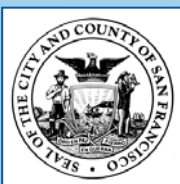


**San Francisco Public Utilities Commission**  
**Peninsula Pipelines Seismic Upgrade Project**  
San Mateo County, California

**Public Review Draft**  
**Environmental Impact Report**

**Volume 1 of 2**

March 2013



*Prepared for:*

**San Francisco Planning Department, Environmental Planning Division**

**San Francisco Planning Department Case No. 2011.0123E**

**State Clearinghouse No. 2011112028**

DEIR Publication Date: March 13, 2013

DEIR Public Comment Period: March 14, 2013 to April 29, 2013

DEIR Public Hearing Dates: April 16, 2013, San Bruno, CA and  
April 18, 2013, San Francisco, CA





# SAN FRANCISCO PLANNING DEPARTMENT

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**DATE:** March 13, 2013

**TO:** Distribution List for the Peninsula Pipelines Seismic Upgrade Project Draft EIR

**FROM:** Sarah Jones, Acting Environmental Review Officer

**SUBJECT:** Request for the Final Environmental Impact Report for the Peninsula Pipelines Seismic Upgrade Project (Planning Department File No. 2011.0123E)

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This is the Draft of the Environmental Impact Report (EIR) for the Peninsula Pipelines Seismic Upgrade Project. A public hearing will be held on the adequacy and accuracy of this document. After the public hearing, our office will prepare and publish a document titled "Responses to Comments," which will contain a summary of all relevant comments on this Draft EIR and our responses to those comments. It may also specify changes to this Draft EIR. Those who testify at the hearing on the Draft EIR will automatically receive a copy of the Responses to Comments document, along with notice of the date reserved for certification; others may receive a copy of the Responses to Comments and notice by request or by visiting our office. This Draft EIR together with the Responses to Comments document will be considered by the Planning Commission in an advertised public meeting and will be certified as a Final EIR if deemed adequate.

After certification, we will modify the Draft EIR as specified by the Responses to Comments document and print both documents in a single publication called the Final EIR. The Final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. It will simply provide the information in one document, rather than two. Therefore, if you receive a copy of the Responses to Comments document in addition to this copy of the Draft EIR, you will technically have a copy of the Final EIR.

We are aware that many people who receive the Draft EIR and Responses to Comments have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final EIR in Adobe Acrobat format on a compact disk (CD) to private individuals only if they request them. Therefore, if you would like a copy of the Final EIR, please fill out and mail the postcard provided inside the back cover to the Environmental Planning division of the Planning Department within two weeks after certification of the EIR. Any private party not requesting a Final EIR by that time will not be mailed a copy. Public agencies on the distribution list will automatically receive a copy of the Final EIR.

Thank you for your interest in this project.



**San Francisco Public Utilities Commission**  
**Peninsula Pipelines Seismic Upgrade Project**  
San Mateo County, California

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**VOLUME 2 (BOUND SEPARATELY)**

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- B. Public Scoping Process Summary Report
- C. Transportation
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## ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ABAG	Association of Bay Area Governments
ACM	asbestos-containing materials
AADT	annual average daily traffic
AEP	Archaeological Evaluation Plan
AEW	AEW Engineering, Inc.
AMP	Archaeological Monitoring Plan
A.D.	<i>Anno Domini</i>
ANSI	American National Standards Institute
APE	area of potential effect
ASP	Archaeological Survey Plan
AYSO	American Youth Soccer Organization
B.C.	Before Christ
B.P.	before present
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BAWSCA	Bay Area Water Supply and Conservation Agency
BCRLF	Brownfields Cleanup Revolving Loan Fund
bgs	below ground surface
BMPs	best management practices
BO	Biological Opinion
C/CAG	City and County Association of Governments of San Mateo County
CAL FIRE	California Department of Forestry and Fire Protection
Cal Water	California Water Service Company
Cal/OSHA	California Division of Occupational Safety and Health
Cal-EPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
Calisphere	Calisphere: A World of Digital Resources
Caltrans	California Department of Transportation
C-APE	California Environmental Quality Act – Area of Potential Effects
CARB	California Air Resources Board
CBC	The 2008 California Building Code
CCR	California Code of Regulations
CCSF	City and County of San Francisco
CCTS	Central California Taxonomic System
CDC	California Department of Conservation
CDFG	California Department of Fish and Game (now CDFW)
CDFW	California Department of Fish and Wildlife
CEHTP	California Environmental Health Tracking Program
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act

CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CFC	California Fire Code
CFPD	Colma Fire Protection District
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHMIRS	California Hazardous Material Incident Report System
CMP	Congestion Management Program
CNDDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2e</sub>	carbon dioxide-equivalent
Corps	U.S. Army Corps of Engineers
CPUC	California Public Utilities Commission
CRA	Conestoga-Rovers & Associates
CRHR	California Register of Historical Resources
CSCSD	Crystal Springs County Sanitation District
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships System
dBA	A-weighted decibel
DPM	diesel particulate matter
DPR	Department of Parks and Recreation
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
eb	eastbound
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report
Environmental Planning	San Francisco Planning Department's Environmental Planning Division
ERNS	Emergency Response Notification System
ERO	Environmental Review Officer
ESA	Environmental Site Assessment
°F	degree Fahrenheit
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FCC	Federal Communications Commission
Fed-OSHA	U.S. Occupational Safety and Health Administration
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zones
FIRM	Flood Insurance Rate Map
FRAP	Fire and Resource Assessment Program
FTA	Federal Transit Authority
FWLA	Fugro William Lettis & Associates, Inc.

GSR	Groundwater Storage and Recovery
GTC	Geotechnical Consultants, Inc.
HASP	Health and Safety Plan
HCASR	Historic Context and Archaeological Survey Report
HCP	Habitat Conservation Plan
HI	hazard index
HMBP	Hazardous Material Business Plan
HPC	The San Francisco Historic Preservation Commission
HPSR	Historic Properties Survey Report
HQ	hazard quotient
HTWTP	Harry Tracy Water Treatment Plant
I-280	Interstate 280
I-380	Interstate 380
IBC	International Building Code
ICF	ICF Jones & Stokes
in/sec	inches per second
ISCST3	Industrial Source Complex Short Term Model 3
ITP	Incidental Take Permit
JRP	JRP Historical Consulting, LLC
L <sub>dn</sub>	day-night average sound level
L <sub>eq</sub>	equivalent continuous noise level
L <sub>max</sub>	maximum A-weighted sound level
LOS	Level of Service
LUST	Leaking Underground Storage Tank Lists
MBTA	Migratory Bird Treaty Act
MEA	San Francisco Planning Department, Major Environmental Analysis Division (now Environmental Planning)
MEI	maximally exposed individual
MG	million gallons
mgd	million gallons per day
µg/L	micrograms per liter
µg/m <sup>3</sup>	micrograms per cubic meter
micro-Pa	microPascal
MLD	Most Likely Descendant
MMTCO <sub>2e</sub>	million metric tons of carbon dioxide-equivalent
MOA	memorandum of agreement
mph	miles per hour
MS4s	municipal separate storm sewer systems
msl	mean sea level
MRZ	Mineral Resource Zones
MT	metric tons
NAHC	Native American Heritage Commission
nb	northbound
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service

NO <sub>2</sub>	nitrogen dioxide
NOA	naturally occurring asbestos
NOI	Notice of Intent
NOP	Notice of Preparation
NO <sub>x</sub>	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NSR	New Source Review
NWIC	Northwest Information Center
OHP	Office of Historic Preservation
OPR	California Governor's Office of Planning and Research
PCB	polychlorinated biphenyls
PCCP	Prestressed Concrete Cylinder Pipe
PEIR	Program Environmental Impact Report
PG&E	Pacific Gas and Electric Company
Phase I ESA	Phase I Environmental Site Assessment
PM <sub>10</sub>	particulate matter less than or equal to 10 microns in diameter
PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
PPSU	Peninsula Pipelines Seismic Upgrade
PPV	peak particle velocity
PRC	California Public Resources Code
PRDs	Permit Registration Documents
RCRA	Resource Conservation Recovery Act
REL	reference exposure level
RGSR	Regional Groundwater Storage and Recovery
ROG	reactive organic gas
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
s/n	serial number
SamTrans	San Mateo Country Transit
SAPL	San Andreas Pipeline
SAPL2	San Andreas Pipeline No. 2
SAPL3	San Andreas Pipeline No. 3
SARA	Superfund Amendment Reauthorization Act
SB	Senate Bill
sb	southbound
SFBAAB	San Francisco Bay Area Air Basin
SFDPH	San Francisco Department of Public Health
SFO	San Francisco International Airport
SF Planning	City and County of San Francisco, San Francisco Planning Department
SFPUC	San Francisco Public Utilities Commission
SFWD	San Francisco Water Department
SIL	Significant Impact Level

SIP	State Implementation Plan
SLIC	Spills, Leaks, Investigations, and Cleanup
SMARA	Surface Mining and Reclamation Act of 1975
SMCEH	San Mateo County Environmental Health
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SO <sub>2</sub>	sulfur dioxide
SR	State Route
SSBPL	Sunset Supply Branch Pipeline
SVP	Society of Vertebrate Paleontology
SVWC	Spring Valley Water Company
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TBA	Targeted Brownfields Assessment
TMDL	Total Maximum Daily Load
TOG	total organic gas
TPH-diesel	total petroleum hydrocarbons as diesel
TPH-gas	total petroleum hydrocarbons as gasoline
TSCA	Toxic Substances Control Act
U.S. 101	U.S. Highway 101
U.S. EPA	United States Environmental Protection Agency
URS	URS Corporation
USFWS	U. S Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator Zone
VegCAMP	Vegetation Classification and Mapping Program
VHFHSZ	Very High Fire Severity Zones
WMUDS/SWAT	Waste Management Unit Database System
WSIP	Water System Improvement Program

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# CHAPTER 1

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## Executive Summary

### 1.1 Introduction and Purpose of Project

The San Francisco Public Utilities Commission (SFPUC) is proposing the Peninsula Pipelines Seismic Upgrade (PPSU) project (or proposed project). The proposed project involves seismic upgrades to SFPUC regional water facilities on the San Francisco Peninsula at five sites in the Town of Colma and the cities of South San Francisco, San Bruno, Millbrae, and in unincorporated San Mateo County. The SFPUC is proposing the PPSU project to improve the seismic reliability of transmission pipelines between the Harry Tracy Water Treatment Plant (HTWTP) and the Capuchino, Baden, and San Pedro Valve Lots, in the event of a major earthquake on the San Andreas Fault.

Under the San Francisco Administrative Code, Chapter 31, the San Francisco Planning Department's Environmental Planning Division (Environmental Planning) (formerly the Major Environmental Analysis Division) is responsible for conducting the environmental review of all City and County of San Francisco (CCSF) projects pursuant to the requirements of the California Environmental Quality Act (CEQA). Thus, Environmental Planning is the lead agency responsible for preparing this Environmental Impact Report (EIR) in compliance with CEQA, and the SFPUC is the project sponsor proposing to implement the PPSU project. This EIR is being prepared to disclose to the public and decision-makers the potential physical impacts of the PPSU project, so that an informed judgment can be made about the project's environmental consequences.

### 1.2 Overview of SFPUC Regional Water System

The CCSF, through the SFPUC, owns and operates a regional water system that extends from the Sierra Nevada to San Francisco, and serves retail and wholesale customers in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne counties. The regional water system consists of water conveyance, treatment, and distribution facilities, and delivers water to retail and wholesale customers. The regional system includes more than 280 miles of pipelines, more than 60 miles of tunnels, 11 reservoirs, five pump stations, and two water treatment plants. The SFPUC currently delivers an annual average of about 265 million gallons per day of water to its customers. The water comes from a combination of local supplies from streamflow and runoff in the Alameda Creek watershed and the San Mateo Creek and Pilarcitos Creek watersheds

(referred to together as the Peninsula watersheds), augmented with imported supplies from the Tuolumne River watershed. Local watersheds provide about 15 percent of total supplies, and the Tuolumne River provides the remaining 85 percent.

The SFPUC serves about one-third of its water supplies directly to retail customers, primarily in San Francisco, and about two-thirds of its water supplies to wholesale customers by contractual agreement. The wholesale customers are largely represented by the Bay Area Water Supply and Conservation Agency, which consists of 26 member agencies in Alameda, San Mateo, and Santa Clara counties. Some of these wholesale customers have other sources of water in addition to the SFPUC, while others rely completely on the SFPUC for supply.

In October 2008, the SFPUC adopted a systemwide program, the Water System Improvement Program (WSIP) (also known as the “Phased WSIP Variant”) (SFPUC Resolution 08-200 [SFPUC, 2008]). The WSIP is a comprehensive program designed to improve the regional system with respect to water quality, seismic response, and water delivery, based on a planning horizon through the year 2030; and to improve the regional system with respect to water supply to meet water delivery needs in the SFPUC service area through the year 2018. The WSIP consists of a water supply strategy and modifications to system operations, as well as construction of a series of facility improvement projects in seven counties—Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, San Mateo, and San Francisco. The PPSU project was not initially identified as a WSIP facility improvement project, but is now proposed under the WSIP. The PPSU project was determined to have independent utility, as further described in Chapter 2, Introduction and Background.

## **1.3 Project Background and Objectives**

### **1.3.1 Project Background**

The PPSU project was not included in the WSIP Program EIR (PEIR) as a facility improvement project because the need for the project was not identified when the WSIP was originally conceived. The SFPUC identified the need for the project after certification of the WSIP PEIR, as a result of geotechnical investigations in connection with the HTWTP Long-Term Improvements Project, which is a WSIP facility improvement project that was approved and adopted by the SFPUC in 2010.

During these investigations, the SFPUC determined that fault strands within the plant’s site could cause significant failure in existing facilities in the event of a major San Andreas earthquake (G&E/GTC Joint Venture, 2011). The fault strands were determined to be part of the Serra Fault system, a secondary fault located along the peninsula in San Mateo County. During additional investigations of the Serra Fault system, the SFPUC identified areas along the San Andreas Pipeline No. 2 (SAPL2), San Andreas Pipeline No. 3 (SAPL3), and Sunset Supply Branch Pipeline (SSBPL) that are susceptible to liquefaction, ground shaking, and landslides (G&E/GTC Joint Venture, 2011). As a result of these studies, the SFPUC identified six pipeline segments in need of seismic improvements at five locations, which are included in the proposed project and are the subject of this EIR.

## 1.3.2 Project Objectives

The goal of the proposed project is to improve the seismic reliability of transmission pipelines between HTWTP and the Capuchino, Baden, and San Pedro Valve Lots in the event of a major earthquake on the San Andreas Fault. Objectives would be achieved by completing proposed improvements designed to prevent the failure of SAPL2, SAPL3, and SSBPL, to maintain reliability during a major seismic event.

The objectives of the proposed project are as follows:

- Upgrade segments of the SAPL2, SAPL3, and SSBPL to meet current seismic standards in locations where they cross the Serra Fault, so that they can withstand the ground displacements potentially caused by a fault offset. This is intended to preserve water flow from the HTWTP to downstream facilities after a major San Andreas earthquake, and to achieve WSIP seismic reliability Level of Service goals.
- Minimize interruptions of water delivery during and following a seismic event by minimizing seismic vulnerabilities at the Serra Fault crossing locations, and by minimizing vulnerabilities at the liquefaction-susceptible zones.
- Reduce the physical, social, and economic impacts associated with the potential rupture of the existing SAPL2, SAPL3, and SSBPL during a major earthquake.

## 1.4 Project Description

### 1.4.1 Project Location and Components

The proposed project consists of seismic upgrades to three SFPUC water transmission pipelines—SAPL2, SAPL3, and SSBPL—at five locations on the San Francisco Peninsula. The upgrades would improve segments of pipelines to increase reliability during potential seismic events. The proposed project activities are listed below:

- Colma Site – Replacement of an approximately 700-foot segment of SAPL2;
- South San Francisco Site – Replacement of an approximately 720-foot segment of SAPL2;<sup>1</sup>
- San Bruno North Site – Stabilization of SAPL2 where it extends through a tunnel;
- San Bruno South Site – Replacement of an approximately 1,170-foot segment of SAPL2 and an approximately 1,050-foot segment of SAPL3; and
- Millbrae Site – Replacement of an approximately 900-foot segment of SSBPL.

A common staging area would be located at SFPUC's Baden Valve Lot in South San Francisco on El Camino Real.

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<sup>1</sup> A portion of the project site is also located in unincorporated San Mateo County.

## 1.4.2 Project Construction

Construction is estimated to begin in 2014 and end in 2015, with a total duration of approximately 12 months. The duration of construction activities at each site would range from 1 month to 9 months. Construction activities would occur concurrently at multiple sites, and primarily during weekdays, from 7 a.m. to 5 p.m. Weekend work may be required on a limited basis, although the nature of such work is not currently known. Weekend construction hours would be the same as those described for weekdays. Nighttime construction may be required at the San Bruno North site. Nighttime activities would also include limited 24-hour pumping for dewatering of the pipelines at a few locations, as described in Chapter 3, Project Description.

There would be three phases of construction activities. Initially, tree removal would be completed at the South San Francisco and Millbrae sites, where dense groves of trees are present in the SFPUC right-of-way. The first construction phase would entail shutdown and dewatering of the pipeline, and mobilization activities such as installation of fencing, grubbing, and preparation of laydown areas. The second phase would include excavation; pipeline removal and installation; hydrostatic testing; and backfill, landscaping, and site restoration. The third phase would include disinfection of the pipelines.

Primary access to the sites that comprise the project and the common staging area would be from Interstate 280; localized access would vary by site. Construction access routes would include both public roadways and unpaved routes. New and existing unpaved routes through public and private lands would be required for the Millbrae site.

On-haul of construction materials, including shoring materials, new pipes, and trench backfill materials; and off-haul of construction debris, including old pipe, shoring, tree debris and vegetation, and excavated spoils, would require a total of approximately 7,060 truck trips. The estimated average trips per day would range from approximately two trips at the San Bruno North site to approximately 21 truck trips at the San Bruno South site; the estimated maximum trips would range from approximately eight trips per day at the San Bruno North site to approximately 118 trips at the San Bruno South site.

## 1.4.3 Project Operations

Future operations and maintenance would be the same as existing operations and maintenance activities, and would continue to entail yearly visual inspections. Approximately every 10 to 15 years, inspections would entail physically entering the manholes for visual inspections inside the pipelines. On an annual basis, water may be discharged from the manholes, as required by other SFPUC projects or inspections.

## 1.5 Summary of Project Impacts and Mitigation Measures

Table 1-1 summarizes the potential environmental impacts for each site, by resource area, and identifies the mitigation measures that would reduce potentially significant impacts to a less-than-significant level, where feasible. The significance criteria used for each environmental topic/resource area are presented in each section of Chapter 5, following the environmental setting and before the discussion of impacts. For the impact analyses, the following categories are used to determine impact significance:

- **No Impact (NI).** An impact is considered not applicable (no impact) if there is no potential for impacts, or the environmental resource does not occur within the project area or the area of potential effect. For example, there would be no impacts related to tree removal if there is no tree removal proposed at a project site.
- **Less-than-Significant impact, no mitigation required (LS).** This determination applies if there is a potential for a limited impact that would not qualify as a significant impact under the significance criteria.
- **Less-than-Significant impact with Mitigation (LSM).** This determination applies if the project would result in an adverse effect that meets the significance criteria, but feasible mitigation is available that would reduce the impact to a less-than-significant level.
- **Significant impact (S).** This determination applies if the project would result in a substantial, or potentially substantial, adverse change that meets the significance criteria before mitigation.
- **Significant and Unavoidable impact for which feasible mitigation is not available (SU).** This determination applies if the project would result in an adverse effect that meets the significance criteria, but for which there appears to be no feasible mitigation available to reduce the impact to a less-than-significant level. Therefore, the impact would be significant and unavoidable.
- **Significant and Unavoidable impact with implementation of feasible Mitigation (SUM).** This determination applies if it is certain that the project would result in an adverse effect that meets the significance criteria and mitigation is available to lessen the impact, but the residual effect after implementation of the measure would remain significant. Therefore, the impact is significant and unavoidable with mitigation.

**Table 1-1  
Summary of Impacts and Mitigation Measures**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Section 5.2: Land Use and Land Use Planning</b>													
<b>Impact LU-1:</b> Project construction could have a substantial temporary direct or indirect impact on the existing character of the vicinity, or could substantially impact or disrupt existing land uses or land use activities.	S	S	S	S	S	NI	<b>Mitigation Measure M-LU-1a: Notice of Construction Activities</b> This mitigation measure applies to all the project sites. The following notification procedures shall be implemented prior to construction:  1. The SFPUC shall provide advance notification to businesses, property owners, facility managers, and residents of adjacent areas potentially affected by the PPSU project about the nature, extent, and duration of construction activities, at least 1 week prior to construction. The SFPUC shall also provide interim updates to these parties during periods of active construction to inform them of the status of the construction activities and schedule. Notices shall be sent to sensitive receptors and affected adjacent properties identified below: <ul style="list-style-type: none"> <li>• <b>Colma Site</b> – Kohl’s Department Store; Home Sweet Home Assisted Living Facility; and Cypress Lawn Memorial Cemetery;</li> <li>• <b>South San Francisco Site</b> –Residences adjacent to the construction zone along Arroyo Drive; Clubview Apartments; and California Golf Club of San Francisco;</li> </ul>	LSM	LSM	LSM	LSM	LSM	NI
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>• <b>San Bruno North Site</b> – Residences adjacent to the construction zone along Cedarwood Court and Pepper Drive;</li> <li>• <b>San Bruno South Site</b> – Park Plaza Apartments and Shelter Creek Condominiums; Residences adjacent to the construction zone along Courtland Drive; Peninsula High School and other uses at the former Crestmoor High School campus; Peninsula High School Athletic Fields; and San Bruno Chinese Church; and</li> <li>• <b>Millbrae Site</b> – Green Hills Country Club; Meadows Elementary School; Residences along Ridgewood Drive; Residences adjacent to the construction zone along Ridgewood Drive, Hacienda Way, Helen Drive, Banbury Lane; Millwood Drive and Barcelona Drive; and Glen Oaks and Millbrae Montessori Schools;</li> </ul> <p>2. The SFPUC shall coordinate with managers of facilities including, but not limited to, Kohl’s Department Store, San Bruno Chinese Church, Peninsula High School, and the Green Hills Country Club to minimize disruptions to facility operations and activities, to the extent feasible.</p> <p>3. Should weekend work be necessary, the SFPUC shall notify adjacent properties, including reasonable advance notification to the businesses, owners, and residents of adjacent areas potentially affected by the proposed project, and interim updates shall be provided.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts</b></p> <p>This mitigation measure applies to South San Francisco, San Bruno North, San Bruno South, and Millbrae sites only. The SFPUC or its contractor shall provide 14-day advance notice by mail or hand delivery to all residents, tenants, and/or property owners in those homes listed below as being potentially subject to significant and unavoidable noise impacts, even after administrative and source controls are implemented.</p> <ul style="list-style-type: none"> <li>• <b>South San Francisco Site</b> – Arroyo Drive (address numbers 105, 107 and 108);</li> <li>• <b>San Bruno North Site</b> – Cedarwood Court (address numbers 1790, 1791, 1800, 1801, 1820, 1821, 1840, and 1841); and Pepper Drive (address numbers 763, 769, 773, 779, 783, 789, 793, and 795);</li> <li>• <b>San Bruno South Site</b> – Courtland Drive (address numbers 300, 306, 310, 316, 320, 326, 330, 336, 340, 350, 360, and 370); Shelter Creek Condominiums Buildings 4A, 4B, and 4D; and Park Plaza Apartments; and</li> </ul>						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>• <b>Millbrae Site</b> – Hacienda Way (address numbers 859, 869, 873, 877, 881, 885, 889, 913, and 917); Ridgewood Drive (address numbers 1078, 1086, 1094, 1100, 1101, 1106, 1110, 1116, 1120, 1126, and 1130); and Banbury Lane (address number 971).</li> </ul> <p>The notice will state the construction location, anticipated activities, and schedule, including whether nighttime construction is proposed. The notice will provide information about anticipated construction-related noise impacts and provide suggestions for avoiding or reducing exposure to such impacts (e.g., planning alternative schedules, closing windows facing the planned construction sites).</p> <p>The SFPUC shall identify and provide a public liaison person before and during construction to respond to the concerns of neighboring property owners. Procedures for contacting the public liaison officer via a toll-free telephone number, email, or in person will be included in the notices. Prior to construction, the SFPUC communications manager, resident engineer, and construction manager shall develop and review procedures for receiving and responding to questions and complaints.</p> <p><b>M-RE-1: Coordination with Green Hills Country Club Facility</b> (see Impact RE-1 in Section 5.11, Recreation, for description)</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Impact LU-2:</b> Project operations would not result in substantial long-term or permanent impacts on the existing character of the vicinity or could substantially impact or disrupt existing land uses or land use activities.	NI	LS	NI	NI	LS	NI	None required.	NI	LS	NI	NI	LS	NI
								Overall Project Impact: LS					
<b>Impact C-LU:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts on existing land uses.	S	S	S	S	S	S	<b>Mitigation Measure M-LU-1a: Notice of Construction Activities</b> (see above)  <b>M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts</b> (see above)	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					
<b>Section 5.3: Aesthetics</b>													
<b>Impact AE-1:</b> Project construction would not result in substantial adverse effects on scenic vistas or temporarily degrade the visual character of the site and its surroundings	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					
<b>Impact AE-2:</b> Project construction could result in significant impacts related to a new source of substantial light or glare.	LS	LS	S	LS	LS	LS	<b>M-AE-2: Site-Specific Construction Lighting Plan</b> This mitigation measure applies to the San Bruno North site only.	LS	LS	LSM	LS	LS	LS
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC shall require the contractor to develop and implement a site-specific nighttime lighting plan. A qualified lighting professional shall prepare the plan, which shall specify lighting sources for nighttime operations, and require that lighting be shielded and directed specifically onto work areas to minimize light spillover. The plan shall also provide for light source monitoring to ensure that feasible adjustments are made as necessary to provide maximum shielding during all phases of construction. The contractor shall submit the plan to the SFPUC for review and approval prior to commencing nighttime construction operations, at which time the plan shall be implemented continuously until the end of nighttime construction.</p> <p><b>M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts</b> (see Impact LU-1 in Section 5.2, Land Use and Land Use Planning, for description)</p>						
<b>Impact AE-3:</b> Project operations would not result in long-term adverse effects on scenic vistas or scenic resources, or degradation of the visual character of the site and its surroundings.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					
<b>Impact C-AE:</b> Implementation of the proposed project would not result in a cumulatively considerable contribution to cumulative impacts on scenic vistas, scenic resources, visual character, or light and glare.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Section 5.4: Population and Housing</b>													
No impacts related to Population and Housing.	NI	NI	NI	NI	NI	NI	None required.	NI	NI	NI	NI	NI	NI
								Overall Project Impact: NI					
<b>Section 5.5: Cultural and Paleontological Resources</b>													
<b>Impact CP-1:</b> Project construction would not cause a substantial adverse change in the significance of a historical resource.	NI	NI	NI	NI	LS	NA	None required.	NI	NI	NI	NI	LS	NA
								Overall Project Impact: LS					
<b>Impact CP-2:</b> Project construction could cause a substantial adverse change in the significance of a historical or unique archaeological resource.	S	S	NI	S	S	NA	<b>M-CP-2a: Distribute "ALERT" Sheet</b> This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only.  At these sites, there is a potential for the inadvertent discovery of archaeological resources because all require excavation into previously undisturbed soils.	LSM	LSM	NI	LSM	LSM	NA
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>To avoid any potential adverse effects on accidentally discovered buried cultural resources, as defined in CEQA Guidelines Section 15064.5(a)(c), the SFPUC shall distribute the San Francisco Planning Department’s archaeological resource “ALERT” sheet to the project prime contractor; to any subcontractors (including firms subcontracted to perform demolition, excavation, grading, foundation, and pile driving); and/or to any utilities firms involved in any and all soil-disturbing activities within the PPSU C-APE.</p> <p>Prior to any soil-disturbing activities, each contractor shall be responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, and supervisory personnel. The SFPUC shall provide the Environmental Review Officer (ERO) with the sign-in sheet from the responsible parties (i.e., prime contractor, subcontractor[s], and utilities firm) confirming that all field personnel have received copies of the ALERT sheet.</p> <p>Should any indication of an archeological resource be encountered during any soil-disturbing activity, SFPUC and/or the contractor shall immediately suspend the soil-disturbing activities within 50 feet of the discovery, and shall notify the ERO immediately.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>Ground-disturbing activities in the vicinity of the discovery shall remain suspended until the ERO has determined what additional measures should be undertaken.</p> <p>If an archaeological resource is present, the archaeological monitor retained for the project (see <b>Mitigation Measure M-CP-2b</b>) shall identify and evaluate the archaeological resource. The archaeological monitor shall make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by the SFPUC. These measures might include preservation in situ of the archaeological resource; or an archaeological evaluation program (see <b>Mitigation Measure M-CP-2c</b>).</p> <p><b>M-CP-2b: Conduct Archaeological Monitoring in Accordance with Approved Archaeological Monitoring Plan</b></p> <p>This mitigation measure applies to the Colma, South San Francisco, and San Bruno South sites only. At these sites, portions of the C-APE are of elevated archaeological sensitivity.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC will retain a qualified archaeologist meeting the Secretary of the Interior’s professional standards for archaeology and, as necessary, a Native American monitor to be present during specific ground disturbing activities at specific locations within the Colma, South San Francisco, and San Bruno South sites as stipulated within the Archaeological Monitoring Plan (AMP) to be prepared for the project (URS, 2012a). The monitoring shall be conducted in accordance with the approved AMP. Archaeological monitoring is not required at the Millbrae site, given the low archaeological sensitivity of the soils occurring within that portion of the C-APE.</p> <p><b>M-CP-2c: Prepare and Comply with an Archaeological Evaluation Plan and Evaluation Report</b></p> <p>This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. In the event archaeological resources are inadvertently exposed during any project-related construction, all ground-disturbing work within 50 feet of the discovery shall immediately cease, and the SFPUC Project Manager and the ERO shall be notified immediately.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>In consultation with the SFPUC, the ERO, and the San Francisco Planning Department’s Environmental Planning Division archaeologist or Designee, the monitoring archaeologist shall prepare an Archaeological Evaluation Plan (AEP) consistent with the requirements of the San Francisco Planning Department, Environmental Planning Division (EP) WSIP Archaeological Guidance No. 5.</p> <p>The AEP shall create a program to determine the potential of the expected resource to meet the California Register criteria—particularly Criterion 4, the resource’s potential to address important research questions identified in the AEP—and the archaeologist shall submit this plan to the ERO for approval. The archaeologist shall then conduct an evaluation consistent with the ERO-approved AEP. The methods and findings of the evaluation shall be presented in an Archaeological Evaluation and Effects Report consistent with EP WSIP Archaeological Guidance No. 6, which shall be submitted to the ERO upon completion.</p> <p>Based on the conclusions of the Archaeological Evaluation and Effects Report, the Environmental Planning Division Archeologist or Designee shall determine if the project will adversely affect a CEQA-significant archaeological resource. If the project will have an adverse effect on such a resource, an Archaeological Research Design and Treatment Plan shall</p>						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure						
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area	
							be prepared by the archaeologist and submitted to the ERO. The Archaeological Research Design and Treatment Plan shall be prepared consistent with the EP (formerly MEA) WSIP Archaeological Guidance No. 7. Once approved by the ERO, a data-recovery investigation and/or other treatment shall be conducted by the archaeologist.							
<b>Impact CP-3:</b> Project construction could result in a substantial adverse effect by directly or indirectly destroying a unique paleontological resource or site.	S	S	NI	S	S	NA	<p><b>M-CP-3: Prepare and Implement a Paleontological Resources Monitoring Program</b></p> <p>This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only.</p> <p>Prior to the initiation of any site preparation or start of construction, SFPUC shall retain a qualified professional paleontologist or a California Professional Geologist with appropriate paleontological expertise, as defined by the Society of Vertebrate Paleontology’s Conformable Impact Mitigation Guidelines Committee (SVP, 1995), to carry out a paleontological resources training program for construction workers and to develop a paleontological monitoring program, except at the San Bruno North site. The SFPUC shall require the paleontologist to be on call throughout the duration of ground-disturbing activities. At a minimum, the monitoring program shall include:</p>	LSM	LSM	NI	LSM	LSM	NA	Overall Project Impact: LSM

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>Preparation of a Paleontological Monitoring Plan.</b> Based on the results of the paleontological investigation completed for the PPSU project (URS, 2012b), the volume and depth of proposed soil excavations, and professional judgment, the paleontologist shall identify the specific locales and depths within the project components where geologic units of high paleontological sensitivity occur, and to determine the frequency in which monitoring will be undertaken to ensure the proper management of paleontological resources. The SFPUC shall review and approve the plan in consultation with the ERO.</p> <p><b>Paleontological Resources Training.</b> All construction forepersons and field supervisors shall be trained in the recognition of potential fossil materials prior to the initiation of any site preparation or start of construction. Training on paleontological resources shall also be provided to all other construction workers, but may include videotape of the initial training and/or the use of written materials rather than in-person training by the qualified paleontologist. In addition to fossil recognition, the training shall convey procedures to follow if construction crews encounter potential fossil materials in the course of earthwork, excavation, or grading, as described below.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>Active Monitoring of Construction Sites for Paleontological Resources, if Recommended in the Paleontological Monitoring Plan.</b> Paleontological monitoring shall consist of inspecting disturbed, graded, and excavated surfaces, as well as soil stockpiles and disposal sites in accordance with the schedule and methods outlined in the Paleontological Monitoring Plan. The monitor (i.e., the professional paleontologist or a designee of the paleontologist) shall have authority to divert grading or excavation away from exposed surfaces temporarily in order to examine disturbed areas more closely and/or recover fossils. The monitor shall coordinate with the construction manager to ensure that monitoring is thorough but does not result in unnecessary delays. If the monitor encounters a paleontological resource, he or she shall assess the fossil, and record or salvage it, as described above.</p> <p><b>Assessment and Salvage of Potential Fossil Finds.</b> If the paleontological monitor or construction crews discover potential fossils, all earthwork or other types of ground disturbance within 50 feet of the find shall stop immediately until the qualified professional paleontologist can assess the nature and importance of the find.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>Based on the scientific value or uniqueness of the find, the monitor may record the find and allow work to continue, or recommend salvage and recovery of the fossil. The monitor may also propose modifications to the stop-work radius based on the nature of the find, site geology, and the activities occurring on the site. Recommendations for any necessary treatment shall be consistent with the SVP 1995 and 1996 guidelines and currently accepted scientific practices.</p> <p>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 and publication of a report describing the finds. The monitor’s recommendations shall be subject to review and approval by the ERO or designee. The SFPUC shall be responsible for ensuring that treatment is implemented and reported to the San Francisco Planning Department. If no report is required, the SFPUC shall nonetheless ensure that information on the nature, location, and depth of all finds is readily available to the scientific community through university curation or other appropriate means.</p>						
<b>Impact CP-4:</b> Project construction could result in a substantial adverse effect related to the disturbance of human remains.	S	S	NI	S	S	NA	<b>M-CP-4: Treatment of Inadvertently Discovered Human Remains</b>	LSM	LSM	NI	LSM	LSM	NA
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. The treatment of any human remains and associated funerary objects discovered during soil-disturbing activities shall comply with applicable state laws. Such treatment would include immediate notification of the San Mateo County coroner and, in the event of the coroner’s determination that the human remains are Native American, notification of the NAHC, which would appoint a Most Likely Descendant (MLD) (PRC Section 5097.98).</p> <p>The archaeological consultant, SFPUC, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated objects (CEQA Guidelines Section 15064.5[d]). The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects.</p> <p>The PRC allows 48 hours to reach agreement on these matters.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>If the MLD and the other parties could not agree on the reburial method, the SFPUC shall follow Section 5097.98(b) of the PRC, which states that “the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance.”</p> <p>All archaeological work performed under this mitigation measure shall be subject to review by the ERO or designee.</p>						
<p><b>Impact C-CP:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts on cultural resources such as archaeological sites (historical and/or unique) including those with human remains, historic architectural, or paleontological resources.</p>	S	S	NI	S	S	NA	<p><b>M-CP-2a: Distribute “ALERT” Sheet</b> (see above)</p> <p><b>M-CP-2b: Conduct Archaeological Monitoring in Accordance with Approved Archaeological Monitoring Plan</b> (see above)</p> <p><b>M-CP-2c: Prepare and Comply with an Archaeological Evaluation Plan and Evaluation Report</b> (see above)</p> <p><b>M-CP-3: Prepare and Implement a Paleontological Resources Monitoring Program</b> (see above)</p> <p><b>M-CP-4: Treatment of Inadvertently Discovered Human Remains</b> (see above)</p>	LSM	LSM	NI	LSM	LSM	NA
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure						
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area	
<b>Section 5.6: Transportation and Circulation</b>														
<b>Impact TR-1:</b> Project construction could substantially 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 travel.	LS	LS	S	LS	LS	LS	<b>M-TR-1: Maintain Traffic Flow on San Bruno Avenue West During the A.M. Peak Hour</b> The SFPUC or its contractor(s) shall maintain eastbound traffic flow on San Bruno Avenue West during the a.m. peak period (generally, between 7 and 9 a.m.) if the temporary closure of the right-turn lane of the I-280 off-ramp and the eastbound San Bruno Avenue West lane adjacent to the project site occur simultaneously. Eastbound traffic flow would be maintained on San Bruno Avenue West during the 2-week period when a portion of the right-hand eastbound lane of San Bruno Avenue would be required for construction activities by plating over the access pit. The SFPUC or its contractor(s) shall coordinate with the City of San Bruno and Caltrans, and the plan for maintaining access shall conform to the State’s Manual of Traffic Controls for Construction and Maintenance Work Areas (Caltrans, 2006).	LS	LS	LSM	LS	LS	LS	Overall Project Impact: LSM
<b>Impact TR-2:</b> Project construction would not result in inadequate emergency access.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure						
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area	
<b>Impact TR-3:</b> Project construction activities could decrease the safety of public roadways for vehicles, bicyclists, and pedestrians.	S	S	S	S	S	S	<p><b>M-TR-3: Traffic Control Plan</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractor(s) shall prepare and implement a traffic control plan.</p> <p>The plan shall conform to the State’s Manual of Traffic Controls for Construction and Maintenance Work Areas (Caltrans, 2006), where applicable. Elements of the traffic control plan shall include, but not be limited to, the following:</p> <p><i>General Measures for All Project Sites</i></p> <ul style="list-style-type: none"> <li>• Advance warning signs shall be placed upstream of work areas advising motorists, bicyclists, and pedestrians of the construction zone ahead in order to minimize hazards associated with construction activities, including the vehicular entry and egress of project-related construction activities.</li> <li>• A public information system shall be developed and implemented to advise motorists, bicyclists, and nearby property owners of the impending construction activities (e.g., direct distribution of flyers to affected properties, email notices, portable message signs, and informational signs).</li> </ul>	LSM	LSM	LSM	LSM	LSM	LSM	Overall Project Impact: LSM



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>• All equipment and materials shall be stored within the designated work areas so as to avoid obstructing traffic.</li> <li>• At all project sites, roadside safety protocols shall be implemented such as advance "Road Work Ahead," "One Lane Road Ahead," "Flagger Ahead," "Prepare to Stop," and "Trucks Entering Road" signs. Warning signs and speed control shall be provided to achieve speed reductions for safe traffic flow through the work zone.</li> <li>• At all sites, pedestrian and bicycle access and circulation shall be maintained during project construction where it is safe to do so. Where appropriate, detours shall be included for bicycles and pedestrians in areas affected by project construction.</li> <li>• To the maximum extent feasible, truck trips (i.e., haul trucks and heavy construction equipment) shall be scheduled outside of the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak commute periods.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>At all project sites, construction shall be coordinated with facility owners or administrators of sensitive land uses such as schools, police and fire stations, churches, hospitals, and residences. Facility owners or operators shall be notified in advance by the SFPUC regarding the timing, location, and duration of construction activities, and the locations of detours and lane closures.</li> <li>Roadway rights-of-ways shall be repaired or restored to their original conditions or better upon completion of construction.</li> </ul> <p><i>Specific Measures for Project Sites</i></p> <ul style="list-style-type: none"> <li>At the <b>Colma</b> site, construction worker parking shall be accommodated within the project area boundary.</li> <li>At the <b>South San Francisco</b> site, flaggers shall be provided at new project driveway on West Orange Avenue to facilitate pedestrian travel adjacent to the project site. Construction worker parking shall be accommodated within the project staging area, or within the common staging area; carpooling between the South San Francisco site and the common staging area shall be established.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>At the <b>San Bruno North</b> site, the construction contractor shall obtain an encroachment permit from Caltrans, and comply with Caltrans requirements for traffic control activities within the State right-of-way, as described in Section 3.10, Required Permits. Construction worker parking on local residential streets shall be limited to 10 vehicles. The remaining workers shall park at the common staging area, and carpooling between the San Bruno North site and the common staging area shall be established.</li> <li>At the <b>San Bruno South</b> site, travel lane closures on Whitman Way shall be limited during the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak periods to the maximum extent feasible.</li> </ul> <p>Outside of allowed working hours or when work is not in progress, Whitman Way shall be restored to normal operations by covering all trenches with steel plates. When sidewalk closures are required on Whitman Way, pedestrian detour routes shall be maintained.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>At the intersection of Shelter Creek Lane and the driveway to the Shelter Creek Condominiums (Intersection #5), the construction contractor shall provide flaggers to facilitate truck access into and out of the project work area at the Shelter Creek Condominiums. Access to lower Garage 4, Lot B, and Lot C shall be maintained to the maximum extent feasible, and alternative fire access to building #3B shall be maintained.</p> <p>The construction contractor shall be required to have ready at all times the means necessary to accommodate emergency vehicles, such as plating over excavations through the use of steel plate to provide for a fire lane with a minimum width of 12 feet. The traffic control plan shall include flaggers with radio communication to allow ingress/egress to the parking areas.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>Flaggers shall be provided on Courtland Drive at the construction vehicle access to the staging area within the Peninsula High School site, to reduce the potential for conflicts between construction vehicles and vehicles destined to other parking or passenger loading/unloading areas within the site. If construction activities occur on weekends, flaggers shall be provided.</p> <p>Plans and Specifications at 65 percent design completion, along with the traffic control plan, shall be submitted to the San Bruno Fire Marshal when available for review and comment.</p> <p>Construction worker parking shall be accommodated within the project area boundary.</p> <ul style="list-style-type: none"> <li>At the <b>Millbrae</b> site, the SFPUC or the construction contractor shall coordinate with the schedule of schools to minimize impacts on school operations to the maximum extent feasible. At the Millbrae site, to the maximum extent feasible, construction haul trips shall not be conducted prior to 9 a.m. or after 3 p.m. when</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>children are traveling to and from the Meadows Elementary School and the Glen Oaks/Millbrae Montessori School. Similarly, if determined appropriate by the school administrators, the SFPUC or the construction contractor shall provide traffic control officers at the intersections of Helen Drive/Larkspur Drive (Intersection #9) near the Meadows Elementary School, and Santa Margarita Avenue/Capuchino Drive (Intersection #11) near the Glen Oaks/Millbrae Montessori School.</p> <p>If sidewalk closures are required on Ridgewood Drive, pedestrian detour routes shall be provided. Construction worker parking shall be accommodated on-street.</p> <ul style="list-style-type: none"> <li>At the <b>Common Staging Area</b>, construction worker parking for the PPSU project shall be accommodated within the site, as feasible.</li> </ul>						
<b>Impact TR-4:</b> Vehicle trips generated during project operation and maintenance activities would not substantially conflict with an applicable congestion management program.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<p><b>Impact C-TR:</b> Project construction could result in a cumulatively considerable contribution to cumulative traffic increases and safety hazards on local and regional roads.</p>	S	S	S	S	S	S	<p><b>M-TR-1: Maintain Traffic Flow on San Bruno Avenue West During the A.M. Peak Hour,</b> (see above)  <b>M-TR-3: Traffic Control Plan</b> (see above)</p>	LSM	LSM	LSM	LSM	LSM	LSM
							<p><b>M-C-TR: Assign a SFPUC Water System Improvement Program Projects Construction Coordinator</b>                      This mitigation measure applies to all project sites, as well as the common staging area. Due to the potential for overlapping project activities and the operation of construction vehicles to affect travel along local roadways, the SFPUC shall assign a qualified construction coordinator responsible for coordinating the project-specific traffic control plan developed as part of <b>Mitigation Measure TR-3: Traffic Control Plan</b> with other SFPUC projects, including, but not limited to the Regional GSR project and the HTWTP Long-Term Improvements project.                      Throughout the construction schedule for the SFPUC projects in the Water System Improvement Program Peninsula Region, the SFPUC construction coordinator shall work with local and regional agencies to minimize local and regional traffic impacts, and shall incorporate these measures into the SFPUC’s project-specific traffic control plans.                      Such measures could include, but would not be limited to, monitoring during construction to identify intersections or areas of problematic cumulative congestion or hazard; and re-routing or coordinating the timing of vehicular or truck trips to avoid or minimize such congestion or hazard.</p>	Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Section 5.7: Noise</b>													
<b>Impact NO-1:</b> Daytime construction activities could result in substantial temporary increases in ambient daytime noise levels that could interfere with nearby land uses.	S	S	S	S	S	LS	<b>M-NO-1: Prepare and Implement Administrative and Source Controls</b> This mitigation measure applies to all project sites, but does not apply to the common staging area. The SFPUC shall include in construction contract specifications the requirement to prepare a noise control plan. The contractor shall submit a noise control plan, prepared by a qualified noise consultant, to the SFPUC for review and approval at least 21 days before the start of mobilization/ construction. The SFPUC shall require the noise consultant to be a board-certified Institute of Noise Control Engineering member or other qualified consultant or engineer, to be approved by the SFPUC project construction manager. The noise control plan shall contain performance standards based on the more-restrictive of the 70 dBA Leq speech interference threshold and the limits established in noise ordinances of San Mateo County, the Town of Colma, and the cities of San Bruno and Millbrae. The noise control plan shall identify the applicable threshold for each project site. The noise control plan shall, at a minimum, contain the following elements:	LSM	SUM	SUM	SUM	SUM	LS
								Overall Project Impact: SUM					



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>• Location of equipment, parking, and other noise generating sources.</li> <li>• Detailed list of potential noise control methods to meet the performance standards. Locations where it is not feasible to meet the performance standards shall be identified</li> <li>• Proposed staging and schedule of noise control measures.</li> <li>• Anticipated performance of noise control measures.</li> <li>• Number and location of monitoring locations and relation to stationary noise controls and sensitive receptors.</li> <li>• Schedule for ongoing monitoring and reporting of construction noise levels to meet performance standards. Monitoring shall occur at least weekly, or more often if needed, in response to complaints.</li> </ul> <p>Specific noise control measures that shall be contained in the plan may include, but are not limited to, the following:</p> <ol style="list-style-type: none"> <li>a) Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will be used for all equipment and trucks in order to minimize construction noise impacts.</li> </ol>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							b) If impact equipment (e.g., concrete/rock breaker, rock drill) is used during project construction, hydraulically or electric-powered equipment will be used to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust will be used (a muffler can lower noise levels from the exhaust by up to 10 dBA). External jackets on the tools themselves will be used, which could achieve a reduction of 5 dBA. Quieter procedures, such as drilling or vibratory methods rather than impact equipment, will be used. c) Alternative shoring installation techniques, such as beam-and-plate or drilled soldier piles, shall be employed to meet noise thresholds. d) The use of vibratory rollers and pile drivers shall be limited to the hours between 7 a.m. to 5 p.m. e) Locate stationary noise sources away from sensitive receptors. If the sources must be located near receptors, adequate muffling (with enclosures where appropriate) will be used to ensure performance standards are met. Enclosure openings or vents will face away from sensitive receptors. If any stationary equipment (pumps, ventilation fans, generators) is operated beyond the ordinance time limits, this equipment will conform to the affected jurisdiction's noise limits.						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>f) Erect temporary noise barriers to maintain construction noise levels at or below the performance standards. Barriers shall be constructed with a solid material with a density of at least 2 pounds per square foot with no gaps. The location and specification of the barriers shall be determined by the approved noise consultant as part of the noise control plan.</p> <p>g) Designate a project liaison to be responsible for responding to noise complaints during construction. The name and phone number of the liaison will be conspicuously posted at construction areas and on all advanced notifications. The liaison will take steps to resolve complaints, including the arrangement of periodic noise monitoring, if necessary. Results of noise monitoring will be presented at regular project meetings with the project contractor, and the liaison will coordinate with the contractor to modify any construction activities that generated excessive noise levels.</p> <p>h) In the event of noise complaints, the contractor shall provide information to the SFPUC within 48 hours of being notified of the complaint regarding the noise levels measured and activities that correspond to the complaints.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC will compare the noise levels to the information in the noise control plan, and the effectiveness of the noise control measures will be verified by the contractor. The contractor will be responsible for the correct installation and use of all implemented noise control measures and for complying with noise specifications.</p> <p>To mitigate the contribution to elevated noise levels from back-up alarms, the contractor may use administrative controls instead of audible back-up alarms, subject to safety priorities and consistency with state and federal worker safety laws. Administrative controls may include designing traffic patterns at the project sites to minimize the need for backward movement, or requiring a spotter or flagger in clear view of the operator to direct the backing operation, or requiring the operator to dismount and circle the vehicle immediately prior to starting a reverse operation.</p> <p>Alternatively, the SFPUC may consult with the California Division of Occupational Safety and Health (Cal/OSHA) to determine whether additional noise reductions may be achieved through Cal/OSHA-approved alternatives to back-up alarms without compromising site safety.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>If Cal/OSHA indicates that such alternatives are a viable option and the SFPUC, in consultation with the contractor, determines that site safety would not be compromised, then the contractor shall apply for a variance from Cal/OSHA and use such alternatives consistent with Cal/OSHA requirements. Such alternatives could include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• “Smart” alarms that have an audible range of 77 to 103 dBA (but limit the warning signal to 5 dBA over ambient noise levels).</li> <li>• Radar presence-sensing alarms that identify objects in the reversing path of a truck.</li> <li>• Use of “bbs-tek” broadband back-up alarm systems that use a broadband sound instead of a more noticeable single-frequency sound.</li> <li>• Use of strobe lights instead of audible alarms.</li> </ul> <p>The administrative source controls and alternatives identified above that are approved by Cal/OSHA instead of back-up alarms shall be included in the noise control plan. If none of these alternatives to back-up alarms can be implemented, the use of back-up alarms shall be minimized by routing the trucks and equipment through sites in a manner that reduces the need to back up.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Impact NO-2:</b> Nighttime construction and dewatering activities could result in substantial temporary increases in ambient nighttime noise levels that could interfere with nearby land uses.	NI	NI	S	S	S	NI	<b>M-NO-1: Prepare and Implement Administrative and Source Controls</b> (see above)	NI	NI	SUM	LSM	LSM	NI
								Overall Project Impact: SUM					
<b>Impact NO-3:</b> Construction activities could result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance.	S	NI	S	NI	S	S	<b>M-NO-1: Prepare and Implement Administrative and Source Controls</b> (see above)	LSM	NI	SUM	NI	SUM	LSM
							<b>M-NO-3a: Limit Hours of Construction at Colma Site</b> This mitigation measure applies to the Colma site. Any construction work conducted within the Town of Colma shall be limited to the hours established in the Town noise ordinance (weekdays 7:00 a.m. to 8 p.m. and Saturdays 10 a.m. to 6 p.m.), unless determined otherwise by the Colma building official.	Overall Project Impact: SUM					
							<b>M-NO-3b: Limit Hours of Construction at Millbrae Site</b> This mitigation measure applies to the Millbrae site. Except for dewatering activities, any construction work conducted within the City of Millbrae shall be limited to the hours established in the City noise ordinance (weekdays 7:30 a.m. to 7 p.m.; Saturdays 8 a.m. to 6 p.m.; and Sundays and holidays 9 a.m. to 6 p.m.).						
<b>Impact NO-4:</b> Construction activities could result in exposure of persons or structures to generation of excessive groundborne vibration	LS	S	S	S	S	LS	<b>M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting</b> This mitigation measure applies to the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites.	LS	LSM	SUM	LSM	LSM	LS
								Overall Project Impact: SUM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC shall include in construction contract specifications the requirement to prepare and implement a vibration control plan. The contractor shall submit a vibration control plan, prepared by a qualified vibration consultant, to the SFPUC for review and approval at least 21 days before the start of mobilization/construction. The vibration control plan shall contain measures to reduce construction-related vibration to meet the 0.3 in/sec PPV damage potential threshold. In addition, at the San Bruno North site, the plan shall contain measures to reduce construction-related vibration to meet the 0.01 in/sec PPV nighttime annoyance potential threshold, to the extent feasible.</p> <p>The vibration control plan shall, at a minimum, contain the following elements:</p> <ul style="list-style-type: none"> <li>• Procedures outlining the coordination among the SFPUC, the contractor, field monitors, and property owners.</li> <li>• Address the use of low-vibration equipment (or using lower power equipment or lower power setting) and methods when working near residential receptors.</li> </ul> <p>Specific vibration control measures that could be addressed in the plan include, but are not limited to, the following:</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							a) Avoiding or reducing simultaneous operation of multiple pieces of construction equipment in proximity to buildings. b) The use of vibratory rollers and pile drivers shall be limited to the hours between 7 a.m. and 10 p.m. c) Continuous monitoring of vibration levels when vibratory equipment is in use within 50 feet of residential receptors. d) Continuous monitoring of pile driving vibration levels within 150 feet of residential receptors. e) Pile driving is not to occur within 60 feet of residential structures; the contractor must provide trench shoring using another less-vibration-intensive method within 60 feet of residential structures. f) Weekly reporting of the vibration monitoring results. If construction vibration monitoring demonstrates that the project-generated vibration is lower than the values estimated, then the SFPUC could allow these activities to be conducted within the buffer zones, based on evaluation of monitoring data by a qualified vibration consultant. The SFPUC will consult with a California-licensed geotechnical engineer to develop procedures to reduce vibration impacts on adjacent sensitive receptors.						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC will ensure that the construction contractor follows the recommendations of the final geotechnical report regarding excavation and construction. The SFPUC will also ensure that the construction contractor monitors adjacent residential receptors during construction as recommended by the geotechnical engineer.</p> <p>The construction contractor will use low-vibration equipment and appropriate trench shoring when working close to buildings, when required by the geotechnical engineer. If necessary, trench shoring near buildings will be designed with the capacity to support the soil loading, as determined by the project structural and/or geotechnical engineer. The construction contractor will monitor the building until the trench is backfilled.</p> <p>SFPUC and the contractor will coordinate with property owners to attempt to gain property access where necessary for vibration monitoring. Where access is granted, the SFPUC shall conduct monitoring to assess construction vibration impacts on adjacent buildings. The SFPUC shall assess the building's pre-construction conditions, identify potential sources of background vibration, and monitor construction vibration near adjacent residential receptors using appropriate monitoring equipment.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							The SFPUC will coordinate with the construction contractor to adjust construction techniques so as to keep vibration levels below the 0.3 in/sec PPV threshold potential damage criterion. The SFPUC will conduct visual surveys during construction, monitor for cracks and other damage, and conduct a post-construction structural evaluation. SFPUC will provide outreach and information to affected residential receptors regarding projected vibration. At a minimum, this will be provided to residences with structures within approximately 200 feet of construction activities. For residential structures within these zones, the SFPUC will convey to the owners the fact that structural damage occurs at very high vibration levels, far above the threshold of human perception, and that vibration from construction activities will be monitored to prevent structural damage.						
<b>Impact C-NO:</b> Construction of the proposed project could result in a cumulatively considerable contribution to cumulative noise and vibration impacts.	S	LS	NI	NI	LS	LS	<b>M-NO-1: Prepare and Implement Administrative and Source Controls</b> (see above)	LSM	LS	NI	NI	LS	LS
<b>Section 5.8: Air Quality</b>													
<b>Impact AQ-1:</b> Project construction could violate air quality standards or contribute significantly to an existing air quality violation.	S	S	S	S	S	S	<b>M-AQ-1: BAAQMD Basic Construction Measures</b> This mitigation measure applies to all project sites and the common staging area.	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC shall post one or more publicly visible signs with the telephone number and person to contact at the SFPUC with complaints related to excessive dust or vehicle idling. This person shall respond to complaints and, if necessary, take corrective action within 48 hours. The telephone number and person to contact at the BAAQMD's Compliance and Enforcement Division shall also be provided on the sign(s) in the event that the complainant also wishes to contact the applicable air district.</p> <p>In addition, to limit dust, criteria pollutants, and precursor emissions associated with project construction, the following BAAQMD-recommended Basic Construction Measures shall be included in all construction contract specifications for the proposed project:</p> <ul style="list-style-type: none"> <li>• All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.</li> <li>• All haul trucks transporting soil, sand, or other loose material offsite shall be covered.</li> <li>• 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.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Vehicle speeds on unpaved areas shall be limited to 15 mph.</li> <li>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.</li> <li>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. Clear signage of this requirement shall be provided for construction workers at all access points to construction areas.</li> <li>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.</li> </ul>						
<b>Impact AQ-2:</b> Project construction would not expose sensitive receptors to substantial pollutant concentrations.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure						
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area	
<b>Impact AQ-3:</b> Project construction would not create objectionable odors affecting a substantial number of people.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	Overall Project Impact: LS
<b>Impact AQ-4:</b> Project construction would not conflict with or obstruct implementation of the applicable air quality plan.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	Overall Project Impact: LS
<b>Impact C-AQ:</b> Project construction could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).	S	S	S	S	S	S	<b>M-AQ-1: BAAQMD Basic Construction Measures</b> (see above)	LSM	LSM	LSM	LSM	LSM	LSM	Overall Project Impact: LSM
<b>Section 5.9: Greenhouse Gas Emissions</b>														
<b>Impact GG-1:</b> Project construction would generate greenhouse gas emissions, but not at levels that would result in a significant impact on the environment, or that would conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	Overall Project Impact: LS
<b>Impact C-GG:</b> Project construction would not result in a cumulatively considerable contribution to GHG emissions.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	Overall Project Impact: LS

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Section 5.10: Wind and Shadow</b>													
No impacts related to Wind and Shadow.	NI	NI	NI	NI	NI	NI	None required.	NI	NI	NI	NI	NI	NI
								Overall Project Impact: NI					
<b>Section 5.11: Recreation</b>													
<b>Impact RE-1:</b> The proposed project could temporarily degrade existing recreational uses during construction.	NI	LS	NI	LS	S	NI	<p><b>M-RE-1: Coordination with Green Hills Country Club Facility Managers</b></p> <p>This mitigation measure applies to the Millbrae site. The SFPUC shall work with the Green Hills Country Club prior to initiation of project activities on the golf course property, and shall coordinate with the club to implement measures that will facilitate maximum continued use of golf course facilities during project construction.</p> <p>Staging areas and access routes should be located to avoid use of fairways, where practicable. Continued play of the fifth hole (adjacent to the construction zone and staging area) should be allowed, to the extent feasible.</p>	NI	LS	NI	LS	LSM	NI
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							The access road through the driving range should be aligned to the maximum extent practicable to avoid sensitive, highly developed and expensive features such as the chipping green and unique bunkers, such as deep sand traps with steep slopes. In addition, alternatives to allow the continued use of the fifth hole should be considered.						
<b>Impact C-RE:</b> Construction of the project would not result in a cumulatively considerable contribution to cumulative impacts on recreational resources or uses.	NI	LS	NI	LS	LS	NI	None required.	NI	LS	NI	LS	LS	NI
<b>Section 5.12: Utilities and Service Systems</b>													
<b>Impact UT-1:</b> Project construction could result in a substantial adverse effect related to disruption of utility operations or accidental damage to existing utilities.	S	S	S	S	S	S	<b>M-UT-1a: Confirm Utility Line Information</b> This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall locate overhead and underground utility lines that may be encountered during excavation work prior to opening an excavation. Information regarding the size, color, and location of existing utilities shall be confirmed before excavation activities commence. These utilities shall be highlighted on all construction drawings.	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area. While any excavation is open, the SFPUC or its contractors shall protect, support, or remove underground utilities as necessary to safeguard employees. As part of contractor specifications, the contractor(s) shall be required to provide updates on planned excavations for the upcoming week, and to specify when construction will occur near a high-priority utility. SFPUC construction managers shall attend tailgate meetings with contractor staff, as required by the California Occupational Safety and Health Administration, to record all protective and avoidance measures regarding such excavations.</p>						
							<p><b>M-UT-1c: Notify Local Fire Departments</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area. In the event that construction activities result in damage to high-priority utility lines, including leaks or suspected leaks, the SFPUC or its contractors shall immediately notify local fire departments to protect worker and public safety.</p>						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-UT-1d: Emergency Response Plan</b> This mitigation measure applies to all project sites, as well as the common staging area. Prior to commencing construction activities, the SFPUC shall develop an emergency response plan that outlines procedures to follow in the event of a leak or explosion. The emergency response plan shall identify the names and phone numbers of PG&amp;E staff who would be available 24 hours per day in the event of damage or rupture of the high-pressure PG&amp;E natural gas pipelines. The plan shall also detail emergency response protocols including notification, inspection, and evacuation procedures; any equipment and vendors necessary to respond to an emergency, such as an alarm system; and routine inspection guidelines.</p> <p><b>M-UT-1e: Ensure Prompt Reconnection of Utilities</b> This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall promptly notify utility providers to reconnect any disconnected utility lines as soon as it is safe to do so.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<b>M-UT-1f: Coordinate Final Construction Plans with Affected Utilities</b> This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall coordinate final construction plans and specifications with affected utilities.						
<b>Impact UT-2:</b> Project construction could result in a substantial adverse effect related to the relocation of regional or local utilities.	S	S	S	S	S	S	<b>M-UT-1a: Confirm Utility Line Information</b> (see above) <b>M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities</b> (see above) <b>M-UT-1c: Notify Local Fire Departments</b> (see above) <b>M-UT-1d: Emergency Response Plan</b> (see above) <b>M-UT-1e: Ensure Prompt Reconnection of Utilities</b> (see above) <b>M-UT-1f: Coordinate Final Construction Plans with Affected Utilities</b> (see above)	LSM	LSM	LSM	LSM	LSM	LSM
							Overall Project Impact: LSM						
<b>Impact UT-3:</b> Project construction would not result in a substantial adverse effect related to water supply availability.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
							Overall Project Impact: LS						
<b>Impact UT-4:</b> Project construction would not result in a substantial adverse effect related to landfill capacity.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
							Overall Project Impact: LS						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure						
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area	
<p><b>Impact UT-5:</b> Project construction could result in a substantial adverse effect related to compliance with federal, State, and local statutes and regulations pertaining to solid waste.</p>	S	S	S	S	S	S	<p><b>M-UT-5: Prepare and Implement a Construction Solid Waste Recycling Plan</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area.</p> <p>The SFPUC or its contractors shall prepare a construction solid waste recycling plan/waste management plan. The plan should identify the goal of salvaging the maximum amount of demolition debris at all projects sites.</p> <p>The plan should also include identification of the types of debris generated by the project and of how waste streams will be handled; and identification of actions to reuse or recycle construction debris and clean excavated soil to the extent possible. The plan shall include actions to divert waste with disposal in a landfill in accordance, at a minimum, with the solid waste diversion goal set by the California Integrated Waste Management Act, and with local ordinance requirements as follows:</p> <ul style="list-style-type: none"> <li>At the Colma site – 50 percent recycling of the waste tonnage from any demolition project where the waste includes concrete and asphalt (or 15 percent where there is no concrete and/or asphalt); and 50 percent recycling of waste tonnage;</li> </ul>	LSM	LSM	LSM	LSM	LSM	LSM	Overall Project Impact: LSM

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>At the South San Francisco site and Common Staging Area – 100 percent recycling of inert solids; and at least 50 percent recycling of the remaining construction and demolition debris tonnage; and</li> <li>At the Millbrae site – 50 percent recycling of all waste generated for the project by weight, with at least 25 percent achieved through reuse and recycling of materials other than source separated dirt, concrete and asphalt.</li> </ul> <p>No local ordinances apply at the San Bruno North and South sites; therefore, diversion shall be consistent with State law (at least 50 percent recycling of solid wastes).</p>						
<b>Impact C-UT:</b> Construction of the proposed project could result in a cumulatively considerable contribution to cumulative impacts related to disruption or relocation of utilities.	S	S	S	S	S	S	<b>M-UT-1a: Confirm Utility Line Information</b> (see above) <b>M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities</b> (see above) <b>M-UT-1c: Notify Local Fire Departments</b> (see above) <b>M-UT-1d: Emergency Response Plan</b> (see above) <b>M-UT-1e: Ensure Prompt Reconnection of Utilities</b> (see above) <b>M-UT-1f: Coordinate Final Construction Plans with Affected Utilities</b> (see above)	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Section 5.13: Public Services</b>													
No impacts related to Public Services.	NI	NI	NI	NI	NI	NI	None required.	NI	NI	NI	NI	NI	NI
								Overall Project Impact: NI					
<b>Section 5.14: Biological Resources</b>													
<b>Impact BI-1:</b> Construction of the proposed project could have a substantial adverse effect through habitat modification on special-status wildlife species.	S	S	S	S	S	S	<b>M-BI-1a: General Protection Measures</b> This mitigation measure applies to all project sites, as well as the common staging area.  The SFPUC shall ensure that the following general measures are implemented by the contractor(s) during construction to minimize or avoid impacts on biological resources: <ul style="list-style-type: none"> <li>• Construction contractor(s) shall minimize the extent of the construction disturbance as much as feasible, which shall be limited to boundaries of the project sites.</li> <li>• For trees to be retained or trimmed:                             <ul style="list-style-type: none"> <li>- A qualified arborist or a qualified biologist will identify trees to be retained, and exclusion fencing will be installed no closer than the drip line of these trees.</li> </ul> </li> </ul>	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>- Prior to the start of construction, SFPUC or its contractors will install exclusion fencing at the limits of construction, outside the dripline of all trees bordering the limits.</li> <li>- All necessary tree pruning will be completed either by a certified arborist or by the contractor under the supervision of either an International Society of Arboriculture qualified arborist, American Society of Consulting Arborists consulting arborist, or a qualified horticulturist.</li> <li>• Project-related vehicles shall observe a 15 mile-per-hour speed limit on unpaved roads in the work area, or as otherwise determined by the applicable regulatory agencies.</li> <li>• The contractor shall provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage shall be collected daily from the project site and placed in a closed container from which garbage shall be removed weekly.</li> <li>• Construction personnel shall not feed or otherwise attract wildlife in the project area.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>No pets shall be allowed in the project area.</li> <li>No firearms shall be allowed in the project area.</li> <li>Staging areas shall be located at least 100 feet from riparian habitat, creeks, and wetlands, where feasible. If not feasible, then staging areas shall be situated outside of the dripline of riparian trees. If a 100 foot setback is not feasible due to field constraints, the project biologist will work with the contractor to determine where the silt fence erected for perimeter control should be placed, and what additional BMPs may be required to prevent construction spoils and sediment from leaving the work area. Sediment controls, such as silt fence or straw wattles, shall be erected along the perimeter of all construction and staging areas to minimize the transport of sediment from the site. If silt fence is used, the fence shall be installed so that the stakes face toward the outside of the work area.</li> <li>Exclusion fencing shall be erected along the boundaries of construction and staging areas to provide perimeter control, and to prevent construction personnel and activities from entering sensitive areas, as determined to be needed by the project biologist.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>If vehicle or equipment fueling or maintenance is necessary, it shall be performed in the designated staging area, consistent with <b>Mitigation Measure M-HY-1: Preparation and Implementation of a SWPPP</b> (see Section 5.16, Hydrology and Water Quality).</li> </ul>						
							<p><b>M-BI-1b: Worker Training and Awareness Program</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC shall ensure that mandatory biological resources awareness training is provided to all construction personnel as follows:</p> <ul style="list-style-type: none"> <li>The training shall be developed and provided by a qualified biologist or construction compliance manager familiar with the sensitive species that may occur in the project area. If a consulting biologist prepares the training program, SFPUC staff shall approve the program prior to implementation.</li> <li>The training shall be provided before any work, including vegetation clearing and grading, occurs within the work area boundaries.</li> </ul>						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>The training shall provide education on the natural history of the special-status species potentially occurring in the project area, and discuss the required mitigation measures to avoid impacts on the special-status species and the penalties for failing to comply with biological mitigation requirements.</li> <li>The environmental awareness training program for construction personnel shall include an orientation regarding the importance of preventing the spread of invasive nonnative plants.</li> <li>If new construction personnel are added to the project, the contractor shall ensure that they receive training prior to starting work. The subsequent training of personnel can include a videotape of the initial training and/or the use of written materials rather than in-person training by a biologist.</li> </ul>						
							<p><b>M-BI-1c: Prepare and Implement a Vegetation Restoration Plan</b></p> <p>This mitigation measure applies to all project sites, but does not apply to the common staging area. The SFPUC or contractor shall prepare and implement a vegetation restoration plan with detailed specifications for minimizing the introduction of invasive weeds, and for restoring all temporarily disturbed areas.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The plan shall include methods to ensure that the contractor successfully implements the vegetation restoration plan after the project is completed, so that proposed success criteria can be achieved subsequent to construction.</p> <ul style="list-style-type: none"> <li>The plan shall be developed by a qualified restoration ecologist familiar with the ecological requirements of special-status species. Willows removed from the South San Francisco site, north of Westborough Boulevard, shall be replaced with vegetation that would provide shelter for California red-legged frog, as specified in the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007).</li> <li>The plan shall be developed with the intent to replace (to the extent possible) the function and values of trees removed during the construction project with plants that are acceptable for planting within the SFPUC ROW.</li> <li>The plan shall indicate the best time of year for seeding to occur and will be consistent with the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007). The restoration plan shall specify measures to</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>remove and/or control weeds in the project area. For grassland and ruderal areas, the affected areas shall be reseeded with a native or noninvasive grass and forb seed mix.</p> <ul style="list-style-type: none"> <li>• Replacement of ordinance-protected trees shall be completed as described in <b>Mitigation Measure M-BI-4: Replacement of Trees to Be Removed</b>. As specified therein, a qualified biologist shall conduct post-construction monitoring of the replacement trees for 5 years.</li> <li>• The SFPUC or contractor shall ensure that topsoil is salvaged during grading and earthmoving activities (including during the preparation of spoils sites), stockpiled separately from subsoils, and protected from erosion (e.g., covered or watered); that composting amendments are added if necessary; and, if needed, that potentially compacted construction work areas are properly prepared prior to reuse of the soil in the post-construction restoration of temporarily disturbed areas. The SFPUC shall ensure that a minimum of 12 inches of topsoil is salvaged; or, if there is less than 12 inches of topsoil, as much as practicable.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Construction equipment shall arrive at the project areas free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species.</li> <li>Any soil amendments, gravel, etc., required for construction and/or restoration activities that would be placed within the upper 12 inches of the ground surface shall be free of vegetation and plant material, and certified pathogen-free. Imported fill material shall be covered with the topsoil layer to prevent any imported seed bed from growing.</li> <li>Certified, weed-free, imported erosion-control materials (or rice straw in upland areas) shall be used exclusively, as applicable (this measure concerns biological material and does not preclude the use of silt fences, etc.). Erosion-control materials shall be natural and biodegradable, such as burlap wattles, and not have plastic netting, especially in areas with the potential for California red-legged frog, to prevent wildlife entanglement.</li> <li>No invasive nonnative plant species shall be used in any restoration plantings.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-BI-1d: Minimize Disturbance to Nesting Birds and Raptors</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area. As feasible, the SFPUC shall conduct tree and shrub removal in the project areas during the nonbreeding season (generally August 15 through February 15) for migratory birds, raptors, and special-status bird species. If trees cannot be removed outside of the bird breeding season, nesting bird surveys will be conducted on all trees prior to removal.</p> <p>If construction activities must occur during the bird breeding season (February 15 to August 15), the SFPUC shall retain a qualified wildlife biologist who is experienced in identifying birds and their habitat to conduct nesting-raptor surveys in and within 300 feet of the project area. Migratory passerine bird surveys shall be conducted within 50 feet of all work areas (as feasible) unless otherwise directed by CDFW.</p> <p>If an area is not accessible for survey, the project biologist shall make a determination if further survey is necessary, and may request assistance to enter properties that may need closer investigation.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>All migratory bird and active raptor nests within these areas shall be mapped. These surveys must be conducted within 2 weeks prior to initiation of construction activities at any time between February 15 and August 15. If no active nests are detected during surveys, no additional mitigation is required.</p> <p>If migratory bird and/or active raptor nests are found in the project areas or in the adjacent surveyed area, the SFPUC shall establish a no-disturbance buffer around the nesting location to avoid disturbance or destruction of the nest site until after the breeding season or after a wildlife biologist determines that the young have fledged (usually late June through mid-July). The extent of these buffers would be determined by a wildlife biologist in consultation with CDFW and would depend on the species' sensitivity to disturbance (which can vary among species); the level of noise or construction disturbance; line of sight between the nest and the disturbance; ambient levels of noise and other disturbances; and consideration of other topographical or artificial barriers. The wildlife biologist shall analyze and use these factors to assist the CDFW in making an appropriate decision on buffer distances.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-BI-1e: Pre-construction Surveys for Special-Status Bats and Avoidance and Minimization Measures</b></p> <p>This mitigation measure applies to the Millbrae site. Not more than 1 week prior to tree removal in the project areas, 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. Bats may be present any time of the year. The biologist shall thoroughly search the tree or snag that provides appropriate habitat (trees with foliage or cavities or that are hollow) for the presence of roosting bats or evidence of bats. If bats are found or evidence of use by bats is present, the following procedures shall be implemented before felling the tree:</p> <ol style="list-style-type: none"> <li>1. Trees shall be removed under the warmest possible conditions. Peel any sections of the exfoliated bark off the tree gently and search for any roosting bats underneath. Create noise and vibrations on the tree itself. Noise and vibrations may include running a chain saw and making shallow cuts in the trunk (where bark has been), and striking the tree base with fallen limbs or tools such as hammers.</li> </ol>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>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, be especially careful to check for the presence of bats in those areas. Cut slowly and carefully at all times. If possible, section trunk near cavities to focus noise and vibrations, and open hollows by sectioning off a side.</p> <p>2. The SFPUC will ensure that trees are not removed or altered until CDFW has been contacted for guidance on measures to avoid and minimize disturbance of the bats. Additional measures may include monitoring trees, excluding bats from a tree until it is removed and/or restricting the timing of tree removal, and use of a construction buffer to avoid breeding disturbance of young before they are able to fly (for pallid bats, this period is between April and August).</p> <p><b>M-BI-1f: Mitigation for the Mission Blue Butterfly</b> This mitigation measure applies to the Millbrae site. At the Millbrae site, not more than 2 weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, the qualified</p>						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>biologist shall survey grassland habitat in the project area for Mission blue butterfly and its larval host plant. As feasible, host plants identified within the project boundaries shall be fenced or flagged and avoided during construction.</p> <p>If it is infeasible to avoid host plants of the Mission blue butterfly, SFPUC shall restore the site to pre-construction conditions.</p> <p><b>M-BI-1g: Mitigation for San Francisco Dusky-Footed Woodrat Middens</b></p> <p>This mitigation measure applies to the South San Francisco and Millbrae sites. Not more than 2 weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, the qualified biologist shall survey the areas to be disturbed within the Central Coast riparian scrub (South San Francisco site) and eucalyptus grove and coast live oak woodland (Millbrae site) for San Francisco dusky-footed woodrat and their nests.</p> <p>If no middens are found within such areas, no further action is required.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>If middens are found and can be avoided, the biologist shall direct the contractor in placing orange barrier fencing between the proposed construction clearing and the midden, allowing as much room as possible to avoid indirect disturbance to the midden, but no less than 2 feet from and along the construction side of the middens to protect them from construction activities.</p> <p>If avoidance is not feasible and the minimum fencing distance cannot be achieved, a qualified biologist shall disassemble middens or, if adjacent habitat is not suitable, trap and relocate woodrats out of the construction area (using live-traps) prior to the start of construction. In addition, the biologists shall attempt to relocate the disassembled midden to the same area where the woodrats are released. If young are present during disassembling, discontinue disassembling and inspect every 48 hours until young have relocated. The midden may not be fully disassembled until the young have left.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-BI-1h: Mitigation for the California Red Legged Frog</b></p> <p>This mitigation measure applies to the South San Francisco site. Not more than 2 weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, the qualified biologist shall survey the South San Francisco site project area for California red-legged frog, and potential refuge or burrow/estivation sites. As feasible, potential burrow/estivation areas identified within the project boundaries shall be temporarily fenced and avoided.</p> <p>At locations where potential refuge/estivation burrows are identified and cannot be avoided, burrows shall be excavated by hand or by other means by a qualified biologist, approved by the CDFW and USFWS, prior to construction. If a burrow is occupied, the individual animal shall be moved to suitable habitat within 0.25 mile of the project area, or other location as agreed by the appropriate agencies, where a natural burrow or artificial burrow will be constructed of PVC pipe. Even if California red-legged frog species are not found at the site, temporary exclusion fencing shall be installed as described below to prevent movement of the species.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>At the beginning of each work day at the South San Francisco site that includes initial ground disturbance, including grading, excavation, and vegetation removal activities, a qualified biological monitor shall conduct on site monitoring for California red-legged frog in the area where ground disturbance shall occur, as follows:</p> <ul style="list-style-type: none"> <li>• The South San Francisco site shall be surveyed prior to any ground disturbing or vegetation removal activities.</li> <li>• Prior to the start of construction at the South San Francisco site, the contractor, in coordination with a qualified biologist, shall install wildlife exclusion fencing to prevent species such as California red-legged frog from moving through the project site. If a silt fence is used as an exclusion fence, it shall be installed with the stakes on the inside of the work area (facing construction) so that wildlife cannot climb up the stakes to enter the construction zone. The SFPUC shall ensure that the temporary fencing is continuously maintained until all construction activities are completed, and that construction equipment is confined to the designated work areas.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The fencing shall be made of suitable material that does not allow the species to pass through, and the bottom shall be buried to a depth of 6 inches (or to a sufficient depth specified by the applicable resource agencies) so that these species cannot crawl under the fence. The fencing shall have one-way escape vents to allow for species to leave the site.</p> <ul style="list-style-type: none"> <li>• Perimeter fences shall be inspected weekly to ensure they do not have any tears or holes, that the bottoms of the fences are still buried, and that no individuals have been trapped in the fences.</li> <li>• Any California red-legged frogs found along and inside the fence shall be closely monitored until they move away from the construction area, or the biologist may be brought in to relocate the frog as described above.</li> <li>• All open trenches or holes and areas under parked vehicles shall be checked daily for the presence of California red-legged frogs.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>All excavated or deep-walled holes or trenches greater than 2 feet shall be covered at the end of each workday using plywood or similar materials, or escape ramps shall be constructed of earth fill or wooden planks. Before such holes are filled, they shall be thoroughly inspected for trapped animals.</li> <li>In cases where excavations require dewatering, the intakes shall be screened with a maximum mesh size of 5 millimeters.</li> <li>Project personnel shall be required to immediately report any harm, injury, or mortality of a special-status species during construction (including entrapment) to the construction foreman or biological monitor, and the construction foreman or biological monitor shall immediately notify the SFPUC. The SFPUC shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and/or to the local CDFW warden or biologist (as applicable) within one working day of the incident.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC shall follow up with written notification to USFWS and/or CDFW (as applicable) within five working days of the incident. All observations of federally- and state-listed species shall be recorded on CNDDDB field sheets and sent to the CDFW by the SFPUC or representative biological monitor.</p> <ul style="list-style-type: none"> <li>Willows removed from the South San Francisco site, north of Westborough Boulevard, shall be replaced with vegetation that would provide shelter for California red-legged frog, as specified in the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007). Replacement plantings will be included in the Vegetation Restoration Plan.</li> </ul>						
							<b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description.)						
<b>Impact BI-2:</b> Construction of the proposed project could have a substantial adverse effect on coast live oak woodland, central coast riparian scrub habitat, or other sensitive natural community.	NI	S	NI	NI	LS	NI	<b>M-BI-1a: General Protection Measures</b> (see above) <b>M-BI-1b: Worker Training and Awareness Program</b> (see above) <b>M-BI-1c: Prepare and Implement a Vegetation Restoration Plan</b> (see above)	NI	LSM	NI	NI	LS	NI
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-BI-2a: Minimize Disturbance to Riparian Habitat</b></p> <p>This mitigation measure applies to the South San Francisco site. To minimize impacts to Central Coast riparian scrub and water quality in the drainage situated adjacent to the northwest end of the work area, a silt fence shall be placed along the work area boundaries adjacent to the drainage. This would prevent construction personnel from damaging riparian vegetation outside of the work area, and prevent sediment and debris from entering the drainage.</p>						
							<p><b>M-BI-2b: Supplemental Measures for the Vegetation Restoration Plan</b></p> <p>This mitigation measure applies to the South San Francisco site. The following activities shall be completed for the Vegetation Restoration Plan at the site:</p> <ul style="list-style-type: none"> <li>To facilitate preparation of the plan, the SFPUC shall ensure that prior to construction a qualified botanist (i.e., one experienced in identifying plant species in the project area) performs additional pre-construction surveys of the areas to collect more detailed vegetation composition data, including species occurrence, vegetation characterization (tree diameter size, etc.), and percent cover of plant species. Photo documentation shall be used to show pre-project conditions.</li> </ul>						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>If required, the SFPUC shall provide the vegetation restoration plan to the CDFW and RWQCB during the permitting process, as any vegetation to be removed may provide habitat for special-status species and may also be within areas under the jurisdiction of the Corps and the RWQCB.</li> <li>Although trees cannot be replanted within the SFPUC ROW, native plant species allowed for planting as described in the Right of Way Integrated Vegetation Management Policy (SFPUC, 2007) should be selected and planted in appropriate locations. Enhancement of the riparian corridor outside of the ROW may be incorporated into the Vegetation Restoration Plan (see Impact BI 1, above, for description).</li> <li>To ensure success, vegetation planted as part of the vegetation restoration plan will be monitored for 1 year following installation. In addition, monitoring shall be conducted for 5 years for any tree species planted.</li> </ul>						
<b>Impact BI-3:</b> Construction of the proposed project could have a substantial adverse effect on jurisdictional waters.	S	S	NI	S	S	NI	<b>M-BI-1a: General Protection Measures</b> (see above) <b>M-BI-1b: Worker Training and Awareness Program</b> (see above)	LSM	LSM	NI	LSM	LSM	NI
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>M-BI-3: Avoidance and Protection Measures for Jurisdictional Water Bodies</b></p> <p>This mitigation measure applies to the Colma, San Bruno South, and Millbrae sites. The SFPUC and its contractors shall minimize impacts on waters of the United States and waters of the State by implementing the following measures:</p> <ul style="list-style-type: none"> <li>Erosion and sedimentation control measures such as a silt fence shall be installed adjacent to all water conveyance features to be avoided within 100 feet of any proposed construction activity, and signs installed indicating the required avoidance. If a 100 foot setback is not feasible due to field constraints, the project biologist or qualified environmental inspector will work with the contractor to determine where the silt fence erected for perimeter control should be placed, and what additional erosion and sedimentation controls, such as sediment traps, may be required to prevent construction spoils and sediment from leaving the work area. No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity, shall occur until a representative of the SFPUC has inspected and approved the fencing installed around these features.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The SFPUC shall ensure that the temporary fencing is continuously maintained until all construction activities are completed. No construction activities, including equipment movement, material storage, or temporary spoil stockpiling, shall be allowed within the fenced areas protecting water features.</p> <ul style="list-style-type: none"> <li>Exposed slopes shall be stabilized immediately upon the completion of construction activities.</li> </ul> <p><b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description.)</p>						
<p><b>Impact BI-4:</b> Construction of the proposed project could be inconsistent with local policies or ordinances protecting biological resources, including trees.</p>	NI	S	S	NI	NI	NI	<p><b>M-BI-1a: General Protection Measures</b> (see above)</p>	NI	LSM	LSM	NI	NI	NI
							<p><b>M-BI-4: Replacement of Trees to Be Removed</b> This mitigation measure applies to the South San Francisco and San Bruno North sites only, where affected trees meet the parameters of the applicable ordinance outlined in the summary table below. The SFPUC will avoid and minimize impacts on ordinance-protected trees by implementing the following measures:</p>	Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>• A tree survey will be conducted prior to construction by a qualified arborist (defined as an International Society of Arboriculture certified arborist or consulting arborist who is a member of the America Society of Consulting Arborists) or a qualified biologist to identify the protected and heritage trees within the project footprint. Protected trees and heritage trees are defined in Table 5.14 6 (on the following page) for the City of South San Francisco and the City of San Bruno.</li> <li>• Removal of ordinance-protected trees or work within the dripline of such trees will be avoided to the extent feasible during construction. If construction must occur within the dripline of a tree, a qualified arborist will determine where the protective fencing should be placed in order to protect the tree.</li> <li>• Where feasible, native trees to be removed that are located within the existing SFPUC ROW, shall be replaced according to the SFPUC's Right of Way Integrated Vegetation Management Policy. If it is not feasible to compensate for all native tree removal in SFPUC's ROW in the vicinity of the project, then native tree compensation shall occur at a suitable offsite location.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>For each removed landscape tree that meets ordinance criteria, the SFPUC shall plant two 24-inch box size trees or one 36-inch box size replacement tree of similar species. If replanting trees on the same site is infeasible, the SFPUC shall find a suitable alternative location.</li> <li>A qualified biologist or arborist shall conduct post-construction monitoring of replacement trees for 5 years. Any replacement trees that fail within the first 5 years shall be replaced. The survival period shall be extended, as necessary, until the planted trees have survived for a period of 5 years, and show signs that they are permanently established.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure										
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area					
							<p><b>Summary of Applicable Tree Ordinances</b></p> <table border="1"> <thead> <tr> <th>City</th> <th>Protected Trees</th> </tr> </thead> <tbody> <tr> <td>South San Francisco</td> <td> <ul style="list-style-type: none"> <li>Any tree with a circumference of 48 inches or more when measured 54 inches above natural grade; or</li> <li>A tree or stand of trees so designated based upon findings that it is unique and of importance to the public due to its unusual appearance, location, or historical significance; or</li> <li>A stand of trees whereby each tree is dependent upon the others for survival.</li> </ul> </td> </tr> <tr> <td>San Bruno</td> <td> <ul style="list-style-type: none"> <li>Any native bay (<i>Umbellularia californica</i>), buckeye (<i>Aesculus</i> species), oak (<i>Quercus</i> species), redwood, or pine tree that has a diameter of 6 inches or more measured at 54 inches above natural grade;</li> <li>Any tree or stand of trees designated by resolution of the City Council to be of special historical value or of significant community benefit;</li> <li>A stand of trees, the nature of which makes each dependent on the others for survival; or</li> <li>Any other tree with a trunk diameter of 10 inches or more, measured at 54 inches above natural grade.</li> </ul> </td> </tr> </tbody> </table>	City	Protected Trees	South San Francisco	<ul style="list-style-type: none"> <li>Any tree with a circumference of 48 inches or more when measured 54 inches above natural grade; or</li> <li>A tree or stand of trees so designated based upon findings that it is unique and of importance to the public due to its unusual appearance, location, or historical significance; or</li> <li>A stand of trees whereby each tree is dependent upon the others for survival.</li> </ul>	San Bruno	<ul style="list-style-type: none"> <li>Any native bay (<i>Umbellularia californica</i>), buckeye (<i>Aesculus</i> species), oak (<i>Quercus</i> species), redwood, or pine tree that has a diameter of 6 inches or more measured at 54 inches above natural grade;</li> <li>Any tree or stand of trees designated by resolution of the City Council to be of special historical value or of significant community benefit;</li> <li>A stand of trees, the nature of which makes each dependent on the others for survival; or</li> <li>Any other tree with a trunk diameter of 10 inches or more, measured at 54 inches above natural grade.</li> </ul>					
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**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure						
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area	
<p><b>Impact C-BI:</b> Implementation of the project could result in a cumulatively considerable contribution to cumulative impacts on biological resources during project construction.</p>	S	S	S	S	S	S	<p><b>M-BI-1a: General Protection Measures</b> (see above)</p> <p><b>M-BI-1b: Worker Training and Awareness Program</b> (see above)</p> <p><b>M-BI-1c: Prepare and Implement a Vegetation Restoration Plan</b> (see above)</p> <p><b>M-BI-1d: Minimize Disturbance to Nesting Birds and Raptors</b> (see above)</p> <p><b>M-BI-1e: Pre-construction Surveys for Special-Status Bats and Avoidance and Minimization Measures</b> (see above)</p> <p><b>M-BI-1f: Mitigation for the Mission Blue Butterfly</b> (see above)</p> <p><b>M-BI-1g: Mitigation for San Francisco Dusky-Footed Woodrat Middens</b> (see above)</p> <p><b>M-BI-1h: Mitigation for the California Red Legged Frog</b> (see above)</p> <p><b>M-BI-2a: Minimize Disturbance to Riparian Habitat</b> (see above)</p> <p><b>M-BI-2b: Supplemental Measures for the Vegetation Restoration Plan</b> (see above)</p>	LSM	LSM	LSM	LSM	LSM	LSM	Overall Project Impact: LSM

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<b>M-BI-3: Avoidance and Protection Measures for Jurisdictional Water Bodies</b> (see above) <b>M-BI-4: Replacement of Trees to Be Removed</b> (see above) <b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description.)						
<b>Section 5.15: Geology and Soils</b>													
<b>Impact GE-1:</b> The project construction could result in substantial soil erosion or the loss of topsoil.	S	S	S	S	S	S	<b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description.) <b>M-BI-1a: General Protection Measures</b> (see Impact BI-1a in Section 5.14, Biological Resources, for description.)	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					
<b>Impact GE-2:</b> The project would not be located on a geologic unit that is unstable or that would become unstable as a result of the project.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Impact GE-3:</b> The project operations would not expose people or structures to potential substantial adverse effects involving surface fault rupture, groundshaking, ground failure, or landslides.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					
<b>Impact GE-4:</b> During project operations, the project sites are not likely to become unstable.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					
<b>Impact GE-5:</b> The proposed project would not be located on expansive soils that could create substantial risks during project operations.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					
<b>Impact C-GE:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts related to geology and soils.	S	S	S	S	S	S	<b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description) <b>M-BI-1a: General Protection Measures</b> (see Impact BI-1 in Section 5.14, Biological Resources, for description)	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					
<b>Section 5.16: Hydrology and Water Quality</b>													
<b>Impact HY-1:</b> Project construction could substantially violate water quality standards or waste discharge requirements or degrade water quality as a result of erosion and sedimentation or an accidental release of hazardous chemicals.	S	S	S	S	S	S	<b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> This mitigation measure applies to all project sites, as well as the common staging area.	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>In accordance with the Construction General Permit, the SFPUC or its contractor(s) would submit the required notices, prepare a SWPPP, and implement site-specific BMPs to control and reduce discharges of sediments and pollutants associated with construction stormwater runoff that could discharge to storm drains or creeks.</p> <p>BMPs would include, but are not limited, to the following.</p> <p><i>Scheduling</i></p> <ul style="list-style-type: none"> <li>Schedule construction to minimize ground disturbance during the rainy season to the extent practicable.</li> <li>Install erosion and sediment control BMPs prior to the start of any ground-disturbing activities.</li> <li>Provide plans to stabilize soil with vegetation or physical means in the event that rainfall is expected. Stabilize all disturbed soils as soon as possible following the completion of soil-disturbing activities.</li> </ul> <p><i>Erosion and Sedimentation</i></p> <ul style="list-style-type: none"> <li>Install silt fences or fiber rolls, or implement other suitable measures around the perimeters of the construction zone, staging areas, temporary stockpiles, and drainage features.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>• Use filter fabric or other appropriate measures to prevent sediment from entering storm drain inlets.</li> <li>• When dewatering, regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.</li> <li>• Detain and treat water produced by construction site dewatering using sedimentation basins, sediment traps (when water is flowing and there is sediment), or other measures, to ensure that discharges to receiving waters meet applicable water quality objectives.</li> <li>• Locate stockpiles a minimum of 50 feet away from concentrated flows of stormwater, water bodies, ditches, and inlets. Contain all stockpiles using perimeter controls such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers. Cover all stockpiles with visqueen or other impermeable materials.</li> <li>• Preserve existing vegetation in areas where no construction activity is planned or where construction activity will occur at a later date.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Stabilize and revegetate disturbed areas as soon as possible after construction by planting or seeding and/or using mulch (e.g., straw or hay, erosion control blankets, hydromulch, or other similar material).</li> </ul> <p><i>Nonstormwater Control</i></p> <ul style="list-style-type: none"> <li>Prevent raw cement, concrete or concrete washings, asphalt, paint or other coatings, and oils or other petroleum products from entering watercourses or storm drains. If possible, all concrete waste and wash water should be returned with each concrete truck for disposal at the concrete batch plant.</li> <li>Locate the entrance and exit pit at each end of the jack-and-bore construction area at least 10 feet from the creek, ditch, or canal.</li> <li>Cofferdam materials used to create dams upstream and downstream of diversion should be erosion-resistant and could include materials such as steel plate, sheetpile, sandbags, continuous berms, inflatable or water bladders.</li> <li>Keep construction vehicles and equipment clean; do not allow excessive buildup of oil and grease.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>• Check construction vehicles and equipment daily at startup for leaks, and repair any leaks immediately.</li> <li>• To prevent run-on and runoff and to contain spills, do not refuel vehicles and equipment within 100 feet of surface waters.</li> <li>• Conduct all refueling and servicing of equipment with absorbent material or drip pans underneath to contain spilled fuel. Collect any fluid drained from machinery during servicing in leak-proof containers and deliver to an appropriate disposal or recycling facility.</li> <li>• Contain fueling areas to prevent run-on and runoff and to contain spills.</li> </ul> <p><i>Tracking Controls</i></p> <ul style="list-style-type: none"> <li>• Grade and stabilize construction site entrances and exits to prevent runoff from the site, and to prevent erosion.</li> <li>• Employ street sweeping to remove any soil or sediment tracked off paved roads during construction.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><b>Waste Management and Hazardous Materials Pollution Controls</b></p> <ul style="list-style-type: none"> <li>Control the discharge of pollutants in stormwater from vehicles and equipment by using drip pans, spill kits, berms, and secondary containment.</li> <li>Remove trash and construction debris from the project area regularly. Provide an adequate number of waste containers with lids or covers to keep rain out of the containers, and to prevent trash and debris from being blown away during high winds.</li> <li>Locate sanitary facilities a minimum of 200 feet from creeks.</li> <li>Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the stormwater drainage system or receiving water.</li> <li>Maintain sanitary facilities regularly.</li> <li>Store all hazardous materials in an area protected from rainfall and stormwater run-on, and prevent the offsite discharge of leaks or spills.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Minimize the potential for contamination of surface water bodies by maintaining spill containment and cleanup equipment onsite, and by properly labeling and disposing of hazardous wastes.</li> <li>Inspect dumpsters and other waste and debris containers regularly for leaks, and remove and properly dispose of any hazardous materials and liquid wastes placed in these containers.</li> <li>Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures.</li> </ul> <p><i>BMP Inspection, Maintenance, and Repair</i></p> <ul style="list-style-type: none"> <li>Inspect all BMPs on a regular basis to confirm proper installation and function.</li> <li>Inspect all stormwater BMPs daily during storms.</li> <li>Inspect sediment basins, sediment traps, and other detention and treatment facilities regularly throughout the construction period.</li> <li>Provide sufficient devices and materials (e.g., silt fence, fiber rolls, and erosion blankets) throughout project construction to enable immediate repair or replacement of failed BMPs.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Inspect all seeded areas regularly for failures, and remediate or repair as soon as feasible.</li> </ul> <p><i>Permitting, Monitoring, and Reporting</i></p> <ul style="list-style-type: none"> <li>Provide the required documentation for SWPPP inspections, maintenance, and repair requirements.</li> <li>Maintain written records of inspections, spills, BMP-related maintenance activities, corrective actions, and visual observations of any offsite discharge of sediment or other pollutants, as required by the RWQCB.</li> <li>Monitor water quality to assess the effectiveness of control measures.</li> <li>Notify the RWQCB and other agencies as required (e.g., California Department of Fish and Wildlife) if the criteria for turbidity, oil/grease, or foam are exceeded, and undertake corrective actions.</li> <li>Immediately notify the RWQCB and other agencies as required (e.g., California Department of Fish and Wildlife) of any spill of petroleum products or other organic or earthen materials, and undertake corrective action.</li> </ul>						



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p><i>Post-Construction BMPs</i></p> <ul style="list-style-type: none"> <li>• Revegetate all temporarily disturbed areas as required after construction activities are completed.</li> <li>• Remove any remaining construction debris and trash from the project area and staging areas upon project completion.</li> <li>• Phase the removal of temporary BMPs as necessary to ensure stabilization of the site.</li> <li>• Maintain post-construction site conditions to avoid any unintended drainage channels, erosion, or areas of sedimentation.</li> <li>• Correct post-construction site conditions as necessary to comply with the SWPPP and any other pertinent RWQCB requirements.</li> </ul>						
<b>Impact HY-2:</b> Dewatering of excavated areas during project construction would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge.	LS	LS	LS	LS	LS	NI	None required.	LS	LS	LS	LS	LS	NI
								Overall Project Impact: LS					
<b>Impact HY-3:</b> Discharges of dewatering effluent from excavated areas during project construction would not substantially degrade water quality.	LS	LS	LS	LS	LS	NI	None required.	LS	LS	LS	LS	LS	NI
								Overall Project Impact: LS					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Impact HY-4:</b> Discharges of treated water from existing and newly installed pipelines during project construction would not substantially degrade water quality.	LS	LS	LS	LS	LS	NI	None required.	LS	LS	LS	LS	LS	NI
								Overall Project Impact: LS					
<b>Impact C-HY:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts on hydrology and water quality.	S	S	S	S	S	S	<b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see above)	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					
<b>Section 5.17: Hazards and Hazardous Materials</b>													
<b>Impact HZ-1:</b> Project construction would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					
<b>Impact HZ-2:</b> Project construction could 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.	S	S	S	S	S	S	<b>M-HZ-2a: Prepare and Implement a Hazardous Material Handling and Disposal Plan</b> This mitigation measure applies to all project sites, as well as the common staging area. The contractor shall prepare, submit to SFPUC, and implement a Hazardous Material Handling and Disposal Plan during the construction of the project. The Hazardous Material Handling and Disposal Plan shall include, but would not be limited to, the following information:	LSM	LSM	LSM	LSM	LSM	LSM
								Overall Project Impact: LSM					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Results of the pre-construction hazardous assessment and descriptions of potential hazardous wastes to be generated.</li> <li>Onsite waste management protocols, which will require that all excavated materials suspected of being hazardous be inspected prior to initial stockpiling, and that excavated materials that are visibly stained, have noticeable odor, and/or are known or suspected to contain contaminants be stockpiled separately, to minimize the amount of material that may require special handling.</li> <li>Hazardous waste characterization protocols, and waste profiling and acceptance criteria. To properly evaluate suspected contaminated soil, a qualified professional will collect a representative sample and submit it to a California-certified laboratory for analysis of contaminants-of-concern. The analytical results will be used to classify the spoils as hazardous or nonhazardous waste, in accordance with applicable federal and state laws and regulations for offsite disposal at an appropriate disposal facility or for onsite reuse.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Transportation and disposal for hazardous wastes in accordance with applicable federal and state regulations.</li> <li>Hazardous waste management documentation and reporting.</li> </ul>						
							<p><b>M-HZ-2b: Develop and Implement a Hazardous Material Business Plan</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area. A Hazardous Material Business Plan (HMBP) shall be required when any of the following conditions are met:</p> <ul style="list-style-type: none"> <li>55 gallons or more of liquid hazardous material, such as fuel products, are present on site at any one project site;</li> <li>500 pounds of solid hazardous material are present at any one project site;</li> <li>200 cubic feet of compressed gases including flammable gases for welding are present at any one project site;</li> <li>Any amount of an extremely hazardous substance is present, as specified in 40 CFR Part 355, Appendix A or B; or</li> <li>Any amount of radiological materials that are present in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40, or 70.</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>In the event that the above criteria are applicable to the construction activities, the contractor will prepare, submit to SFPUC, and implement a HMBP for the construction. The HMBP shall be certified by a qualified professional (such as a California-licensed civil engineer) from the contractor, and will include step-by-step procedures for the use, storage, and handling of hazardous materials during construction. The HMBP shall include, but not be limited to, the following elements:</p> <ul style="list-style-type: none"> <li>• Descriptions of planned operation for which the HMBP is applicable;</li> <li>• Procedures for handling, transporting, storing, and disposing all hazardous materials used for the project component activities;</li> <li>• Location where the hazardous materials are stored;</li> <li>• Spill prevention protocols;</li> <li>• Protocols including response equipment to address any accidental spill and releases of hazardous materials to be used during the operation;</li> <li>• Personnel training requirement to implement the HMBP; and</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Emergency response and spill contingency protocols to address any emergencies and contingencies resulting from hazardous chemicals or waste from the project components.</li> </ul> <p>The HMBP will be prepared in compliance with the requirements of the local environmental department (San Mateo County, SMCEH Division).</p> <p><b>M-HZ-2c: Develop and Implement an Health and Safety Plan</b></p> <p>This mitigation measure applies to all project sites, as well as the common staging area. This mitigation measure will be applicable when any of the following conditions is observed:</p> <ul style="list-style-type: none"> <li>Handling of hazardous materials during construction is required;</li> <li>Visual signs of hazardous wastes are observed during construction; or</li> <li>Potential presence of hazardous wastes is anticipated for the construction activities.</li> </ul> <p>Prior to the start of any construction activities, the contractor shall prepare, submit to SFPUC, and implement a Health and Safety Plan (HASP) to address chemical hazards identified for the construction.</p>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<p>The contractor shall not start any construction activities until the contractor receives SFPUC’s notification that all submittal requirements regarding the health and safety plan have been fulfilled in accordance with the project contract bid and specification documentation.</p> <p>The HASP shall be consistent with all applicable CCR Title 8 or other applicable regulations and SFPUC’s health and safety requirements. The HASP shall establish, in detail, the protocols necessary for the recognition, evaluation, and control of all hazards associated with the construction activities performed by the contractor and its subcontractors. The HASP will include, but not be limited to, the following major elements:</p> <ul style="list-style-type: none"> <li>• Chemicals to be encountered, handled, or used;</li> <li>• Chemical hazard analyses to identify potential health and safety hazards associated with the chemicals identified for the project;</li> <li>• Chemical action levels for site worker safety;</li> <li>• Name and qualifications of all the site health and safety personnel designated for the project;</li> <li>• Health and safety organization for the project including, but not limited to, lines of authority, responsibility, and communication protocols</li> </ul>						

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
							<ul style="list-style-type: none"> <li>Worker safety monitoring requirement and protocols;</li> <li>Confined space entry permit and plan, if applicable;</li> <li>Crane critical lift plan, if applicable;</li> <li>Fall protection and prevention plan;</li> <li>Personal protective equipment;</li> <li>Emergency response and contingency planning procedures, including emergency and first aid equipment; and information on the nearest emergency room, including address, phone number, and routing from each of the project sites; and</li> <li>Inspection, incident investigation, and reporting requirements, including documentation and record keeping procedures.</li> </ul>						
							<b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description.)						
<b>Impact HZ-3:</b> Project construction would not result in emissions or use of hazardous materials or substances within 0.25 mile of a school during construction.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
								Overall Project Impact: LS					



**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure											
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area						
<b>Impact HZ-4:</b> Project construction would not result in public airport-related aviation hazards during construction.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	Overall Project Impact: LS					
<b>Impact HZ-5:</b> Project construction would not impair implementation of, or physically interfere with, an emergency response plan or emergency evacuation plan.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	Overall Project Impact: LS					
<b>Impact C-HZ:</b> Construction of the proposed project could result in a cumulatively considerable contribution to cumulative impacts related to hazards and hazardous materials.	S	S	S	S	S	S	<b>M-HZ-2a: Prepare and Implement a Hazardous Material Handling and Disposal Plan</b> (see above) <b>M-HZ-2b: Develop and Implement a Hazardous Material Business Plan</b> (see above) <b>M-HZ-2c: Develop and Implement an Health and Safety Plan</b> (see above) <b>M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan</b> (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description)	LSM	LSM	LSM	LSM	LSM	LSM	Overall Project Impact: LSM					
<b>Section 5.18: Mineral and Energy Resources</b>																			
<b>Impact ME-1:</b> Project construction would not encourage activities that would result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS	Overall Project Impact: LS					

**Table 1-1  
Summary of Impacts and Mitigation Measures (Continued)**

Impact Summary	Impact Significance Without Mitigation Measure						Mitigation Measures	Impact Significance With Mitigation Measure					
	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area		Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Common Staging Area
<b>Impact C-ME:</b> Project implementation would not result in a cumulatively considerable contribution to the use of fuel, water, or energy resources in a wasteful manner.	LS	LS	LS	LS	LS	LS	None required.	LS	LS	LS	LS	LS	LS
Overall Project Impact: LS													
<b>Section 5.19: Agricultural and Forest Resources</b>													
No impacts related to Agricultural and Forest Resources.	NI	NI	NI	NI	NI	NI	None required.	NI	NI	NI	NI	NI	NI
Overall Project Impact: NI													
Source: Source: PPSU project analysis, URS. Notes: NA= Not Applicable NI = No Impact LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant Impact with mitigation S = Significant impact SUM = Significant and Unavoidable impact, with implementation of feasible Mitigation													

## 1.6 Alternatives to the Proposed Project

Chapter 7, Alternatives, of this EIR evaluates two alternatives to the proposed project:

- **Alternative 1: No Project Alternative.** The SFPUC would not make improvements, and the SAPL2, SAPL3, and SSBPL would continue to operate as they do under existing conditions.
- **Alternative 2: Sliplining Alternative.** The SFPUC would construct improvements at the South San Francisco, San Bruno South, and Millbrae sites using a sliplining construction method instead of the proposed open-trench and jack-and-bore construction methods. In this method, a smaller-diameter new pipe is pushed or pulled through the existing pipe. Compared to the proposed project, sliplining would require less ground disturbance since pits (40 feet long by 12 feet wide) would be excavated at intervals along the existing pipeline, thereby potentially reducing significant and unavoidable noise impacts. Under this alternative, the PPSU project as proposed would be implemented at the Colma and San Bruno North sites.

The impacts of the proposed project and those of the alternatives are summarized in Table 1-2. The No Project Alternative would avoid the significant unavoidable impacts resulting from construction of the proposed project in the absence of a major earthquake along the San Andreas Fault. However, during a probable seismic event and subsequent pipeline rupture, the No Project Alternative would likely result in greater or more severe environmental impacts, although the impact conclusion would remain the same for some impacts. For example, under Impact AE-2 (new source of substantial light or glare), potential light and glare impacts could be reduced by measures that require that lighting to be shielded and directed specifically onto work areas to minimize light spillover, resulting in an impact that would be less than significant with mitigation (LSM), similar to the proposed project. However, due to the emergency nature of such repairs, it may be unlikely that such controls could be initially implemented, resulting in greater impacts than the proposed project while still resulting in the same overall impact conclusion (LSM). This alternative would not meet any of the project objectives.

The Sliplining Alternative would have the same or fewer impacts than the proposed project, and in many cases, the intensity or severity of the impact would be reduced compared to the proposed project, although the impact conclusion would generally remain the same. For example, under Impact NO-1 (temporary increases in daytime noise levels), the noise levels would be reduced at some locations as a result of sliplining, while there would still overall be significant and unavoidable noise impacts even with mitigation (SUM). This alternative would meet some of the project objectives, but would provide a lower seismic reliability than the proposed PPSU project (G&E/GTC Joint Venture, 2011). Therefore, among the alternatives to the proposed project the Sliplining Alternative is considered environmentally superior.

## 1.7 Areas of Controversy

No areas of scientific or technical controversy have been identified for the proposed project. During the scoping meeting held on November 30, 2011, attendees commented on the scope of

**Table 1-2  
Comparison of Significant Impacts of the PPSU Project to Impacts of Alternatives<sup>1</sup>**

	<b>Proposed Project</b>	<b>Alternative 1 No Project Alternative</b>	<b>Alternative 2 Sliplining Alternative</b>
<b>Description</b>	Seismic upgrades to three SFPUC water transmission pipelines – SAPL2, SAPL3, and SSBPL – at five locations on the San Francisco Peninsula. Construction techniques would be primarily open trench.	No pipeline repair/ replacement unless pipeline failure (assumed).	Sliplining of pipeline segments at selected project sites to reduce environmental impacts. Relies on pushing smaller new pipe inside existing pipe; would reduce construction noise, volume of excavation, and truck trips.
<b>Ability to Meet SFPUC's Objectives</b>	Would meet all project objectives.	Would not meet any of the project objectives.	Would meet some of the project objectives, but would have a lower seismic reliability than the proposed PPSU project.
<b>IMPACTS:</b>			
<b>Land Use and Land Use Planning</b>			
Impact LU-1 Temporary impacts on existing character and land use disruptions	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-LU Contribution to cumulative impacts on existing land uses	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Aesthetics</b>			
Impact AE-2 New source of substantial light or glare	LSM	Greater (LSM) <sup>3</sup>	Similar (LSM)
Impact C-AE Contribution to cumulative impacts on scenic vistas, scenic resources, visual character, or light and glare	LS	Greater (SUM)	Similar (LS)
<b>Cultural and Paleontological Resources</b>			
Impact CP-2 Archaeological resources	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact CP-3 Paleontological resources	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact CP-4 Human remains	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-CP Contribution to cumulative impacts on cultural resources	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>

**Table 1-2**  
**Comparison of Significant Impacts of the PPSU Project to Impacts of Alternatives<sup>1</sup>**  
**(Continued)**

	<b>Proposed Project</b>	<b>Alternative 1 No Project Alternative</b>	<b>Alternative 2 Sliplining Alternative</b>
<b>Transportation and Circulation</b>			
Impact TR-1 Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system	LSM	Greater (SU)	Similar (LSM)
Impact TR-2 Inadequate emergency access	LS	Greater (SU)	Similar (LS)
Impact TR-3 Safety of public roadways for vehicles, bicyclists, and pedestrians	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-TR Contribution to cumulative traffic increases and safety hazards on local and regional roads	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Noise</b>			
Impact NO-1 Temporary increases in daytime noise levels	SUM	Greater (SU)	Reduced (SUM) <sup>2</sup>
Impact NO-2 Nighttime noise levels	SUM	Greater (SU)	Similar (SUM)
Impact NO-3 Local general plan or noise ordinance standards	SUM	Greater (SU)	Similar (SUM)
Impact NO-4 Excessive groundborne vibration	SUM	Greater (SU)	Similar (SUM)
Impact C-NO Contribution to cumulative noise and vibration impacts	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Air Quality</b>			
Impact AQ-1 Violate air quality standards	LSM	Greater (LSM) <sup>3</sup>	Reduced (LSM) <sup>2</sup>
Impact AQ-2 Expose sensitive receptors to substantial pollutant concentrations	LS	Greater (LSM)	Reduced (LS) <sup>2</sup>
Impact AQ-3 Create objectionable odors	LS	Greater (LSM)	Reduced (LS) <sup>2</sup>
Impact C-AQ Contribution to cumulative air quality impacts	LSM	Greater (LSM) <sup>3</sup>	Reduced (LSM) <sup>2</sup>
<b>Recreation</b>			
Impact RE-1 Temporarily degrade existing recreational uses	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-RE Contribution to cumulative recreational impacts	LS	Greater (SU)	Reduced (LS) <sup>2</sup>
<b>Utilities and Service Systems</b>			
Impact UT-1 Disruption of utility operations or accidental damage	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact UT-2 Relocation of regional or local utilities	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact UT-3 Water supply availability	LS	Greater (SU)	Similar (LS)
Impact UT-5: Solid waste	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-UT Contribution to cumulative impacts related to disruption or relocation of utilities	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Biological Resources</b>			
Impact BI-1 Special-status wildlife species	LSM	Greater (SU)	Similar (LSM)

**Table 1-2**  
**Comparison of Significant Impacts of the PPSU Project to Impacts of Alternatives<sup>1</sup>**  
**(Continued)**

	<b>Proposed Project</b>	<b>Alternative 1 No Project Alternative</b>	<b>Alternative 2 Sliplining Alternative</b>
Impact BI-2 Coast live oak woodland, central coast riparian scrub habitat, or other sensitive natural community	LSM	Greater (SU)	Similar (LSM)
Impact BI-3 Jurisdictional waters	LSM	Greater (SU)	Similar (LSM)
Impact BI-4 Local policies or ordinances protecting biological resources, including trees	LSM	Greater (SU)	Similar (LSM)
Impact C-BI Contribution to cumulative impacts on biological resources	LSM	Greater (SU)	Similar (LSM)
<b>Geology and Soils</b>			
Impact GE-1 Soil erosion or the loss of topsoil	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact GE-2 Geologic unit that is unstable or that would become unstable as a result of the project	LS	Greater (SU)	Greater (LS) <sup>3</sup>
Impact GE-3 Expose people or structures to adverse effects involving surface fault rupture, groundshaking, ground failure, or landslides	LS	Greater (SU)	Greater (LS) <sup>3</sup>
Impact C-GE Contribution to cumulative impacts related to geology and soils	LSM	Greater (SU)	Similar (LSM)
<b>Hydrology and Water Quality</b>			
Impact HY-1 Violate water quality standards or waste discharge requirements or degrade water quality	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-HY Contribution to cumulative impacts on hydrology and water quality	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Hazards and Hazardous Materials</b>			
Impact HZ-2 Reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	LSM	Similar (LSM)	Similar (LSM)
Impact HZ-5 Interfere with emergency response plan or emergency evacuation plan	LS	Greater (SU)	Similar (LS)
Impact C-HZ Contribution to cumulative impacts related to hazards and hazardous materials	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Source: G&E/GTC Joint Venture, 2011; PPSU project analysis, URS.			
Notes:			
1 Includes significant impacts of alternatives.			
2 Although the impact conclusion does not change, the level or intensity of the impact would be reduced under this alternative.			
3 Although the impact conclusion does not change, the level or intensity of the impact would be greater under this alternative.			
LS = Less-than-Significant impact, no mitigation required			
LSM = Less-than-Significant Impact with Mitigation			
SU = Significant and Unavoidable impact for which feasible mitigation is not available			
SUM = Significant and Unavoidable impact, with implementation of feasible Mitigation			

the Draft EIR. Written comments were also received during the scoping period, which began on November 9, 2011, and ended on December 9, 2011. A scoping report was prepared that summarizes the comments received on the project, including a transcript of oral testimony at the November 2011 scoping meeting (see Appendix B). Refer to Table 2-1 in Chapter 2, Introduction and Background, for an overview of environmental concerns raised during the scoping period. These concerns cover the following topics: construction impacts on adjacent residences and schools, including dust and noise; security and safety of neighborhood and schools during construction; communication plan to inform neighbors of construction activities; minimization of visual effects on neighbors during construction, including commercial uses; traffic circulation/congestion from construction equipment; maintenance of access routes through neighborhood to facilities/services during construction; vegetation and tree removal; weed and pest management; erosion controls; and utility replacement and impacts to wholesale customers.

## 1.8 References

Caltrans (California Department of Transportation), 2006. Manual of Traffic Controls for Construction and Maintenance Work Areas.

G&E/GTC Joint Venture, 2011. CUW 36702 Peninsula Pipeline Seismic Upgrade Project, Final Alternatives Analysis Report. September.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Final Program Environmental Impact Report for the San Francisco Public Utility Commission's Water System Improvement Program, File No. 2005.0159E, State Clearinghouse No. 2005092026. Certified October 30, 2008.

SFPUC (San Francisco Public Utilities Commission), 2007. Right-of-Way Integrated Vegetation Management Policy. February.

San Francisco Public Utilities Commission (SFPUC), 2008. SFPUC Resolution 08-200, Water System Improvement Program California Environmental Quality Act Findings: Findings of Fact, Evaluation of Mitigation Measures and Alternatives, and Statement of Overriding Considerations. October 2008.

SVP (Society of Vertebrate Paleontology), 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines. Society of Vertebrate Paleontology News Bulletin 163:22-27.

SVP (Society of Vertebrate Paleontology), 1996. Conditions of Receivership for Paleontologic Salvage Collections. Society of Vertebrate Paleontology News Bulletin 166:31-32.

URS (URS Corporation), 2012a. Peninsula Pipelines Seismic Upgrade Project. Historic Context and Archaeological Survey Report, Final. April. Confidential Report.

URS (URS Corporation), 2012b. Peninsula Pipelines Seismic Upgrade Project. Paleontological Resources Survey Report, Final. April.

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# CHAPTER 2

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## Introduction and Background

### 2.1 Introduction

The proposed Peninsula Pipelines Seismic Upgrade (PPSU) project involves seismic upgrades to San Francisco Public Utilities Commission (SFPUC) regional water facilities at five discrete project sites on the San Francisco Peninsula in San Mateo County. The project sites are in the Town of Colma, and the cities of South San Francisco,<sup>1</sup> San Bruno, and Millbrae; and a common staging area is proposed in South San Francisco. The SFPUC is proposing the PPSU project to improve the seismic reliability of transmission pipelines between Harry Tracy Water Treatment Plant (HTWTP) and the Capuchino, Baden, and San Pedro Valve Lots, in the event of a major earthquake on the San Andreas Fault. Proposed project improvements include seismic upgrades to the SFPUC's San Andreas Pipeline No. 2 (SAPL2), San Andreas Pipeline No. 3 (SAPL3), and Sunset Supply Branch Pipeline (SSBPL), which deliver water from the HTWTP to the SFPUC's regional water system. The objectives of the project would be achieved by completing the proposed improvements, which are designed to prevent the failure of SAPL2, SAPL3, and SSBPL, and maintain their reliability during a major seismic event.

### 2.2 Background – Regional Water System and the Water System Improvement Program

#### 2.2.1 SFPUC Regional Water System Overview

The City and County of San Francisco (CCSF), through the SFPUC, owns and operates a regional water system that extends from the Sierra Nevada to San Francisco and serves drinking water to 2.4 million people in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne counties. The regional water system consists of water conveyance, storage, treatment, and distribution facilities, and delivers water to retail and wholesale customers. The existing system includes more than 280 miles of pipeline, more than 60 miles of tunnels, 11 reservoirs, five pump stations, and two water treatment plants. The SFPUC currently delivers an annual average of about 265 million gallons per day of water to its customers. The water comes from a combination of local supplies from streamflow and runoff in the Alameda Creek watershed and the San Mateo Creek and Pilarcitos Creek watersheds (referred to together as the Peninsula watershed), which is

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<sup>1</sup> A portion of the South San Francisco project site is located in unincorporated San Mateo County.

augmented with imported supplies from the Tuolumne River watershed. Local watersheds provide about 15 percent of total supplies, and the Tuolumne River provides the remaining 85 percent. Figure 2-1 illustrates the general location of the SFPUC regional system, and Figure 2-2 shows the location of the water supply watersheds.

Water from the upper Tuolumne River watershed that is captured in Hetch Hetchy Reservoir can be delivered to SFPUC customers without filtration, provided it meets all federal<sup>2</sup> and State<sup>3</sup> “filtration avoidance” requirements. These requirements specify that the water provider must meet source water quality standards and disinfection criteria, and conduct extensive routine water quality monitoring and watershed protection activities. The SFPUC maintains the filtration avoidance status for Hetch Hetchy water by proactively operating and maintaining facilities to prevent contamination of water supplies, and, when unfavorable changes in water quality do occur, by diverting the quality-impaired Hetch Hetchy water out of the regional system to prevent the water from being delivered to customers (SFPUC, 2008). SFPUC water supplies from the Alameda and Peninsula watersheds do not meet the filtration avoidance criteria, and require filtration before delivery to customers.

The SFPUC serves about one-third of its water supplies directly to retail customers, primarily in San Francisco, and about two-thirds of its water supplies to wholesale customers by contractual agreement. The wholesale customers are represented by the Bay Area Water Supply and Conservation Agency, which consists of 26 member agencies, as shown on Figure 2-3.<sup>4</sup> Some of these wholesale customers have access to other sources of water in addition to the supplies they receive from the SFPUC regional water system, while others rely completely on the SFPUC for water supply.

## 2.2.2 SFPUC Water System Improvement Program

On October 30, 2008, the SFPUC adopted the Water System Improvement Program (WSIP) (also known as the “Phased WSIP Variant”) and the WSIP goals and objectives (SFPUC Resolution 08-200 [SFPUC, 2008]). The adopted WSIP will improve the reliability of the regional water system with respect to water quality, seismic response, and water delivery based on a planning horizon through the year 2030. The WSIP will also improve the regional system with respect to water supply to meet water delivery needs in the service area through the year 2018. The program area spans seven counties—Tuolumne, Stanislaus, San Joaquin, Alameda, Santa Clara, San Mateo, and San Francisco.

The WSIP includes a water supply strategy, modifications to system operations, and construction of a series of facility infrastructure improvement projects. The overall goals of the WSIP are to

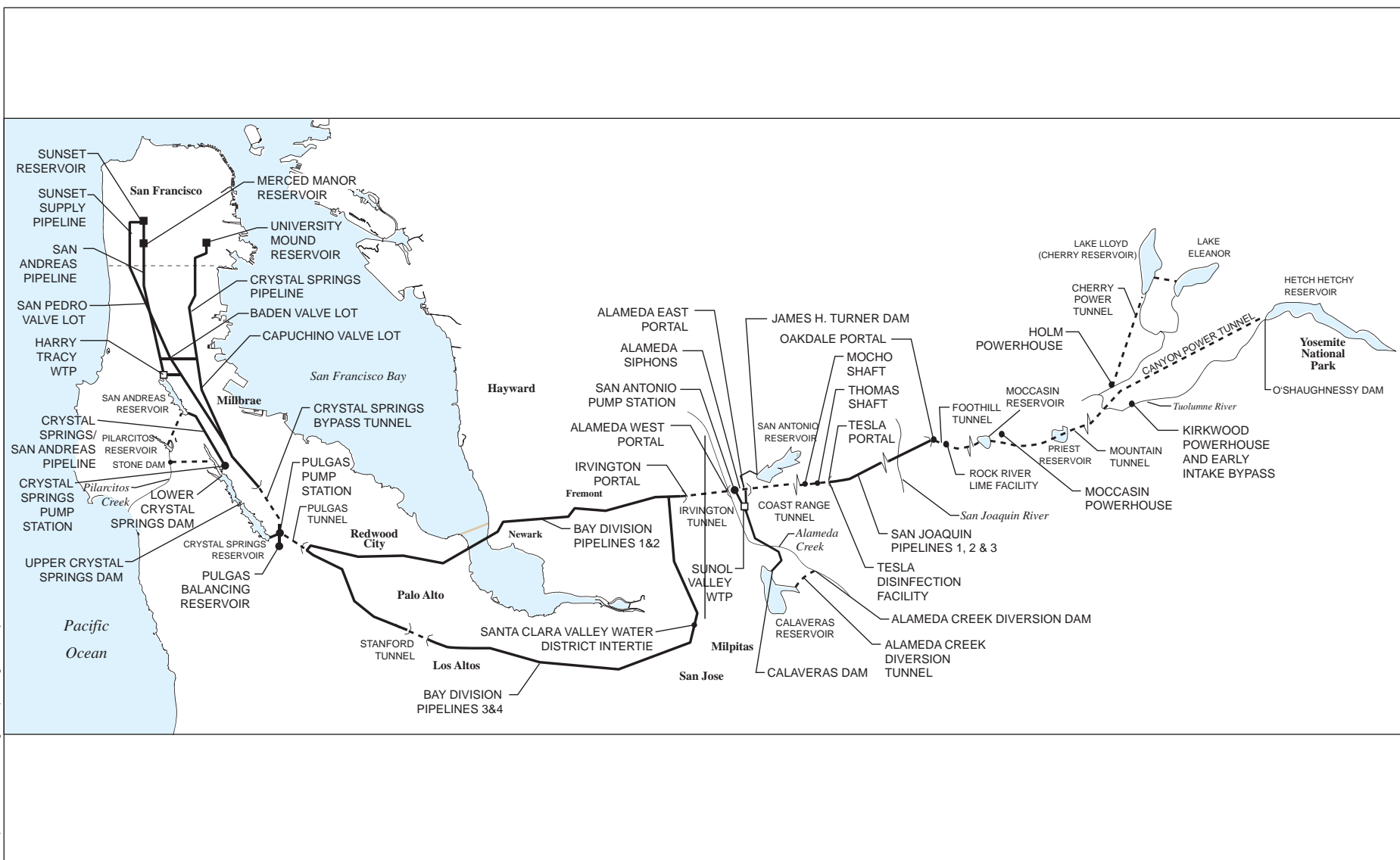
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<sup>2</sup> In 1991, the U.S. Environmental Protection Agency (U.S. EPA) adopted the Surface Water Treatment Rule, which includes water quality provisions for unfiltered water systems. In 1993, the U.S. EPA approved Hetch Hetchy water supplies as an unfiltered source that meets all filtration avoidance criteria contained in the federal statute.

<sup>3</sup> In 1998, the state added filtration avoidance provisions to Title 22 of the California Code of Regulations, under which the California Department of Public Health currently regulates the Hetch Hetchy water system.

<sup>4</sup> The Cordilleras Mutual Water Association is an additional wholesale customer receiving water from the SFPUC, but it is not a Bay Area Water Supply and Conservation Agency member and is not shown in Figure 2-3. It is a small water association serving 18 single-family homes in San Mateo County.

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- Pipeline
- - - Tunnel
- Water Treatment Plant (WTP)
- Other Facilities
- ⋈ Segments of the system not shown



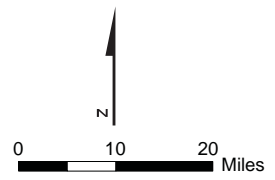
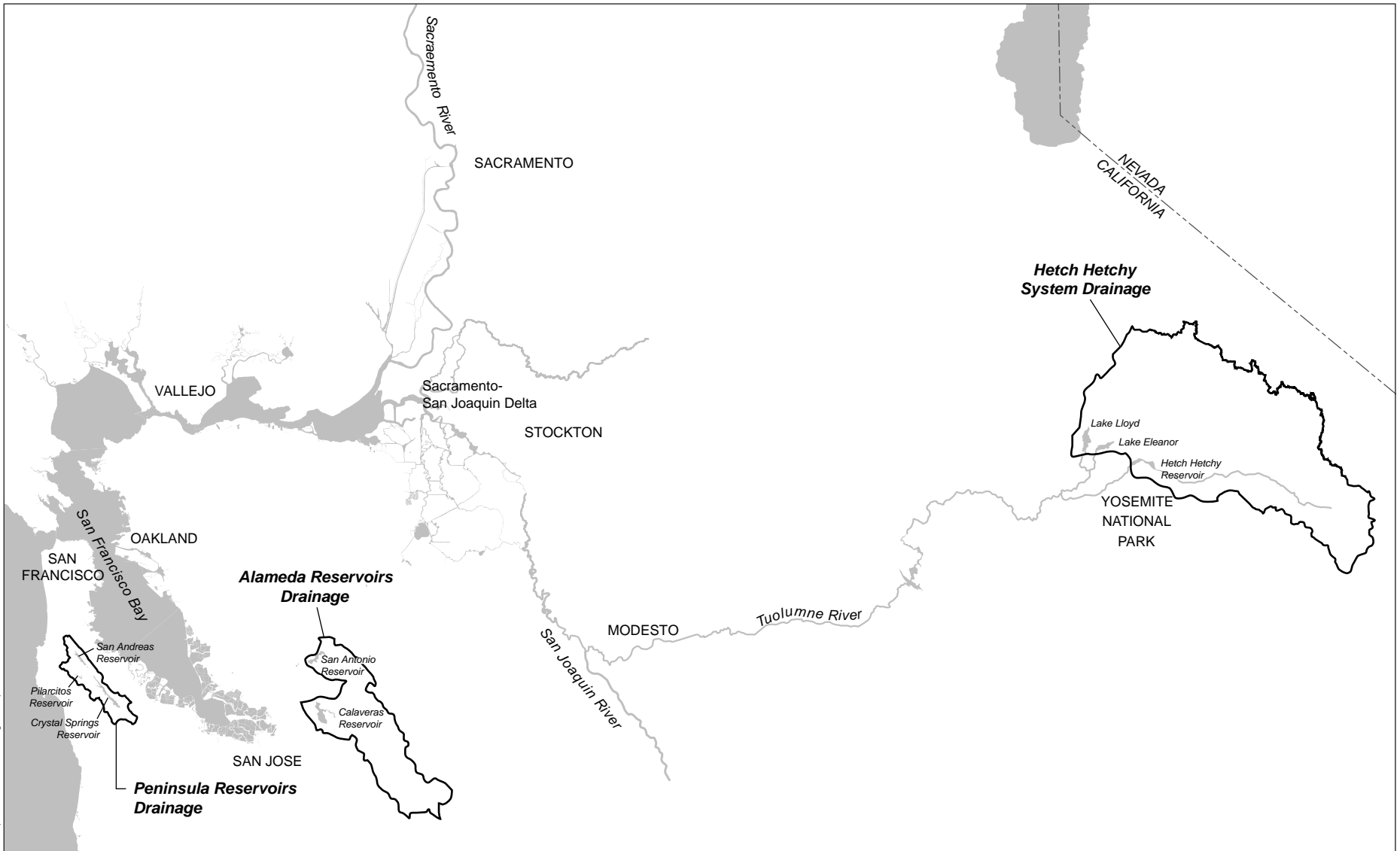
**SFPUC REGIONAL WATER SYSTEM**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 2-1**

Source: San Francisco Planning Department (2008)

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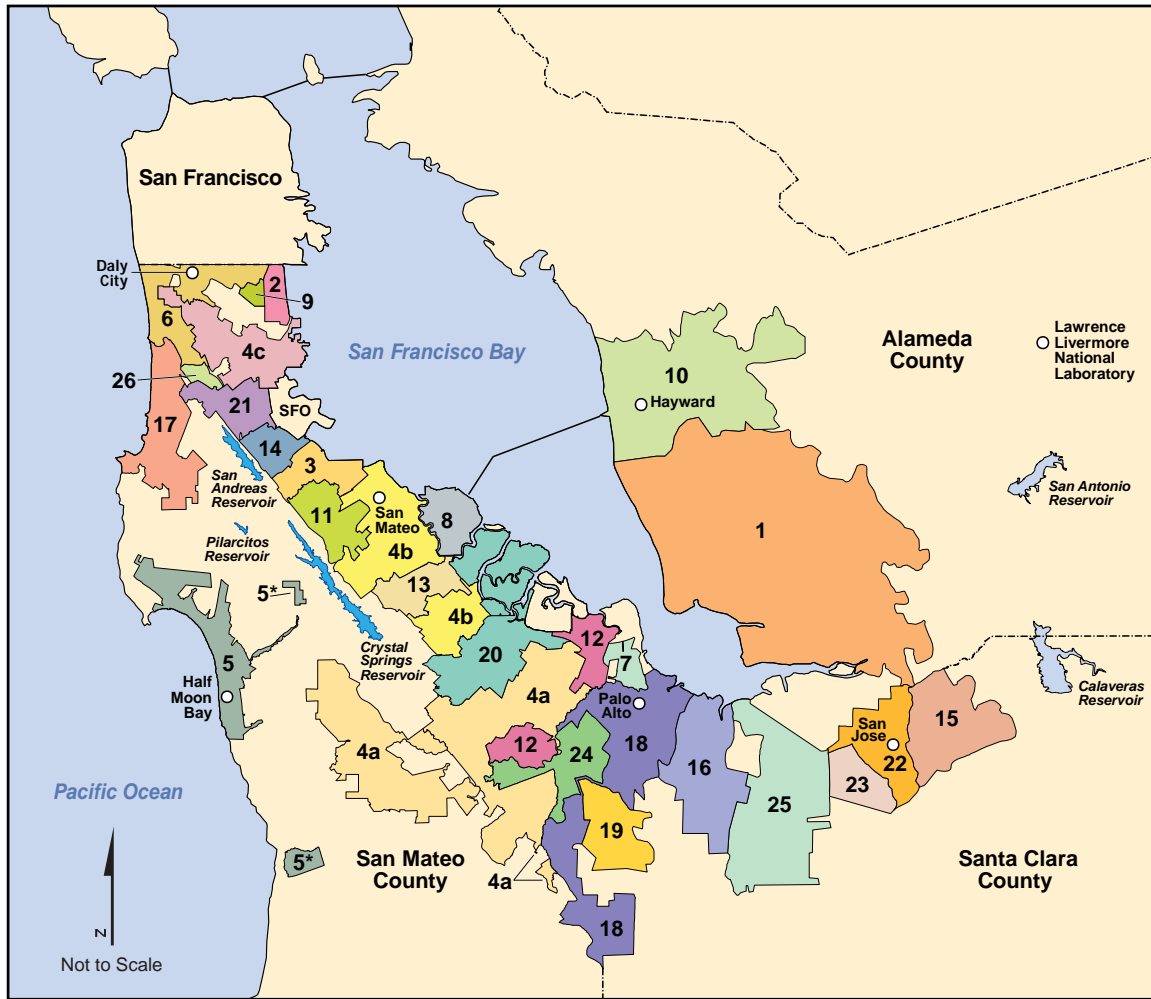


**SFPUC WATER SUPPLY WATERSHEDS**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 2-2**

Source: San Francisco Planning Department (2008)



**Legend**

(Wholesale customers and members of Bay Area Water Supply and Conservation Agency)

- |   |                                      |
|---|--------------------------------------|
| 1 Alameda County Water District                   | 13 Mid-Peninsula Water District      |
| 2 City of Brisbane                                | 14 City of Millbrae                  |
| 3 City of Burlingame                              | 15 City of Milpitas                  |
| 4a CWS – Bear Gulch                               | 16 City of Mountain View             |
| 4b CWS – Mid-Peninsula                            | 17 North Coast County Water District |
| 4c CWS – South San Francisco                      | 18 City of Palo Alto                 |
| 5 Coastside County Water District                 | 19 Purissima Hills Water District    |
| 6 City of Daly City                               | 20 City of Redwood City              |
| 7 City of East Palo Alto                          | 21 City of San Bruno                 |
| 8 Estero Municipal Improvement District           | 22 City of San Jose (North)          |
| 9 Guadalupe Valley Municipal Improvement District | 23 City of Santa Clara               |
| 10 City of Hayward                                | 24 Stanford University               |
| 11 Town of Hillsborough                           | 25 City of Sunnyvale                 |
| 12 City of Menlo Park                             | 26 Westborough Water District        |

\* Portions of Coastside County Water District not served by the SFPUC regional water system.

NOTE:  
For the purposes of this EIR, the California Water Service (CWS) Company is a single wholesale customer with three different water service districts.

**SFPUC WATER SERVICE AREA  
SAN FRANCISCO AND SFPUC WHOLESALE CUSTOMERS**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 2-3**

maintain high-quality water; reduce vulnerability to earthquakes; increase delivery reliability and improve the ability to maintain the system; meet customer purchase requests in nondrought and drought periods; enhance sustainability in all system activities; and achieve a cost-effective, fully operational system. To further these program goals, the WSIP also includes objectives that address system performance in the areas of water quality, seismic reliability, delivery reliability, and water supply.

The San Francisco Planning Department prepared a Program Environmental Impact Report (PEIR) to address the potential environmental impacts of the WSIP. The San Francisco Planning Commission certified the WSIP PEIR on October 30, 2008 (SF Planning, 2008; San Francisco Planning Commission Motion No. 17734). The SFPUC approved the WSIP and made findings pursuant to the California Environmental Quality Act (CEQA), including a statement of overriding considerations, and adopted a mitigation monitoring and reporting program for the WSIP (SFPUC Resolution 08-200).

The PPSU project was not identified as a WSIP facility improvement project, and was not part of the WSIP evaluated in the PEIR. The need for the project was identified only as a result of geotechnical investigations in connection with the HTWTP Long Term Improvements project, which is a WSIP facility improvement project that was approved and adopted by the SFPUC in 2010.

Based on project information provided by the SFPUC (Zhang, 2012a), the San Francisco Planning Department determined that the PPSU project should proceed with environmental review under a separate project Environmental Impact Report, independent of the PEIR, for the following reasons:

1. The purpose of the project is reduce the risk of pipeline failure at locations along the SAPL2, SAPL3, and SSBPL that are susceptible to liquefaction, ground shaking, and landslides during seismic events; the project would serve this function and is necessary irrespective of any other WSIP project.
2. The project proposes replacement and stabilization of segments of the existing pipelines, and would not increase the normal operating capacity of the regional water system.
3. The project would not change the manner in which water is dispersed, increase the storage capacity of the regional water system, or increase or alter the nature of any treatment capacity of the system.
4. Any potential cumulative impacts associated with the project are addressed in this Environmental Impact Report (EIR).
5. Proceeding with the PPSU project does not commit the City to any other project, including WSIP facility improvement projects.

For these reasons, the PPSU project is independent of the WSIP PEIR, and is undergoing separate environmental review. However, this EIR relies on the WSIP PEIR as a key source of information about the SFPUC facilities and operations. In addition, to the extent that they overlap in timing and geography with the proposed project, the WSIP facility improvement

projects are included in this EIR's cumulative impact analysis (see Section 5.1.3, Cumulative Impacts).

### 2.2.3 Regional Water System Facilities

The regional water system begins with Hetch Hetchy Reservoir and O'Shaughnessy Dam, which are located in Yosemite National Park on the main stem of the Tuolumne River in the Sierra Nevada. From Hetch Hetchy Reservoir, raw surface water is transported westward within a series of tunnels (Canyon Power, Mountain, and Foothill tunnels) to the Oakdale Portal. Approximately 3 miles upstream from the Oakdale Portal is the Rock River Lime Facility, where chemicals are added to water in the Foothill Tunnel for corrosion control. From the Oakdale Portal, water is conveyed within the San Joaquin Pipelines to the Tesla Disinfection Facility at the Tesla Portal, where chlorine is applied in the form of sodium hypochlorite for primary disinfection. At the Tesla Portal, the chlorinated Hetch Hetchy water enters the 25-mile-long Coast Range Tunnel and is conveyed west to the Alameda East Portal in the Sunol Valley, which connects the Coast Range Tunnel to the Alameda Siphons.

The Alameda Siphons are three parallel pipelines that extend approximately 3,000 feet from the Alameda East Portal across the Sunol Valley and beneath Alameda Creek to the Alameda West Portal. Under normal operating conditions, local water supplies from the Alameda watershed that have been treated at the Sunol Valley Water Treatment Plant enter the regional water system and are blended with Hetch Hetchy supplies in Alameda Siphons Nos. 1 and 2. At the Sunol Valley Chloramination Facility and the fluoride facility located south of the Alameda Siphons, chloramine is added to the blended water for secondary disinfection, fluoride is added to prevent tooth decay, and the pH of the blended water is adjusted for corrosion control. The blended water exits the Sunol Valley at the Alameda West Portal, where it enters the Irvington Tunnel and is conveyed westward to Bay Area customers.

The Peninsula water system originates with the impounding of local drainage at Crystal Springs Reservoir, where local water sources from within the Peninsula watershed blend with water from the Hetch Hetchy and Alameda Watersheds. Crystal Springs Reservoir is composed of two reservoirs, Upper and Lower Crystal Springs Reservoirs, divided by a dam with two large culverts enabling unimpeded flow between the reservoirs. From Crystal Springs Reservoir, the Crystal Springs Pump Station pumps stored water through the Crystal Springs/San Andreas Pipeline to the San Andreas Reservoir, which serves as the terminus of the Peninsula water system. The San Andreas Reservoir, which also receives inflow from the Pilarcitos Reservoir and San Mateo Creek drainage, is the source of raw water inflow to the HTWTP. The HTWTP provides the treatment process necessary (i.e., filtration, fluoridation, and disinfection) to convert raw water from the San Andreas Reservoir to drinking water before being delivered to customers in northern San Mateo County and San Francisco via the SAPL2, and SAPL3 or the SSBPL.

## 2.3 Purpose of this Environmental Impact Report

Under the San Francisco Administrative Code, Chapter 31, the San Francisco Planning Department Environmental Planning Division (Environmental Planning) (formerly the Major Environmental Analysis Division) is the lead agency responsible for implementing CEQA

requirements for all projects sponsored by the CCSF or conducted in San Francisco, including those sponsored by the SFPUC. Environmental Planning determined that preparation of this EIR for the PPSU project, for which the SFPUC is the project sponsor, is required to comply with CEQA. CEQA requires the preparation of an EIR when a proposed project could significantly affect the physical environment.

Environmental Planning has prepared this EIR to provide the public and responsible and trustee agencies reviewing the PPSU project with information about the potential effects of the project on the environment. This EIR describes the potential environmental impacts resulting from implementation of the PPSU project, identifies mitigation measures for reducing impacts to a less-than-significant level where feasible, and evaluates alternatives to the project.

## **2.4 Public Outreach**

### **2.4.1 Notice of Preparation**

In accordance with Sections 15063 and 15082 of the CEQA Guidelines, the San Francisco Planning Department, as lead agency, sent a Notice of Preparation (NOP) to responsible and trustee agencies, as well as to interested entities and individuals, to begin the formal CEQA scoping process. These included local, State, and federal agencies; regional and local interest groups; and property owners within 300 feet of the project area (see Appendix A). The scoping period began on November 9, 2011, and ended on December 9, 2011. The NOP included a preliminary discussion of the potential environmental impacts of the project. The NOP was placed in the Examiner (San Francisco, CA) and in the San Mateo Times on November 9, 2011, and was posted to the San Francisco Planning Department website along with other information related to the proposed project.

### **2.4.2 Public Scoping Meeting**

Pursuant to CEQA Guidelines Section 15083, the San Francisco Planning Department held a public scoping meeting at 6:30 p.m. on November 30, 2011, at the San Bruno Chinese Church, 250 Courtland Avenue, San Bruno, California. Notices were placed in local newspapers informing the general public of the scoping meeting, the purpose of which was to present the project to the public and to receive public input regarding the proposed scope of the EIR analysis. Attendees were provided with an opportunity to make comments or express concerns on potential effects of the project.

### **2.4.3 Public and Agency Comments on Notice of Preparation**

The scoping process provided an opportunity for governmental agencies and the public to provide comments on the issues and scope of the EIR. The Planning Department prepared a scoping report to summarize the public scoping process and the comments received in response to the NOP. Appendix B includes the comments received during the public scoping period, a transcript of the scoping meeting, and the scoping report. Approximately a dozen members of the public attended, and four of those present provided comment. Additional comments were received by San Francisco Planning Department staff via mail and email correspondence. The major environmental concerns raised during the scoping period are summarized in Table 2-1.



**Table 2-1  
Summary of Scoping Comments**

Summary of Scoping Comments	Location Where Addressed in the EIR
<p><b>General</b></p> <ul style="list-style-type: none"> <li>• The EIR should describe the history of right-of-way and easement boundaries and ownership issues, especially in the area of the Fifth Avenue right-of-way in Colma.</li> <li>• Provide a detailed site plan showing planned improvements in the vicinity of the Fifth Avenue right-of-way.</li> </ul>	<p>Chapter 3, Project Description (planned improvements); history regarding Fifth Avenue right-of-way not an environmental issue</p>
<p><b>Communications</b></p> <ul style="list-style-type: none"> <li>• Describe neighborhood outreach plans that will be implemented during project construction.</li> <li>• Specify a contact person whom neighbors can call should concerns arise.</li> <li>• Keep affected neighbors informed of exact construction start and end dates.</li> <li>• Notify neighbors in advance of any scheduled utility interruptions, or if any evening or weekend work is planned.</li> </ul>	<p>Section 5.2, Land Use and Land Use Planning</p>
<p><b>Safety and Security</b></p> <ul style="list-style-type: none"> <li>• Address the potential for project activities to disrupt gas pipelines in the neighborhoods and result in explosions.</li> <li>• Identify site security measures to be taken in and near construction areas, including fencing and signage.</li> </ul>	<p>Section 5.12, Utilities and Service Systems/ Section 5.2, Land Use and Land Use Planning</p>
<p><b>Aesthetics</b></p> <ul style="list-style-type: none"> <li>• Consider the location of staging areas and spoils storage areas to minimize the visual impacts to the Serramonte Boulevard commercial uses in Colma.</li> <li>• Consider locating staging and material/storage areas to minimize the visual impacts on adjacent residential areas.</li> <li>• Describe post-construction landscaping and grounds maintenance plans; consider improving on existing conditions in Colma commercial corridor.</li> <li>• Identify plans to restore directly affected residential parcels after project completion to be visually compatible with the surrounding neighborhood.</li> <li>• Keep portable restrooms within the staging areas.</li> <li>• Remove construction debris from work areas regularly.</li> </ul>	<p>Chapter 3, Project Description/ Section 5.3, Aesthetics</p>

**Table 2-1  
Summary of Scoping Comments (Continued)**

Summary of Scoping Comments	Location Where Addressed in the EIR
<p><b>Noise and Vibration</b></p> <ul style="list-style-type: none"> <li>• Identify noise impacts on adjacent neighboring uses.</li> <li>• Identify construction equipment noise and vibration impacts on nearby homes.</li> <li>• Address project vibration impacts on nearby home foundations.</li> </ul>	Section 5.7, Noise
<p><b>Land Use Conflicts</b></p> <ul style="list-style-type: none"> <li>• Address project construction interference with activities at the San Bruno Chinese Church.</li> <li>• Address construction impacts on residents of Shelter Creek Condominiums.</li> <li>• Consider privacy concerns of residents in immediate project vicinity.</li> <li>• Consider quality-of-life impacts on adjacent residents.</li> </ul>	Section 5.2, Land Use and Land Use Planning
<p><b>Transportation, Traffic, and Parking</b></p> <ul style="list-style-type: none"> <li>• Describe impacts of construction on local roads.</li> <li>• Consider project traffic impacts on sidewalks, curbs, and roads that homeowners are responsible for maintaining.</li> <li>• Consider project impacts on local parking and traffic.</li> <li>• Describe project disruption to ingress/egress from Shelter Creek Condominiums and parking structure.</li> <li>• Consider impacts to home access and street parking in residential areas.</li> <li>• Consider the traffic impacts of construction access routes, as well as routes for ongoing cleaning, maintenance, and repair activities.</li> <li>• Consider the need for additional traffic mitigation measures to reduce conflicts during the busy holiday shopping period in the adjacent Colma commercial uses.</li> <li>• Identify how project construction may interfere with Meadows Elementary School traffic—especially parents dropping off or picking up kids.</li> </ul>	Section 5.6, Transportation and Circulation
<p><b>Biological Resources</b></p> <ul style="list-style-type: none"> <li>• Provide a detailed description of tree removal plans and post-construction vegetation management.</li> <li>• Describe post-construction vegetation management plans in the Spur Area.</li> <li>• Address pest control issues associated with vegetation removal and excavation, and identify an environmentally sensitive pest control program.</li> <li>• Discuss the need to handle noxious weeds and poison oak carefully on the Spur property.</li> <li>• Identify encroachment impacts on local wildlife habitat and suggest mitigation measures to minimize such impacts.</li> <li>• Implement an active neighborhood pest control program after vegetation removal and ground disturbance.</li> </ul>	Section 5.14, Biological Resources

**Table 2-1  
Summary of Scoping Comments (Continued)**

Summary of Scoping Comments	Location Where Addressed in the EIR
<b>Hydrology and Water Quality</b> <ul style="list-style-type: none"> <li>Identify stormwater impacts associated with project construction.</li> </ul>	Section 5.16, Hydrology and Water Quality
<b>Air Quality</b> <ul style="list-style-type: none"> <li>Identify dust impacts and proposed control measures related to the project.</li> </ul>	Section 5.8, Air Quality
<b>Erosion Control</b> <ul style="list-style-type: none"> <li>Address the potential for vegetation removal and grading/trenching activities to exacerbate landslide risks in hilly areas.</li> <li>Consider the need for additional erosion control measures during winter construction periods.</li> <li>Identify post-construction compacting and drainage plans for sloped areas.</li> </ul>	Section 5.15, Geology and Soils/ Section 5.16, Hydrology and Water Quality
<b>Utilities and Services</b> <ul style="list-style-type: none"> <li>Consider project impacts on other utilities that may be located in the vicinity of the right-of-way.</li> <li>Describe construction impacts on all wholesale customer turnouts.</li> <li>Identify any other utility repair or replacement work in the vicinity to be done concurrently with the PPSU work.</li> </ul>	Section 5.12, Utilities and Service Systems
<b>Other</b> <ul style="list-style-type: none"> <li>Address project description discrepancies between the NOP, the PPSU Final Alternatives Analysis Report, and the Conceptual Engineering Report.</li> <li>The Alternatives Analysis should quantify the degree to which seismic reliability goals can be met, as well as any potential changes in operating performance.</li> <li>Consider compensation and/or relocation for homeowners whose daily lives will be disrupted by the project.</li> <li>Identify property value impacts associated with construction.</li> <li>Indemnify property owners for actions related to the project.</li> </ul>	Not environmental issues; response to commenter separately provided by SFPUC
Source: URS and Mara Feeney & Associates (Appendix B). Notes: EIR = Environmental Impact Report NOP = Notice of Preparation PPSU = Peninsula Pipelines Seismic Upgrade SFPUC = San Francisco Public Utilities Commission	

## 2.4.4 Other Community Outreach

In addition to the public meeting and formal public input process described above, members of the SFPUC project team have met with representatives from local jurisdictions, including the Town of Colma and the cities of San Bruno and Millbrae. Additional meetings have occurred with the San Bruno Fire Marshall and private property owners to discuss the project and learn more about the concerns of community members, including representatives of groups that use the Peninsula High School facilities; representatives of the San Bruno Chinese Church; and representatives of the Shelter Creek Condominiums (Zhang, 2012b). Information gained at these meetings has been incorporated into the setting and impact analysis of this EIR.

## 2.5 Project Changes Subsequent to Publication of Notice of Preparation

This section describes the various modifications made to the PPSU project subsequent to publication of the NOP in 2011. The project evolved as more detailed information was developed during project design. The lengths of some of the pipeline segments to be replaced were slightly modified, construction methods have been further defined, and the schedule has been reduced by approximately 4 months. A common staging area is now proposed in South San Francisco at the northern portion of the SFPUC's Baden Value Lot, west of El Camino Real and north of West Orange Avenue. The footprint of several staging areas was modified in response to information obtained regarding potential impacts to adjacent land uses. Nighttime construction may be required at the San Bruno North site, and the project site was extended into a portion of the right-hand eastbound lane of San Bruno Avenue West, which may require the closure of the lane for up to 2 weeks during construction. Nighttime activities would also include limited 24-hour pumping for dewatering of the pipelines at a few locations. Chapter 3, Project Description, of this EIR provides a detailed description of the project, inclusive of these revisions.

## 2.6 Organization of the Draft Environmental Impact Report

This EIR is organized into eight chapters, as discussed below:

**Chapter 1 – Executive Summary.** This chapter presents a summary of the proposed project, identifies potentially significant environmental impacts and mitigation measures, and describes the alternatives considered in this EIR. It also addresses areas of controversy and issues to be resolved.

**Chapter 2 – Introduction and Background.** This chapter provides project background information and describes the purpose and organization of the EIR, as well as the environmental review process.

**Chapter 3 – Project Description.** This chapter presents the proposed project description (including project objectives), a summary of project components, and information about project construction. The chapter also lists required permits and approvals.

**Chapter 4 – Plans and Policies.** This chapter describes applicable land use plans and policies and their relevance to the project, and then discusses the project’s consistency with those plans.

**Chapter 5 – Environmental Setting, Impacts, and Mitigation Measures.** This chapter is subdivided into sections for each environmental resource topic. Each section describes the environmental and regulatory setting, the criteria used to determine impact significance, and the approach to the analysis for that resource topic. It then presents an analysis of potential environmental impacts and the project-specific mitigation measures that have been developed to address significant and potentially significant impacts. Each section also includes an evaluation of cumulative impacts with respect to that resource topic.

**Chapter 6 – Other CEQA Issues.** This chapter discusses growth-inducing effects, summarizes the cumulative impacts, identifies the significant environmental effects that cannot be avoided if the proposed project is implemented, and describes the significant irreversible impacts.

**Chapter 7 – Alternatives.** This chapter describes the alternatives to the proposed project and compares their impacts to those of the proposed project. This chapter also summarizes the alternatives that were considered but screened from further analysis.

**Chapter 8 – EIR Authors and Consultants.** This chapter lists the authors of this EIR.

## Appendices

## 2.7 References

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Final Program Environmental Impact Report for the San Francisco Public Utility Commission’s Water System Improvement Program, File No. 2005.0159E, State Clearinghouse No. 2005092026. Certified October 30, 2008.

SFPUC (San Francisco Public Utilities Commission), 2008. SFPUC Resolution 08-200, Water System Improvement Program California Environmental Quality Act Findings: Findings of Fact, Evaluation of Mitigation Measures and Alternatives, and Statement of Overriding Considerations. October.

Zhang, YinLan, 2012a. SFPUC Peninsula Pipeline Seismic Upgrade Project, Memo Documenting Project Independent Utility to Steven Smith. July 31.

Zhang, YinLan, 2012b. Personal communication between YinLan Zhang, SFPUC Environmental Project Manager, and Hannah Young, URS. December 5.

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# CHAPTER 3

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## Project Description

This chapter describes the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project (the “project”). Topics addressed include the proposed project’s location; project background; goals and objectives; existing facilities; proposed construction and operation activities; the San Francisco Public Utilities Commission’s (SFPUC) standard construction measures that would be implemented as part of the proposed project; the SFPUC’s proposed greenhouse gas reduction actions; proposed project construction activities; proposed operations and maintenance; and required permits for project implementation.

### 3.1 Project Location

The proposed project would entail seismic upgrades to the SFPUC’s San Andreas Pipeline No. 2 (SAPL2), San Andreas Pipeline No. 3 (SAPL3), and Sunset Supply Branch Pipeline (SSBPL), potable water transmission pipelines that deliver water from the Harry Tracy Water Treatment Plant (HTWTP) to the SFPUC’s regional water system. The proposed project would be located on the San Francisco Peninsula at five sites in the Town of Colma, and the cities of South San Francisco, San Bruno, and Millbrae in San Mateo County, as shown on Figure 3-1.

Within this Environmental Impact Report (EIR), the sites comprising the project<sup>1</sup> are referred to as follows:

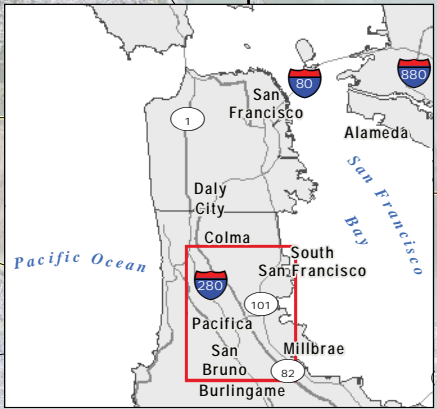
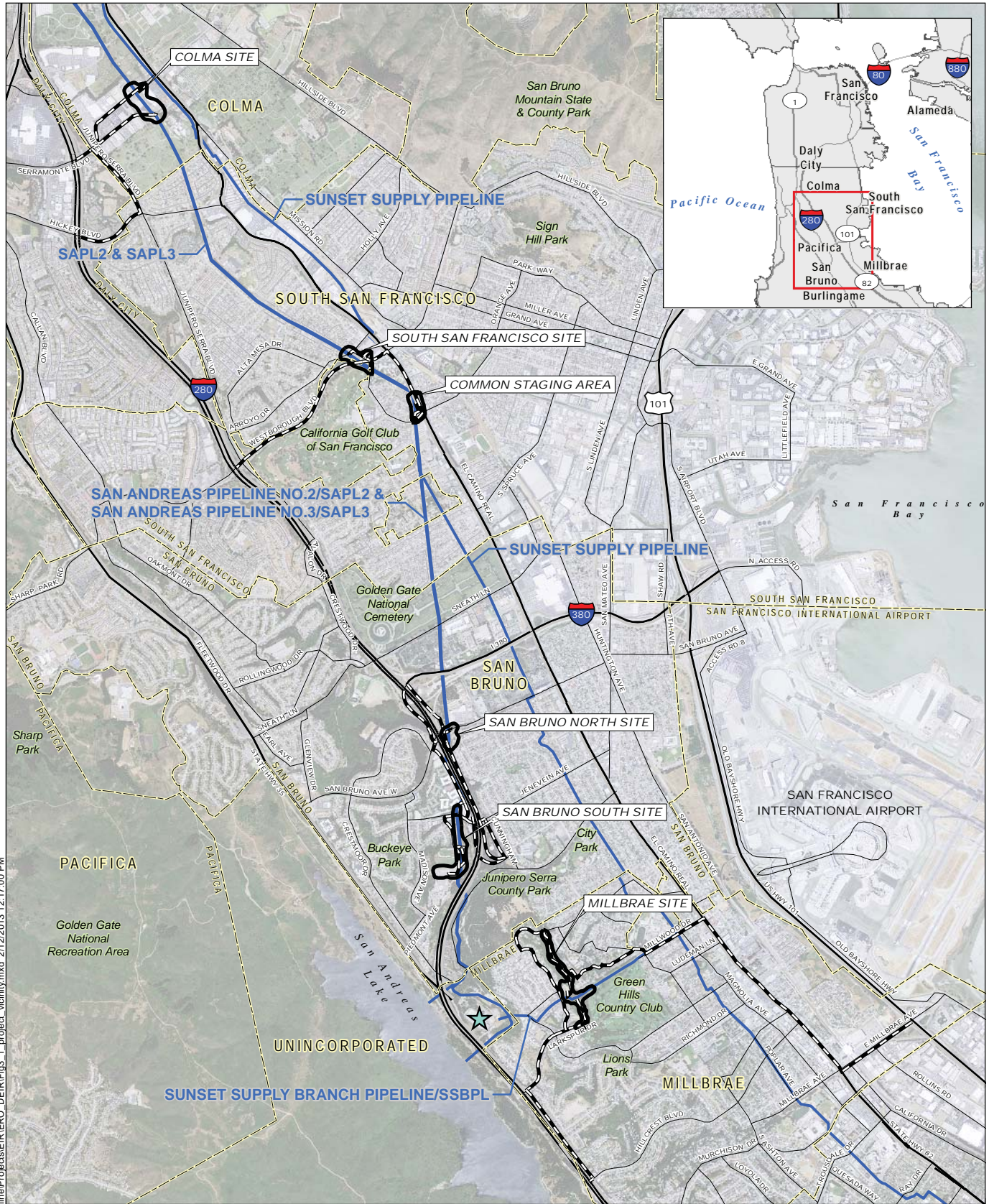
- Colma site – SAPL2 replacement in the Town of Colma;
- South San Francisco site – SAPL2 replacement in the City of South San Francisco;<sup>2</sup>
- San Bruno North site – SAPL2 pipe stabilization in the City of San Bruno, near the San Bruno Avenue West off-ramps from Interstate 280 (I-280);
- San Bruno South site – SAPL2 and SAPL3 replacement in the City of San Bruno, at Whitman Way; and
- Millbrae site – SSBPL replacement in the City of Millbrae.

A common staging area is proposed in the City of South San Francisco at the northern portion of the SFPUC’s Baden Value Lot near the South San Francisco site.

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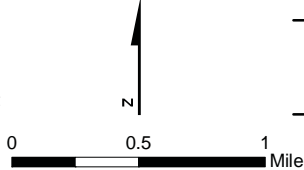
<sup>1</sup> Each site includes the construction zone, staging and spoils areas, and new or existing access routes requiring upgrades, as applicable.

<sup>2</sup> A portion of the project site is also located in unincorporated San Mateo County.



I:\GIS\SFPUC\_Peninsula\_Pipeline\Projects\IERO DEIR\Fig3\_1\_project\_vicinity.mxd 2/12/2013 12:17:00 PM  
 Source: SFPUC 2009/2011

- Project Site
- Access Route to Project Site
- SFPUC Water Transmission Line
- Harry Tracy Water Treatment Plant
- City Limits



**PROJECT VICINITY**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-1**



The locations of the five sites that comprise the project and the common staging area are described below.

### **3.1.1 Colma Site**

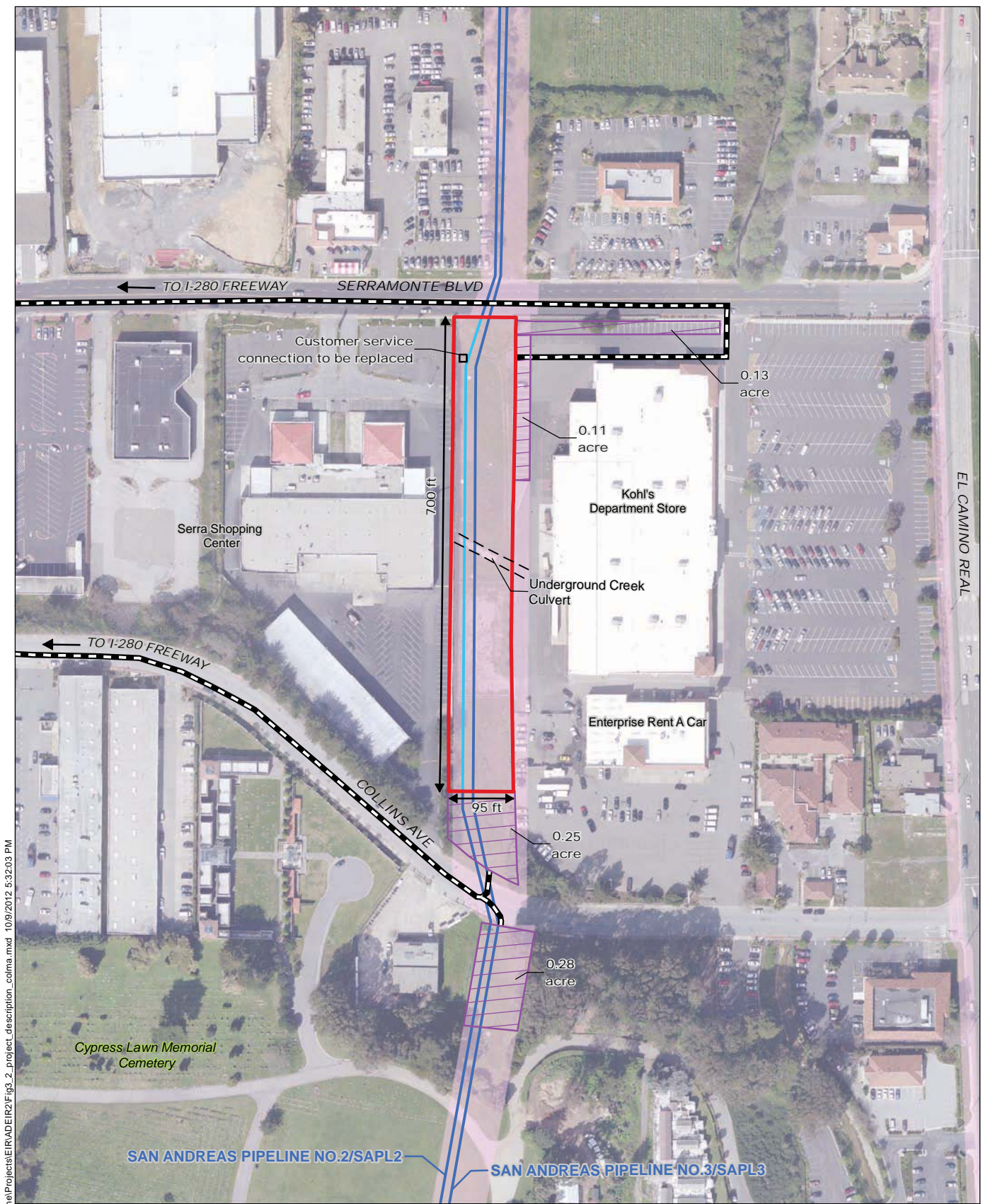
The proposed project activity in the Town of Colma consists of the replacement of a segment of pipeline along the SAPL2. The Colma site would be located in a commercial area between I-280 and El Camino Real. As shown on Figure 3-2, the site would be predominantly located within the SFPUC right-of-way (ROW), which is unpaved vacant land that extends roughly north-south, just east of the Serra Shopping Center, south of Serramonte Boulevard. A portion of the site proposed to be used for construction staging and spoils storage would be located within the Kohl's Department Store parking lot, immediately east of the ROW. This area at the rear of the store is used for merchandise deliveries and trash collection, but not for customer parking (Fletcher, 2012). The staging area would be designed so as not to impede access to and circulation along the rear of the store. Commercial uses in the shopping center include car dealerships, department stores, auto repair shops, a car rental agency, and a plumbing supply store. Several cemeteries are located in the area, including Cypress Lawn Cemetery, immediately south of the site. An unnamed creek runs through an underground culvert that crosses the site. The site is accessible from I-280 via the Serramonte Boulevard and Hickey Boulevard exits.

### **3.1.2 South San Francisco Site**

The proposed project activity in the City of South San Francisco consists of the replacement of a segment of pipeline along SAPL2. A portion of the project site is also located in unincorporated San Mateo County. The South San Francisco site would be located in a mixed residential/commercial area west of Camaritas Avenue and El Camino Real, and is accessible from I-280 via the Westborough Boulevard exit. As depicted on Figure 3-3, the site would be predominantly located in the SFPUC ROW that extends between Arroyo Drive and West Orange Avenue. The ROW extends under Westborough Boulevard, adjacent to the California Golf Club of San Francisco and a landscaped area along West Orange Avenue. A grove of willows is established on top of the ROW, north of Westborough Boulevard. A portion of the site proposed to be used for construction staging and spoils storage would be located within the Pacific Supermarket parking lot north of Camaritas Avenue. Twelve Mile Creek previously extended through the area and now runs through a culvert underneath Westborough Boulevard.

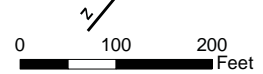
### **3.1.3 San Bruno North Site**

The northernmost of the two proposed project activities in the City of San Bruno consists of the stabilization of a segment of pipeline along SAPL2. As shown on Figure 3-4, the San Bruno North site would be adjacent to a residential neighborhood and the I-280 off ramp to San Bruno Avenue West, and across San Bruno Avenue West from the Bayhill Shopping Center. The site is accessible from I-280 via the Sneath Lane/San Bruno Avenue West exit. The proposed project would be located within the SFPUC ROW that extends between San Bruno Avenue West and the I-280 north off ramp. The ROW extends over California Department of Transportation (Caltrans)



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 Source: SFPUC 2011

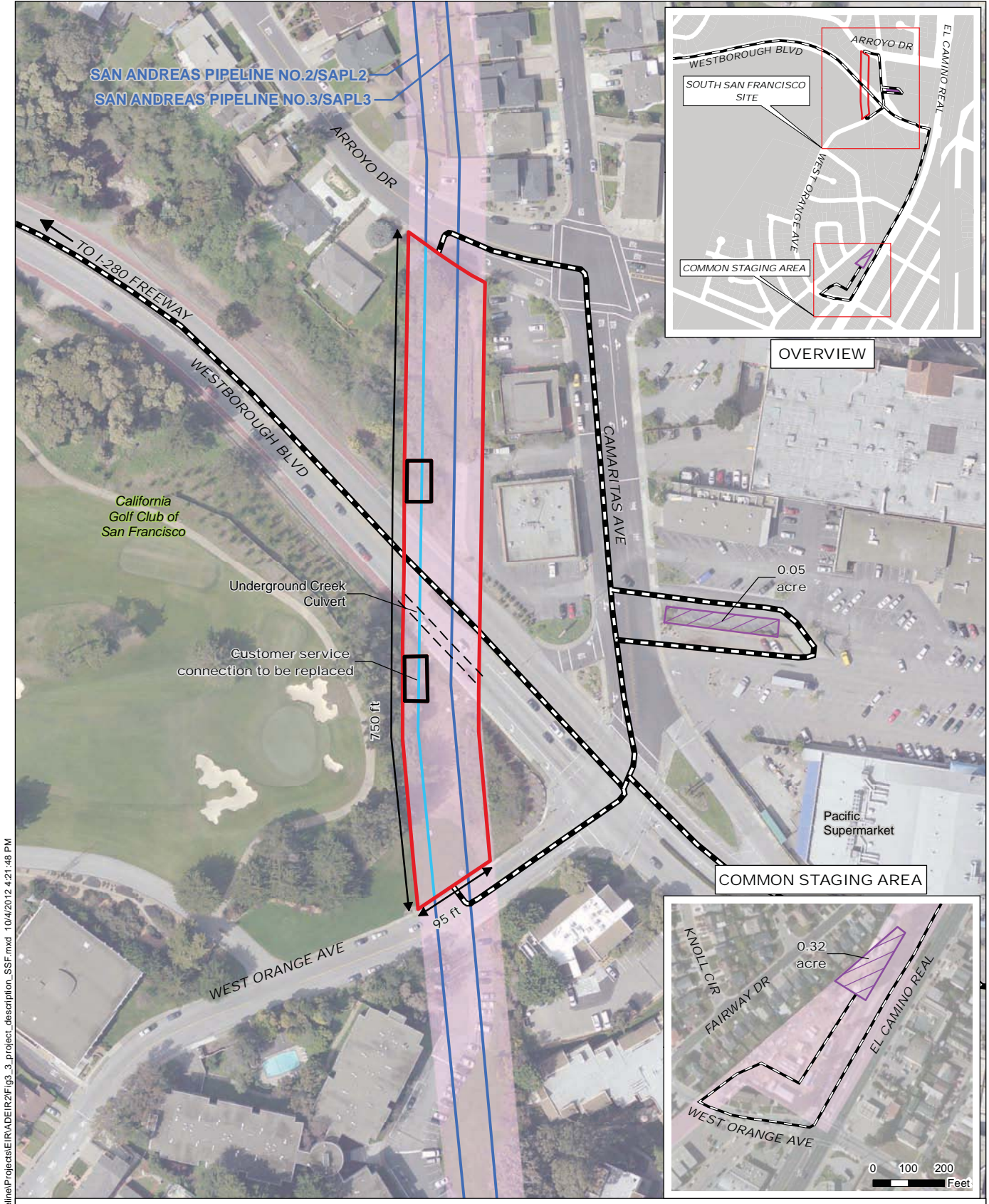
- Project Components**
- Construction Zone
  - SFPUC Water Transmission Line
  - SFPUC Water Transmission Line to be Replaced
  - Staging and Spoils Area
  - Access Route
  - SFPUC Parcels - Right-of-Way



**COLMA SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-2**



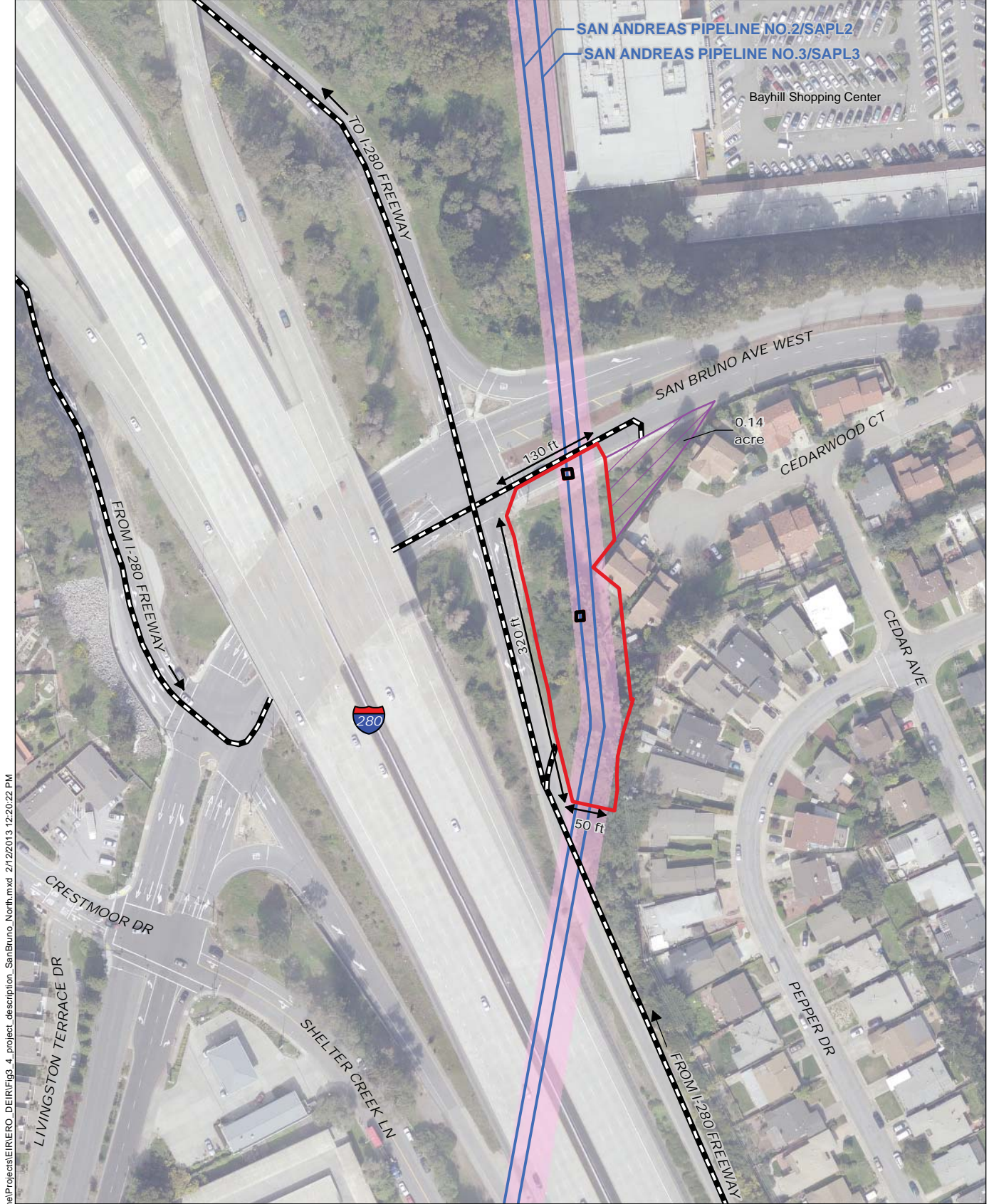
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<b>Project Components</b>		SFPUC Water Transmission Line
Construction Zone	SFPUC Water Transmission Line to be Replaced	
Staging and Spoils Area	SFPUC Parcels - Right-of-Way	
Boring Pit		
Access Route		

0      75      150  
 Feet

**SOUTH SAN FRANCISCO SITE**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-3**



SAN ANDREAS PIPELINE NO.2/SAPL2  
 SAN ANDREAS PIPELINE NO.3/SAPL3

Bayhill Shopping Center

SAN BRUNO AVE WEST

0.14  
acre

CEDARWOOD CT

CEDAR AVE

PEPPER DR

SHELTER CREEK LN

CRESTMoor DR

LIVINGSTON TERRACE DR

FROM I-280  
FREEMWAY

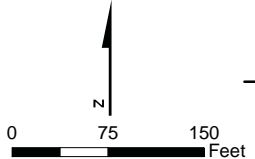
TO I-280  
FREEMWAY

FROM I-280  
FREEMWAY



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- Project Components**
- SFPUC Water Transmission Line
  - Construction Zone
  - SFPUC Parcels - Right-of-Way
  - Staging and Spoils Area
  - Access Portal
  - Access Route



**SAN BRUNO NORTH SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-4**

Source: SFPUC 2011

property. The project site would extend into a portion of the right-hand eastbound lane of San Bruno Avenue West, requiring the closure of the lane for up to 2 weeks during construction. A portion of SAPL2 that would be stabilized extends under the rear yard of 1840 Cedarwood Court.

### 3.1.4 San Bruno South Site

The southernmost project activity in the City of San Bruno consists of pipeline replacements along both SAPL2 and SAPL3. As shown on Figure 3-5, the proposed San Bruno South site is located in a residential neighborhood west of I-280, and is accessible from I-280 via the Sneath Avenue/San Bruno Avenue West and Cunningham Way exits. This site would be predominantly located within the SFPUC ROW, which is generally unpaved open land, although a portion of the site extends under Whitman Way and the Shelter Creek Condominium parking lot.

Construction staging and spoils storage areas are proposed along the ROW south of the construction zone, near the ROW within the Peninsula High School parking lot, and in the San Bruno Chinese Church parking lot. The proposed staging area for the San Bruno South site at the northern parking lot of the San Bruno Chinese Church would be used during the week for project staging, but would be available for church parking during the weekend so that adequate parking would be maintained during the most attended church activities.

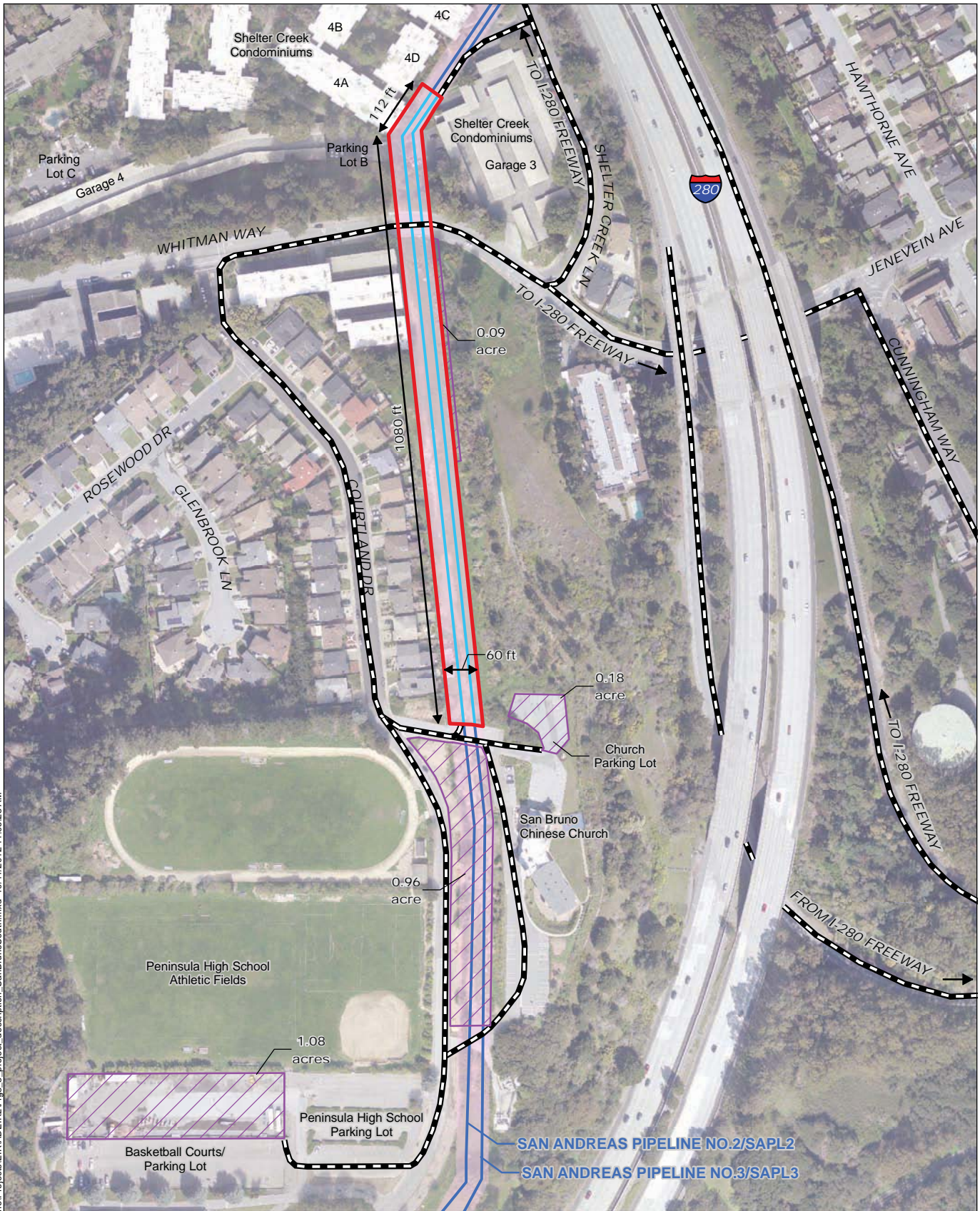
### 3.1.5 Millbrae Site

The proposed project activity in the City of Millbrae consists of a pipeline replacement along the SSBPL. As shown on Figure 3-6, the Millbrae site generally extends east from the intersection of Banbury Lane and Ridgewood Drive, through two residential side yards, and through a portion of the Green Hills Country Club golf course. The proposed Millbrae site is accessible from I-280 via the Larkspur Drive and Hillcrest Boulevard exits. The HTWTP is located approximately 0.4 mile west of this site. The Millbrae site extends through a residential neighborhood, City of Millbrae open space area, and a golf course. The site is located predominantly within the SFPUC ROW and is generally unpaved land, with residential encroachments and a dense grove of primarily eucalyptus and oak trees established on top of a portion of the ROW. Proposed access routes requiring upgrades and a portion of the construction staging and spoils storage areas are proposed to be located on City of Millbrae and Green Hills Country Club property.

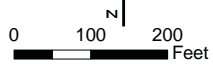
### 3.1.6 Common Staging Area

The common staging area is the approximately 0.32-acre northern portion of the SFPUC's Baden Valve Lot, located just west of El Camino Real in the City of South San Francisco (see Figure 3-3). The Baden Valve Lot is an approximately 2-acre, triangularly shaped site within the SFPUC ROW at the corner of El Camino Real and West Orange Avenue. The common staging area is accessible from I-280 via the Westborough Boulevard exit, continuing on Westborough Boulevard to El Camino Real, then to West Orange Avenue. Existing ground cover consists of gravel interspersed with vegetation and exposed soils. A chain-link fence borders the site (SF Planning, 2008b). Surrounding land uses are both residential and nonresidential, including commercial and water

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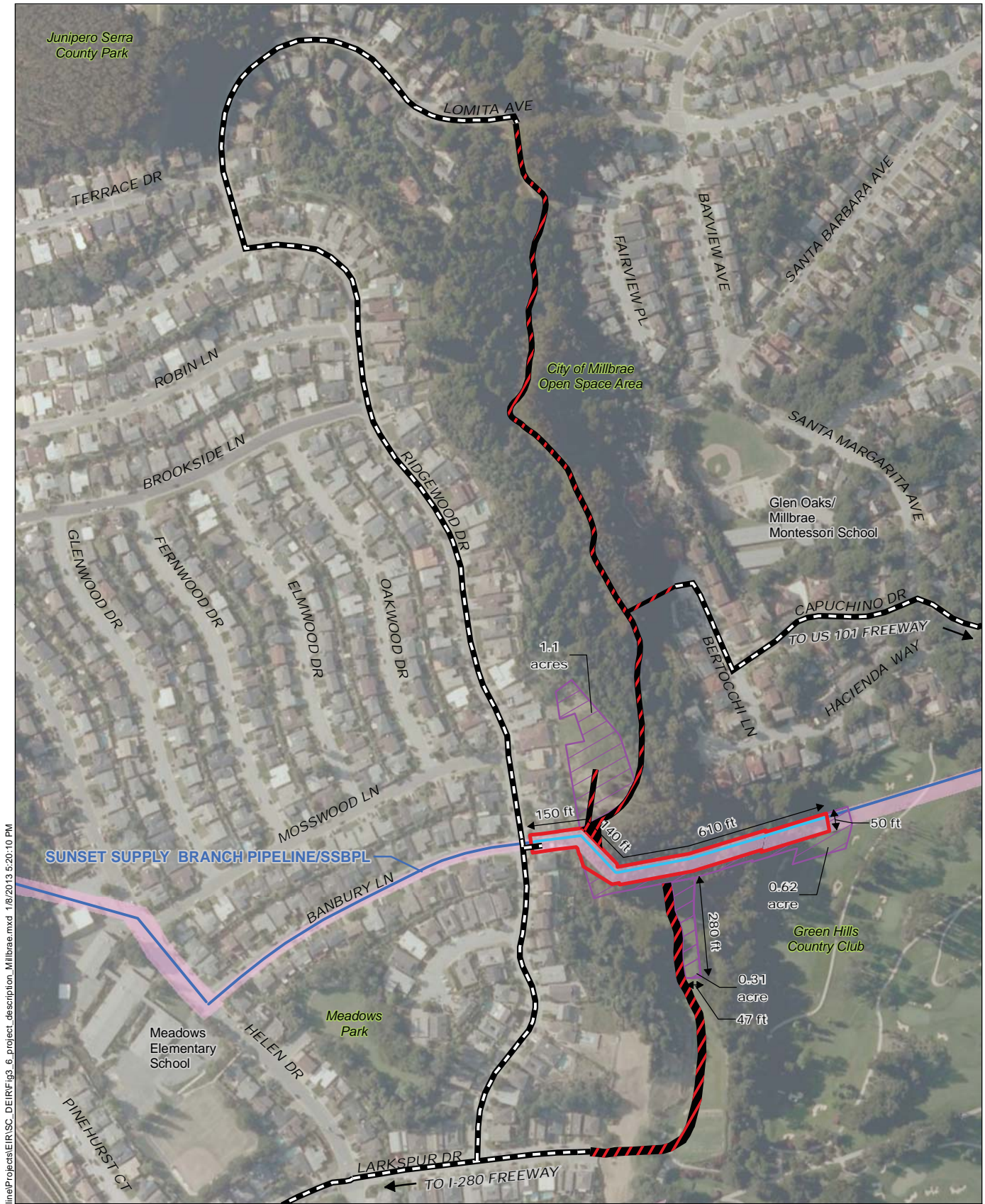
- Project Components**
- Construction Zone
  - Staging and Spoils Area
  - Access Route
  - SFPUC Water Transmission Line
  - SFPUC Water Transmission Line to be Replaced
  - SFPUC Parcels - Right-of-Way



**SAN BRUNO SOUTH SITE**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-5**

Source: SFPUC 2011



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<b>Project Components</b>	Access Route
Construction Zone*	SFPUC Water Transmission Line
Staging and Spoils Area	SFPUC Water Transmission Line to be Replaced
Access Route Requiring Upgrade	SFPUC Parcels - Right-of-Way

**MILLBRAE SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-6**

\* SFPUC right-of-way from Ridgewood Drive (shown as construction zone) would also serve as an access route to project site.

0 200 400 Feet

facilities. Commercial uses are located along El Camino Real to the east, a funeral home is located to the north, and water facilities are located south of the staging area on the Baden Valve Lot. Single-family residences are located immediately west of the common staging area.

## 3.2 Project Background

The City and County of San Francisco, through the SFPUC, owns and operates a water conveyance, treatment, and distribution system that extends from the Sierra Nevada mountain range to the San Francisco Bay Area, as shown on Figure 2-1. SFPUC's regional water system serves approximately 2.4 million people in San Francisco, San Mateo, Santa Clara, Alameda, and Tuolumne counties. The basic network of major facilities in the Regional Water System was built from the late 1880s through the 1930s. Expansion and improvements of the major facilities continued through the 1970s. The SFPUC has identified aging facilities within the system that are in need of major repair, rehabilitation, upgrade, and/or replacement.

In October 2008, the SFPUC adopted a systemwide program, the Water System Improvement Program (WSIP) (SF Planning, 2008a). The WSIP is a comprehensive program designed to improve the Regional Water System with respect to water quality, seismic response, and water delivery, based on a planning horizon through the year 2030; and to improve the water system with respect to water supply to meet water delivery needs in the SFPUC service area through the year 2018. To address the potential environmental impacts of the WSIP, the San Francisco Planning Department prepared a Program EIR (PEIR), which was certified by the San Francisco Planning Commission in 2008 (PEIR State Clearinghouse No. 2005092026). The WSIP PEIR evaluated the environmental impacts of the water supply strategy and system operations at a project level of detail, and evaluated the environmental impacts of certain WSIP facility improvement projects at a program level of detail.

The PPSU project was not included in the WSIP PEIR as a facility improvement project because the need for the project was not identified when the WSIP was originally conceived. The SFPUC identified the need for the project after certification of the WSIP PEIR, as a result of geotechnical investigations in connection with the HTWTP Long-Term Improvements Project,<sup>3</sup> which is a WSIP facility improvement project that was approved and adopted by the SFPUC in 2010.

During these investigations, the SFPUC determined that fault strands within the plant's site could cause significant failure in existing facilities in the event of a major San Andreas earthquake (G&E/GTC Joint Venture, 2011). The fault strands were determined to be part of the Serra Fault system, a secondary fault located along the peninsula in San Mateo County. As a result, additional geotechnical studies were pursued to determine the ability of the Peninsula water transmission system to achieve the adopted WSIP Level of Service (LOS) goal related to seismic reliability. The LOS goal requires that within 24 hours of a major earthquake on the San Andreas Fault, the HTWTP must be capable of delivering up to 140 million gallons per day of potable drinking water to customers within the Regional Water System and in the City and County of San Francisco.

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<sup>3</sup> The HTWTP Long-Term Improvements Project proposed improvements to the plant's treatment process to meet water quality and delivery reliability goals, seismic reliability improvements, and other improvements to the HTWTP, such as pipeline distribution, access, and site improvements.



During these additional investigations of the Serra Fault system, the SFPUC identified areas along the SAPL2, SAPL3, and SSBPL that are susceptible to liquefaction, ground shaking, and landslides (G&E/GTC Joint Venture, 2011). As a result of these studies, the SFPUC identified the six pipeline segments in need of seismic improvements that are the subject of this EIR. The proposed project does not include any new pipelines, an increase the size or capacity of existing pipelines, or an increase in the normal operating capacity of the regional water system.

### 3.3 Goals and Objectives

As described above and in Section 2.2.2, SFPUC Water System Improvement Program, the proposed project is part of the SFPUC's WSIP.

As stated in the PEIR, the WSIP is intended to deliver capital improvements that enhance the SFPUC's ability to provide reliable, affordable, high-quality water to its customers in an environmentally sustainable manner. The WSIP includes a water supply strategy, modifications to system operations, and construction of a series of facility improvement projects. Although the PPSU project was not originally identified in the WSIP PEIR, it is considered a WSIP project as described above and in Section 2.2, Background – Regional Water System and the Water System Improvement Program.

The goal of the proposed project is to improve the seismic reliability of transmission pipelines between HTWTP and the Capuchino, Baden, and San Pedro Valve Lots in the event of a major earthquake on the San Andreas Fault. The objectives of the project would be achieved by completing proposed improvements designed to prevent the failure of SAPL2, SAPL3, and SSBPL, and maintain their reliability during a major seismic event.

The objectives of the proposed project are as follows:

- Upgrade segments of the SAPL2, SAPL3, and SSBPL to meet current seismic standards in locations where they cross the Serra Fault, so that they can withstand the ground displacements potentially caused by a fault offset. This is intended to preserve water flow from the HTWTP to downstream facilities after a major San Andreas earthquake and achieve WSIP seismic reliability LOS goals.
- Minimize interruptions of water delivery during and following a seismic event by minimizing seismic vulnerabilities at the Serra Fault crossing locations, and by minimizing vulnerabilities at the liquefaction-susceptible zones.
- Reduce the physical, social, and economic impacts associated with the potential rupture of the existing SAPL2, SAPL3, and SSBPL during a major earthquake.

### 3.4 Existing Facilities

As described above, the existing SAPL2, SAPL3, and SSBPL water transmission pipelines deliver water from the HTWTP to the SFPUC's regional water system. The location of the existing alignment for these three pipelines within the project vicinity is shown on Figure 3-1.

The existing pipelines are described briefly below (G&E/GTC Joint Venture, 2011).

- SAPL2 is a 54-inch-diameter riveted lockbar steel pipe that was constructed by the Spring Valley Water Company in approximately 1928. The original pipe features lockbar joints for longitudinal joints and rivets for circumferential joints. Several sections of SAPL2 have been reconstructed or encased since 1928. Modifications to the original pipeline were made in the 1950s, 1960s, and early 1980s. Pipeline improvements in the vicinity of the proposed project include:
  - In the vicinity of the San Bruno North site, a structural arch plate was installed over the pipe, and a concrete tunnel was built over an approximately 140-foot portion of SAPL2 to support soils placed over the pipe during construction of San Bruno Avenue West in the 1950s. To the south, SAPL2 was encased in concrete.
  - In the vicinity of the San Bruno South site, the pipe is original construction, except at the Shelter Creek Condominiums, where it has been relocated and is likely encased in concrete.
  - A segment of SAPL2 between San Bruno and Daly City was lined with cement mortar, and weakened sections of the pipe were repaired in 1983. However, in the vicinity of the Colma and South San Francisco project sites, the pipe is original construction.
- SAPL3 was constructed by the SFPUC in 1979, and portions of the pipeline were rehabilitated in 1991 and 1997. SAPL3 consists of the following types of pipe segments:
  - Extending north of Baden Valve Lot in South San Francisco, the pipeline consists of approximately 17,550 feet of 66-inch pre-stressed concrete cylinder pipe (PCCP) with a steel-lined interior, and approximately 460 feet of 67.5-inch cement mortar-lined and coated steel pipe. The PCCP pipe was retrofitted in 1997 with an interior steel 60-inch-diameter liner.
  - Extending south of Baden Valve Lot, the pipeline is a 66-inch PCCP, which was subsequently lined on the inside with pipe ranging in diameter from 66 inches to 54 inches. In the vicinity of the San Bruno South site, segments of the pipe have been encased in concrete, and the PCCP pipe has been sliplined with smaller (60-inch- or 57-inch-diameter) steel pipe.
- The portion of SSBPL in Millbrae was constructed in 1955 and consists of a 60-inch-diameter welded steel pipe. No modifications have been made to the pipe.

The existing pipelines are located within the SFPUC ROW on land that is either owned by the City and County of San Francisco or subject to an easement held by the City. The pipelines are located below ground in the vicinity of the sites. Some appurtenances, such as manholes and customer service connections, extend either above or below ground in several locations within the proposed sites.

## 3.5 Proposed Project

The proposed project consists of seismic upgrades to three SFPUC water transmission pipelines—SAPL2, SAPL3, and SSBPL—at five locations on the San Francisco Peninsula. The upgrades would improve segments of pipelines to increase reliability during potential seismic events. The proposed project activities are listed below and summarized in Table 3-1:

**Table 3-1  
Proposed Project Sites**

Project Site	Pipeline	Approximate Distance of Pipe Upgrade <sup>1</sup> (feet)	Staging and Spoils Areas (acres)	Construction Zone (acres)	Total Construction Work Area <sup>2</sup> (acres)	Proposed Project Activities	Existing Uses – Site and Vicinity
Colma	SAPL2	700	0.77	1.47	2.24	Pipe segment replacement	<b>Site:</b> Vacant SFPUC ROW and area within Kohl’s Department Store Parking Lot <b>Adjacent Uses:</b> Commercial and cemetery
South San Francisco	SAPL2	720	.05	1.29	1.34	Pipe segment replacement	<b>Site:</b> Vacant SFPUC ROW, Westborough Boulevard and area within Pacific Supermarket Parking Lot <b>Adjacent Uses:</b> Commercial, residential, and recreational
San Bruno North	SAPL2	140 <sup>3</sup>	0.14	0.76	0.90	Stabilization of pipe segment in tunnel	<b>Site:</b> Vacant SFPUC ROW and area within Caltrans ROW; portion of right-hand eastbound lane on San Bruno Avenue West <b>Adjacent Uses:</b> Commercial, residential, recreational
San Bruno South	SAPL2	1,170	2.31	1.59	3.90	Pipe segment replacement	<b>Site:</b> Vacant SFPUC ROW, Whitman Way, and areas within parking lots for Peninsula High School and San Bruno Chinese Church <b>Adjacent Uses:</b> Residential, church, school, open space, and recreational
	SAPL3	1,050				Pipe segment replacement	
Millbrae	SSBPL	900	2.03	1.07	3.10	Pipe segment replacement	<b>Site:</b> Vacant SFPUC ROW, areas within a golf course, open space, and residential lots <b>Adjacent Uses:</b> Residential and recreational

Source: G&E Engineering Systems, Inc., 2012; PPSU project analysis, URS.

- Notes:
- <sup>1</sup> Approximate distance of pipe is measured as horizontal distance. Total length of pipe to be replaced may be longer, due to the vertical changes along the pipeline.
  - <sup>2</sup> Total Construction Work Area is the sum of Staging and Spoils Areas and the Construction Zone.
  - <sup>3</sup> Estimated length of work in tunnel.

ROW = right-of-way

- Colma Site – Replacement of an approximately 700-foot<sup>4</sup> segment of SAPL2;
- South San Francisco Site – Replacement of an approximately 720-foot segment of SAPL2;
- San Bruno North Site – Stabilization of SAPL2 where it extends through a tunnel;<sup>5</sup>
- San Bruno South Site – Replacement of an approximately 1,170-foot segment of SAPL2 and an approximately 1,050-foot segment of SAPL3; and
- Millbrae Site – Replacement of an approximately 900-foot segment of SSBPL.

Proposed project activities are described for each site below.

### 3.5.1 Colma Site

At the Colma site, the proposed construction activities would include the installation of a new 54-inch-diameter steel pipeline to replace the existing 54-inch-diameter riveted lockbar steel pipeline for an approximately 700-foot segment of SAPL2. The existing pipeline consists of lockbar<sup>6</sup> joints for longitudinal joints and rivets for circumferential joints, which could fail due to soil liquefaction during an earthquake (G&E Engineering Systems, Inc., 2012; Kennedy/Jenks Consultants, 2012; Young and Manders, n.d.). The new pipeline segment would be constructed with thick-welded steel, designed to withstand the expected differential settlement and lateral spread due to liquefaction during a seismic event (G&E Engineering Systems, Inc., 2012).

The segment of pipeline to be replaced is south of Serramonte Boulevard, extending to approximately 100 feet north of Collins Avenue. Open-trench construction techniques would be used: the existing pipeline would be excavated and removed; the trench would be excavated to an additional depth and width to allow for placement of support and trench backfill materials; and the new pipeline would be installed in the same general location as the existing pipeline. The new pipeline would be installed at depths ranging from approximately 9 feet to 16 feet below ground surface (bgs) and would extend under an existing box culvert that conveys a tributary of Colma Creek, as shown on Figure 3-7. As described under Section 3.8.1, Pipeline Replacement and Stabilization, a portion of the box culvert would be demolished to allow access to SAPL2, and subsequently replaced in kind. This culvert is considered other waters of the United States, subject to the jurisdiction of the U.S. Army Corps of Engineers; as well as waters of the State of California, under the jurisdiction of the Regional Water Quality Control Board (RWQCB). In addition, a concrete v-ditch designed for slope stability or to carry runoff away from the vicinity of the site during precipitation events would be removed for construction activities. After completion of the pipeline replacement, the SFPUC would replace the v-ditch in kind. The v-ditch is considered a water of the State of California, and is under the jurisdiction of the RWQCB.

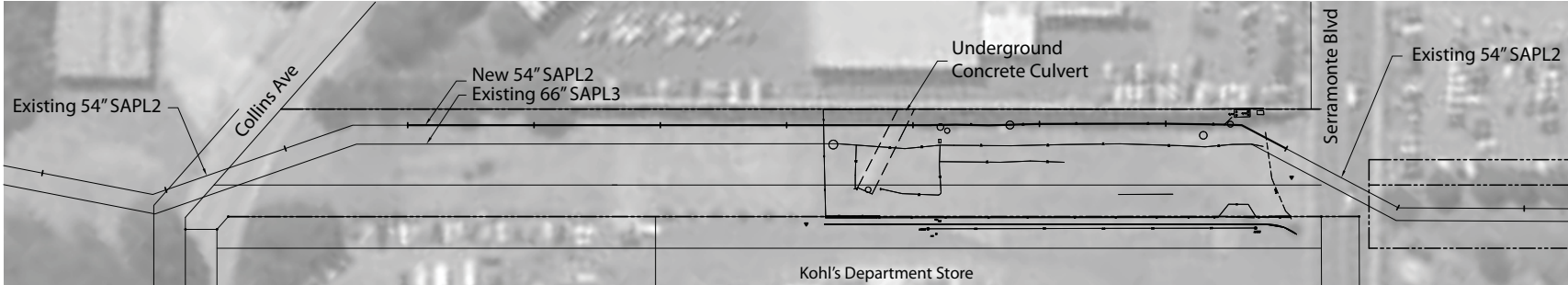
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<sup>4</sup> Throughout this EIR, approximate pipe replacement lengths are provided as horizontal distances. The total length of pipe to be replaced may be longer, due to the vertical changes along the pipeline.

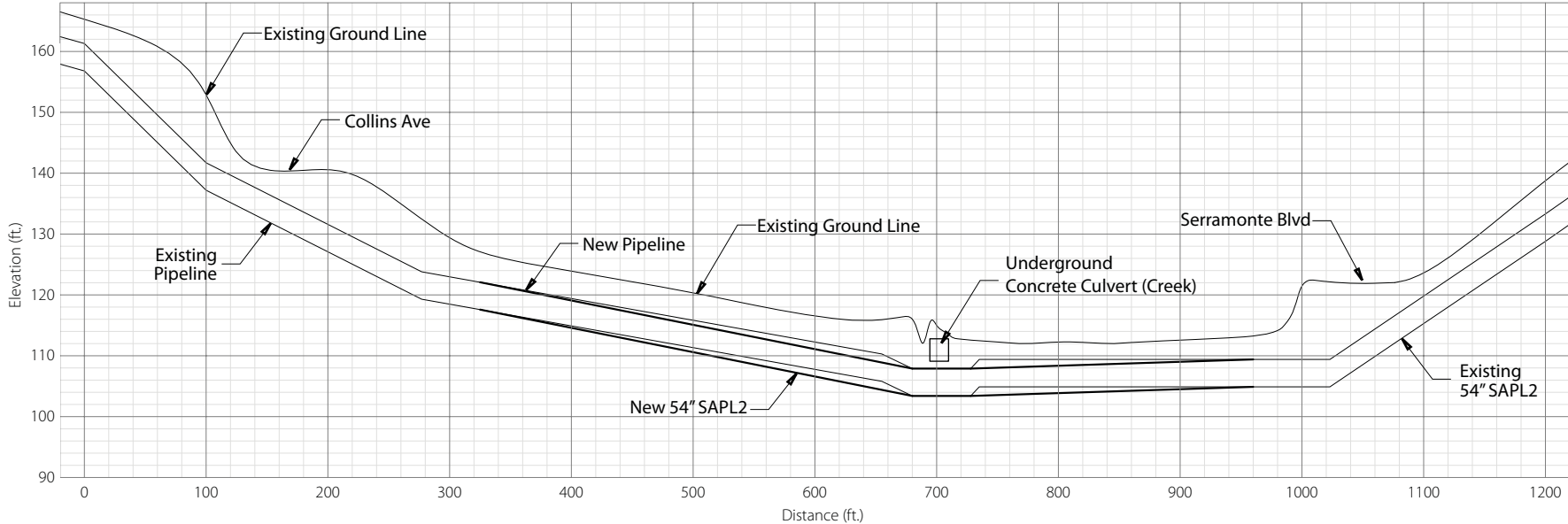
<sup>5</sup> Currently, SAPL2 extends through a concrete tunnel but is not supported within the tunnel. Stabilization activities would entail the injection of grouting to fill the void under the pipeline within the tunnel, or the installation of pipe stabilization structures within the tunnel to prevent it from shifting during a seismic event.

<sup>6</sup> Lockbar joints, an old construction method, consists of two cast half pipe steel sections joined longitudinally with a locking metal bar.

**Plan and Profile for SAPL2**



Not to scale



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Source: G&E Engineering Systems, Inc., September 2011.

**COLMA PLAN AND PROFILE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-7**

Two different trench types would be used: controlled low-strength material trench and normal trench.<sup>7</sup> Additionally, the existing pipe and valves connecting SAPL2 with the existing customer service connection, located approximately 59 feet to 70 feet south of Serramonte Boulevard, would be replaced.

### **3.5.2 South San Francisco Site**

At the South San Francisco site, the proposed construction activities would include the installation of a new 54-inch-diameter steel pipeline to replace the existing 54-inch-diameter riveted lockbar steel pipeline for an approximately 720-foot segment of SAPL2. As described above, the existing SAPL2 pipeline consists of lockbar joints for longitudinal joints and rivets for circumferential joints, which could fail due to liquefaction of soils during an earthquake (G&E Engineering Systems, Inc., 2012). The new pipeline segment would be constructed with thick-welded steel, designed to withstand the expected differential settlement and lateral spread due to liquefaction during a seismic event (G&E Engineering Systems, Inc., 2012).

The approximately 720-foot segment of pipeline to be replaced is from approximately 45 feet south of Arroyo Drive, extending approximately 230 feet to Westborough Boulevard, approximately 170 feet under Westborough Boulevard, and then another 270 feet to West Orange Avenue. North and south of Westborough Boulevard, open-trench construction techniques would be used, and the new pipeline would be installed in same general location as the existing pipeline, shown on Figure 3-8. As described under Section 3.8.1, Pipeline Replacement and Stabilization, jack-and-bore techniques would be used to jack a steel casing underneath Westborough Boulevard, into which the new pipe would be installed. The pipeline would be installed at depths ranging from approximately 11 feet to 30 feet bgs, and would extend under the existing creek culvert. Two different trench types would be used: controlled low-strength material trench and normal trench. In addition, the project would include replacement of the existing pipe and valves connecting the customer service connection, located approximately 50 feet south of Westborough Avenue, with SAPL2.

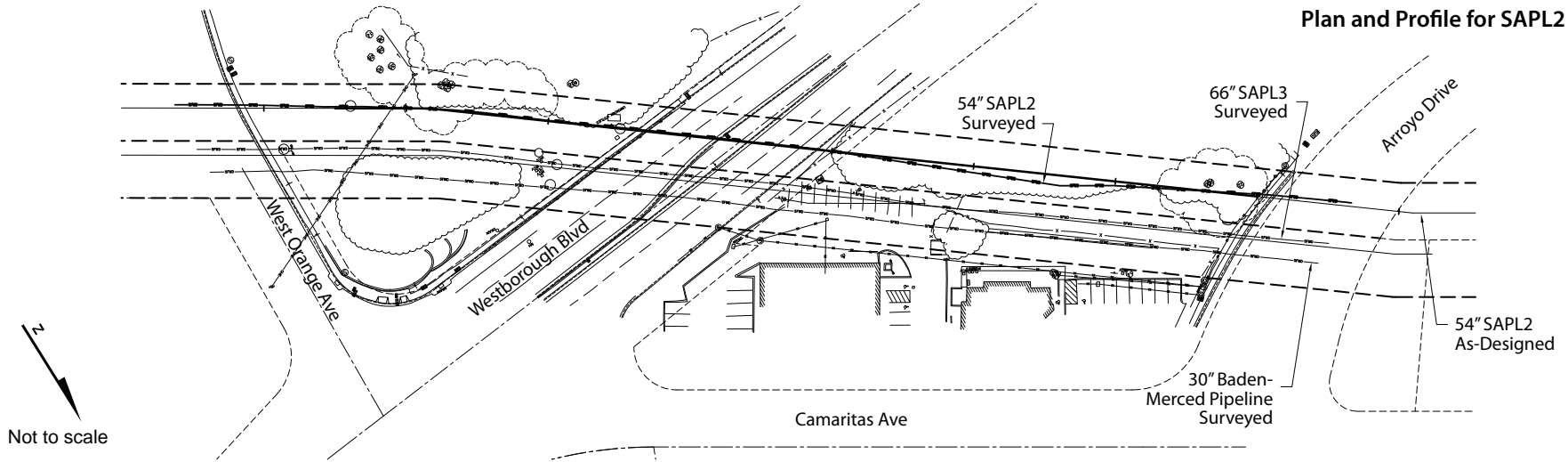
### **3.5.3 San Bruno North Site**

At the San Bruno North site, construction activities would entail the stabilization of approximately 140 feet of SAPL2 within the tunnel from San Bruno Avenue West to just before the San Bruno Avenue West northbound exit from I-280, through which SAPL2 currently extends, as shown on Figure 3-9. Project construction activities would include excavation of two access pits above the existing tunnel, removal of portions of the tunnel roof to gain access to the tunnel, and the injection of grouting to fill the void under the pipeline within the tunnel, or the installation of pipe supports within the tunnel. The access pits would be approximately 10 feet wide by 10 feet long. It is estimated that the roof of the tunnel is 10 feet bgs. The stabilization efforts are intended to enable SAPL2 to withstand the expected effects of ground shaking during a seismic event (G&E Engineering Systems, Inc., 2012).

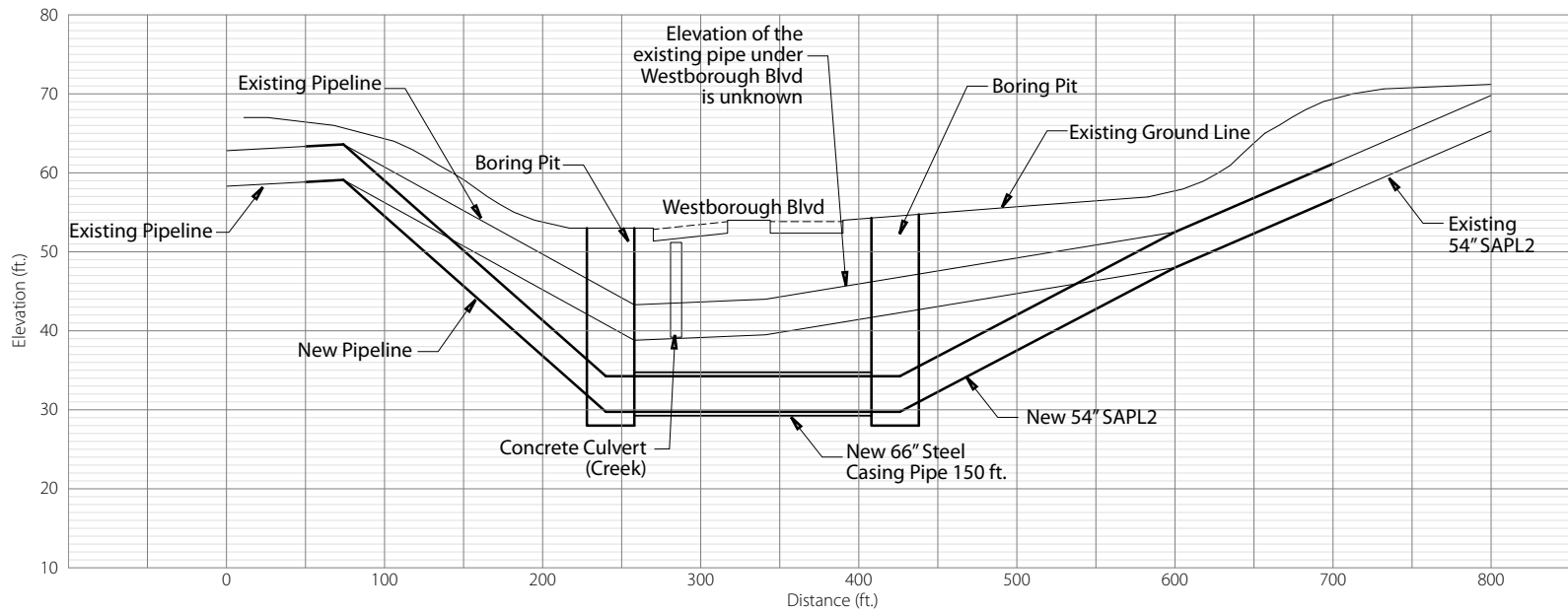
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<sup>7</sup> A normal trench is backfilled with granular material, such as gravel or sand materials, and a controlled low-strength material trench is backfilled with controlled low-strength material. Controlled low-strength material is cementitious grout-like material used primarily as backfill in lieu of granular, compacted backfill.

**Plan and Profile for SAPL2**



Not to scale



Source: G&E Engineering Systems, Inc., September 2011.

Note: Location and dimensions of boring pits are approximate.

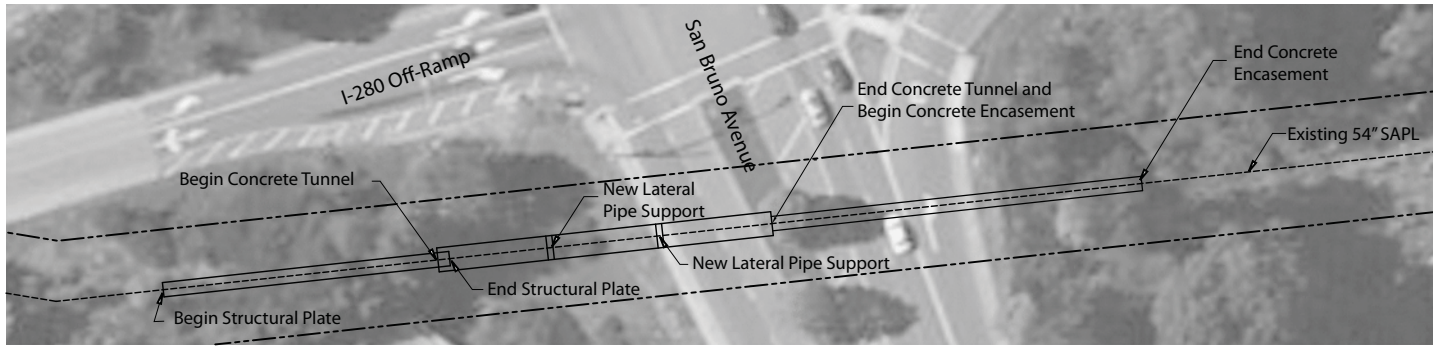
**SOUTH SAN FRANCISCO PLAN AND PROFILE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

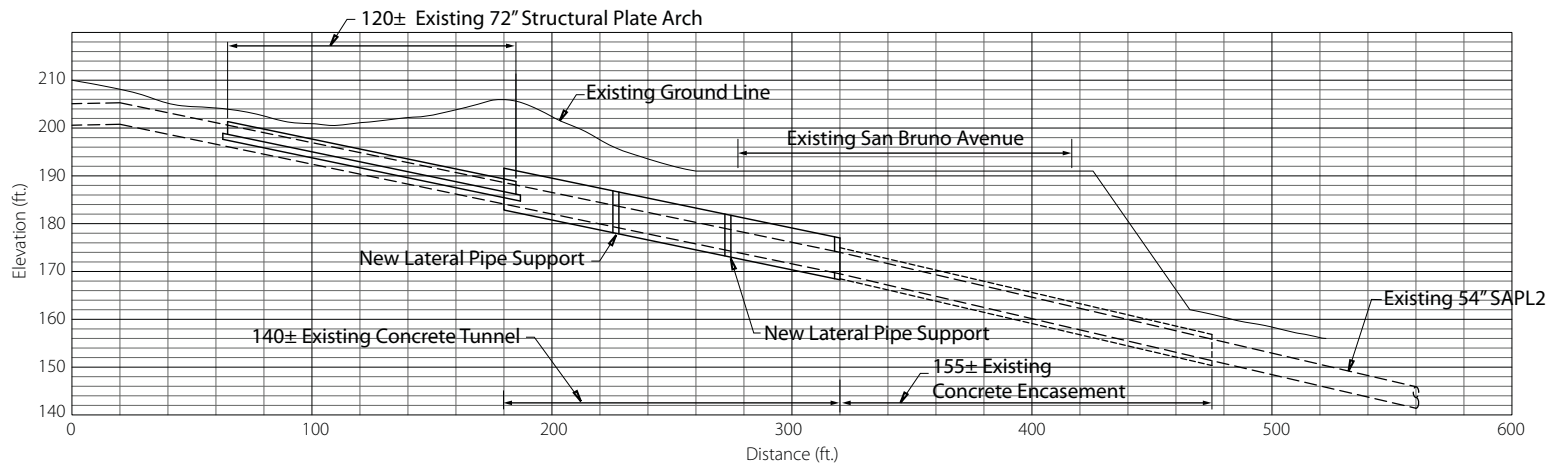
**FIGURE 3-8**

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**Plan and Profile for SAPL2**



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 Not to scale



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Source: Kennedy/Jenks Consultants, August 2012.

**SAN BRUNO NORTH PLAN AND PROFILE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-9**



### 3.5.4 San Bruno South Site

At the San Bruno South site, construction activities would include the installation of a new 54-inch-diameter steel pipeline to replace the existing 54-inch-diameter steel pipeline for an approximately 1,170-foot segment of SAPL2. The existing pipeline consists of lockbar joints for longitudinal joints and rivets for circumferential joints, which could fail at the fault crossing location in the event of an earthquake (G&E Engineering Systems, Inc., 2012). The new pipeline would be constructed with thick-welded steel, designed to withstand the expected loads and ground offset imposed by the Serra Fault on the pipeline during a seismic event (G&E Engineering Systems, Inc., 2012).

Open-trench construction techniques would be used, and the new pipeline would be installed in same general alignment as the existing pipeline. The pipeline would be installed at depths ranging from approximately 11 feet to 32 feet bgs. Four different trench types would be used: controlled low-strength material trench, normal trench, and two different special trenches with expanded polystyrene backfill.<sup>8</sup> In addition to the project activities for SAPL2 above, the proposed project would include the installation of a new 66-inch-diameter steel pipeline to replace the existing 66-inch-diameter steel SAPL3. An approximately 1,050-foot segment of SAPL3 would be replaced. The new pipeline would be thick-welded steel, designed to withstand the expected loads and ground offset imposed by the Serra Fault on the pipeline during a seismic event (G&E Engineering Systems, Inc., 2012).

Open-trench construction techniques would be used; a portion of the pipeline would be installed at a lower elevation than the existing pipeline, as shown on Figure 3-10. The new alignment of the pipeline would be at depths similar to those described above for SAPL2. A normal trench would be used for the length of the new pipeline.

A concrete v-ditch designed for slope stability or to carry runoff away from the vicinity of the site during precipitation events would be removed for construction activities. After completion of the pipeline replacement, the SFPUC would replace the v-ditch in kind. The v-ditch is considered waters of the State of California, and is under the jurisdiction of the RWQCB.

### 3.5.5 Millbrae Site

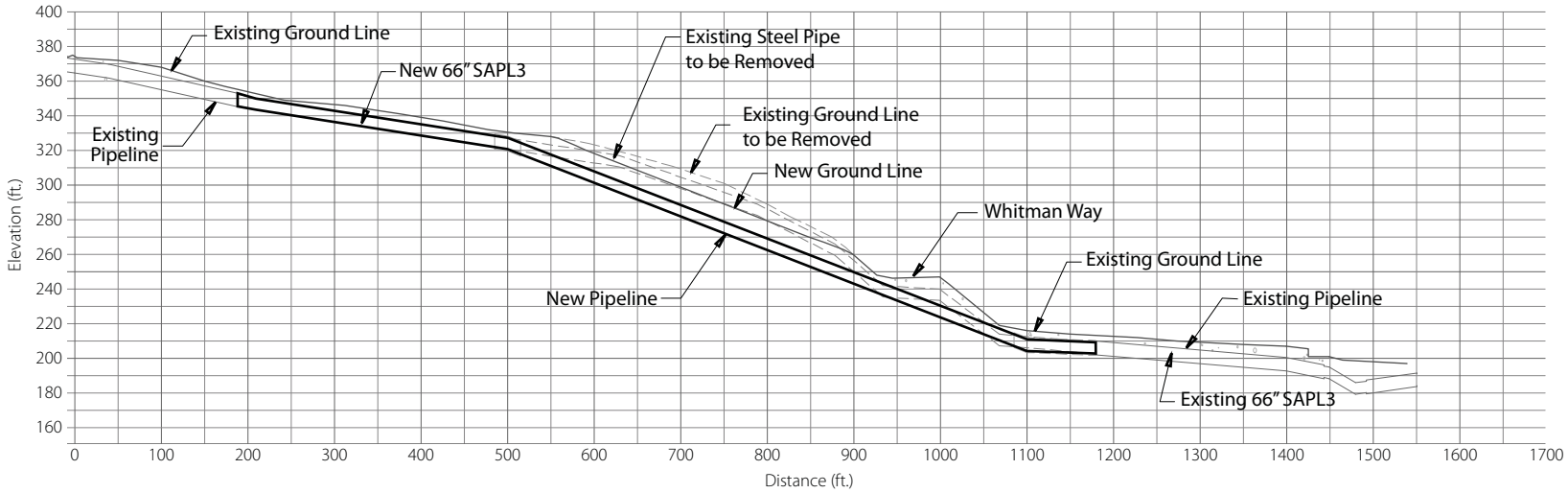
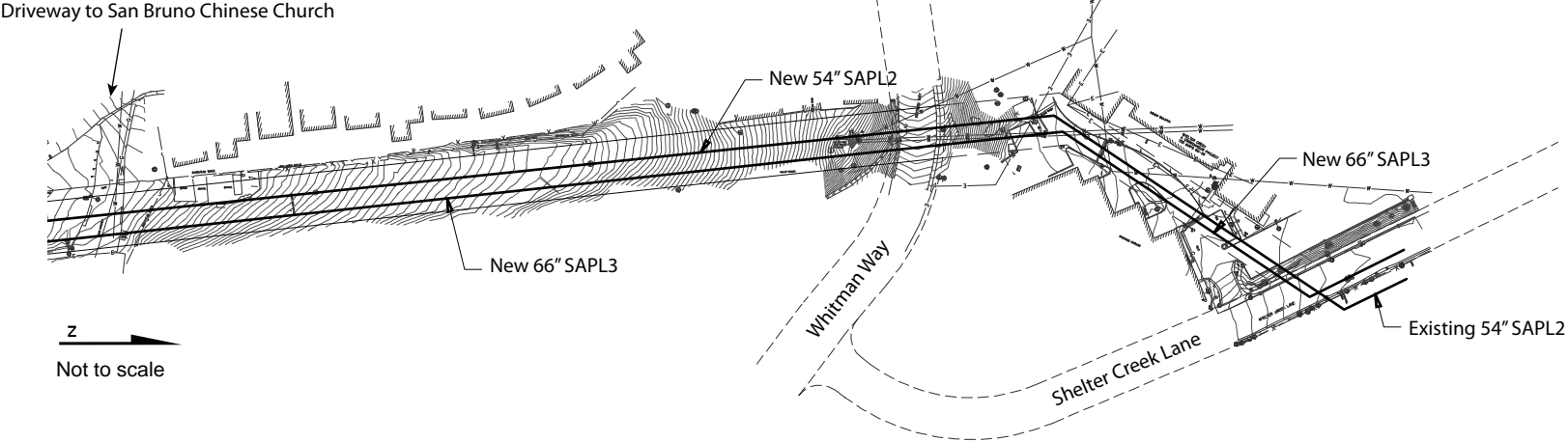
At the Millbrae site, construction activities would include installation of a new 61-inch-diameter steel pipeline to replace the existing 61-inch-diameter steel SSBPL pipeline, from the eastern curb of Ridgewood Drive and extending approximately 900 feet to the east. The new pipeline segment would be constructed with thick-welded steel, designed to withstand the expected loads and ground offset imposed by the Serra Fault on the pipeline during a seismic event (G&E Engineering Systems, Inc., 2012).

Open-trench construction would be used, and the new pipeline would be installed in the same general location as the existing pipeline. The pipeline would be installed at depths ranging up to 18 feet bgs; a portion of the pipeline would be installed at a lower elevation than the existing pipeline, as shown on Figure 3-11. Three different trench types would be used: controlled low-strength material trench; normal trench; and special wide trench, with pea gravel backfill designed to improve the pipeline's performance in a seismic event.

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<sup>8</sup> Expanded polystyrene backfill is a low-density cellular plastic foam solid used as a lightweight fill for construction on soft ground.

**Plan and Profile for SAPL3**



Source: G&E Engineering Systems, Inc., February 2011.  
 Note: The profile shown for SAPL3 is generally representative of the profile for SAPL2.

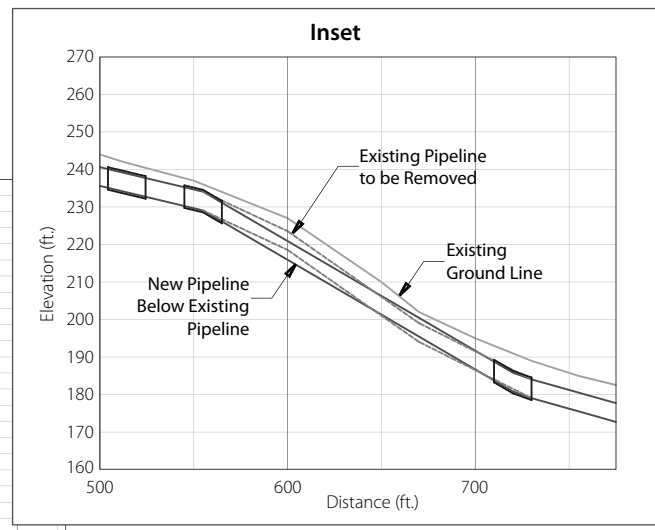
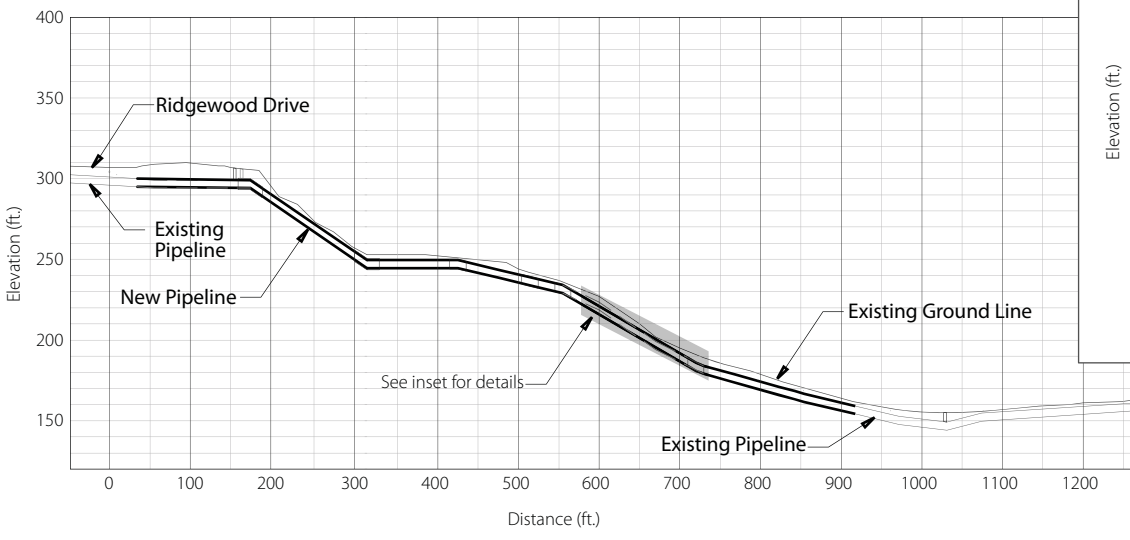
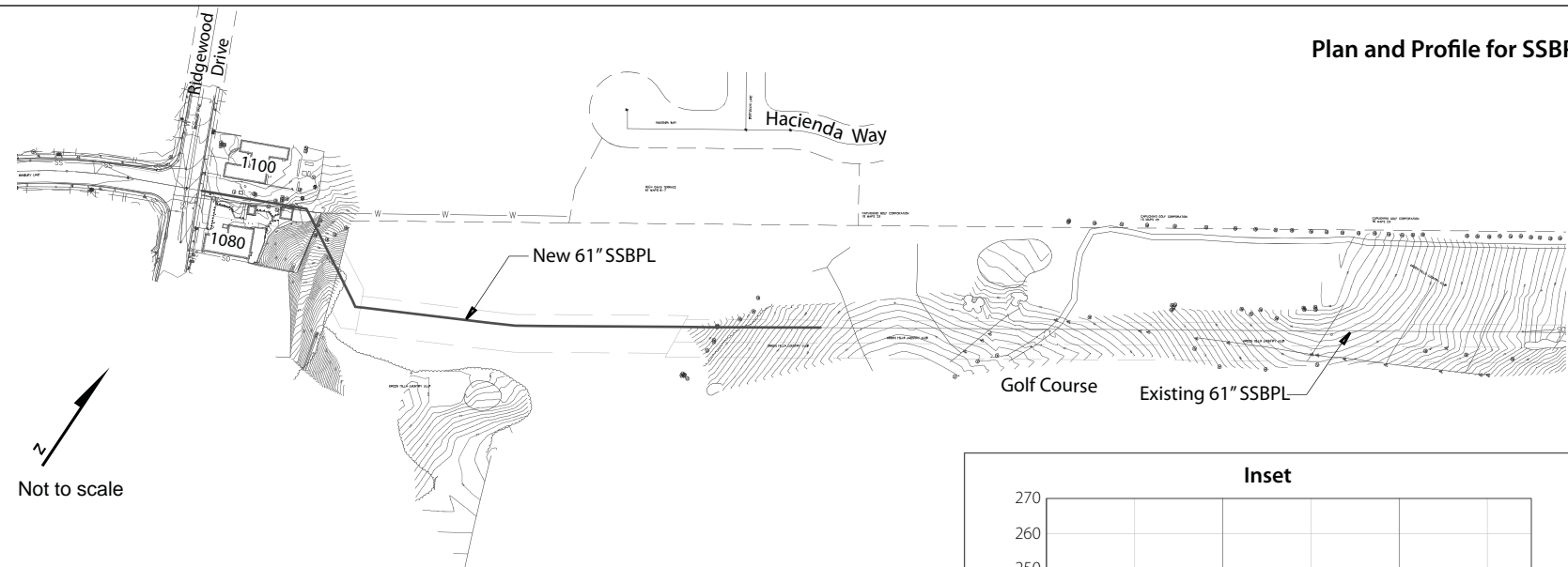
**SAN BRUNO SOUTH PLAN AND PROFILE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-10**

10/4/12 h:\vsa...T:\SFPUCCS-116 Peninsula Pipelines\DER 2012\A\DER2\Fig3\_10\_SBS\_P&P.ai

**Plan and Profile for SSBPL**



10/4/12 hkv:va...T:\SFPUC CS-116 Peninsula Pipelines\DEIR 2012\ADEIR\Figs\_11\_Millbrae\_P&P.ai

Source: G&E Engineering Systems, Inc., February 2011.

**MILLBRAE PLAN AND PROFILE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 3-11**

## 3.6 SFPUC Standard Construction Measures

The SFPUC has established standard construction measures for all WSIP projects that would be implemented as part of the proposed project (SFPUC, 2007a). The main objectives of these measures are to:

- Reduce impacts on existing resources to the extent feasible;
- Include activities such as early identification of sensitive environmental resources in the WSIP project area; and
- Notify businesses, owners, and residents of adjacent areas potentially affected by the WSIP projects about the nature, extent, and duration of construction activities.

The SFPUC would ensure that the proposed project's contract specifications contain uniform minimum provisions to address these issues.

## 3.7 Greenhouse Gas Reduction Actions

In addition to standard construction measures, the SFPUC has established greenhouse gas reduction actions that would be implemented for all projects completed as part of the WSIP. The SFPUC would include the following measures in the contractor's specifications, which in addition to having other environmental benefits, would help reduce greenhouse gas emissions:

- The SFPUC would require that all contractors maintain tire inflation to the manufacturers' inflation specifications and limit idling time; and
- The SFPUC would implement a construction worker education program.

## 3.8 Project Construction

This section describes the proposed project construction activities and includes the following topics:

- Pipeline replacement and stabilization;
- Excavation and stockpiling of soil;
- Spoils disposal and removal of construction and demolition debris;
- Pipeline shutdown and startup;
- Dewatering;
- Construction staging and spoils areas;
- Site access and construction vehicle routes;
- Project workforce and construction vehicle parking; and
- Construction schedule and equipment.

The recommendations and requirements of the geotechnical investigations completed for the PPSU project would be implemented during project design and construction. Specific requirements pertain to each of the following activities: site preparation; excavations and ground support; groundwater/dewatering; pipeline trenching; pipe bedding and pipe-zone backfill; trench zone backfill; trenchless crossings; modulus of soil reaction; thrust block design; and corrosion (GTC, 2011a, GTC, 2011b, and GTC, 2011c).

## 3.8.1 Pipeline Replacement and Stabilization

### 3.8.1.1 Common Construction Elements for Pipeline Replacement

With the exception of the San Bruno North site, construction activities at all of the sites that comprise the project would use shored open-trench construction techniques for the pipe replacement. In addition to open-trench construction, activities at the South San Francisco site would use the jack-and-bore construction method for an approximately 170-foot portion of the pipeline segment to be replaced under Westborough Boulevard, described under Unique Construction Elements, below. Activities at the San Bruno North site would use the methods described under Unique Construction Elements, below.

Open-trench construction for the pipe replacement would generally include the following activities: (1) mobilization of the site, including removal of vegetation and grading; (2) trench excavation and shoring, as necessary; (3) removal of existing pipe and installation of new pipe; (4) trench backfill and compacting; and (5) surface restoration and landscaping.

#### *Site Mobilization and Preparation*

Site mobilization and preparation would include the preparation of the site for excavation and, depending on the site, would require the removal of existing structures, pavement, and vegetation consistent with the SFPUC's Right-of-Way Encroachment Policy (SFPUC, 2007b), the SFPUC's Right-of-Way Integrated Vegetation Management Policy (SFPUC, 2007c), and with the terms of existing easements, as applicable. Existing encroachments on SFPUC property would be removed prior to construction. Such encroachments include small structures, fences, and landscaping belonging to the properties through which the SFPUC ROW extends. Within each site, some trees may be removed, particularly those located above the pipelines. However, more extensive tree removal would be required at the South San Francisco and Millbrae sites, as described below under Unique Construction Elements. Survey work and potholing<sup>9</sup> would be completed first to precisely locate the pipeline and other underground utilities. Topsoil would then be removed and either off-hauled or stored for reuse. In paved areas, the pavement would be broken up and removed for recycling. Temporary fencing would be installed around construction zones and staging areas. Gravel would be laid down in some locations along the construction zone to provide traction for the movement of equipment. Mobilization would also include pipeline shutdown and dewatering, described in Section 3.8.4, Pipeline Shutdown and Startup; and Section 3.8.5, Dewatering.

#### *Trench Excavation and Shoring*

Trenches would be excavated to allow for the removal of the existing pipe. Approximately 500 feet of trench could be open at one time. The existing pipe would be cut using a torch, and removed by crane or backhoe. Once the existing pipe is removed, additional soil would be excavated along the length of the pipeline segment to be replaced, to allow for installation of supporting materials under the new pipe. Final trench excavation would be approximately 10 feet to 50 feet wide, and from approximately 11 feet to 32 feet deep, depending on the type of trench to be constructed and the depth of the new pipe. Open-trench construction would proceed

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<sup>9</sup> Potholing entails removing material, such as soil or asphalt, to verify the location and depth of the pipeline prior to excavation.

at a rate of approximately 30 to 100 linear feet per day, with approximately 500 feet of open trench at any given time. Section 3.8.3, Spoils Disposal and Removal of Construction and Demolition Debris, describes the use and off-haul of excavated soils and pipe debris.

The sidewalls of trenches would be stabilized using standard shoring methods, in accordance with the SFPUC's Health and Safety requirements and the California Occupational Safety and Health Administration's requirements (California Code of Regulations Title 8, Chapter 4, Section 1541). Shoring methods would include hydraulic shoring, soldier pile shoring, or sheet pile shoring methods. Hydraulic shoring entails aluminum side walls that are supported by vertical and horizontal hydraulic struts installed within the excavated trench. Soldier pile shoring entails installation of steel H-beams at intervals along the trench and extending below the trench, and installation of a steel plate or timber lagging between the beams to form the walls of the trench. Steel beams would be installed using either a drill rig or pile driver and crane. Additional bracing within the trench may be installed. Sheet pile shoring entails installation of interlocking sheets of steel that will form a continuous trench wall. Sheet pile shoring would be installed by a hydraulic, diesel, or vibrating hammer and crane, and would extend below the trench. During nonwork hours, open trenches within the roadways would be covered with steel plates, and trenches in other areas would be fenced off. Prior to pipe installation, trenches would be prepared by installing materials that support the pipeline, such as sand or polystyrene slabs.

### ***Removal of Existing Pipe and Installation of New Pipe***

The existing pipe would be removed, new pipe would be welded into place, the joints would be inspected, and a protective coating would be applied. Hydrostatic testing of the pipeline would be completed to verify the structural integrity of the pipeline, as described in Section 3.8.4, Pipeline Shutdown and Startup.

### ***Trench Backfill***

Trenches would be backfilled with materials to meet the specifications of the trench design. Backfilled trenches would be compacted and graded to restore soils to general pre-construction conditions, except where the slope would be redesigned. For example, in most cases, the finished grade would typically be similar to existing grade; however, at the San Bruno South site, the finished grade along SAPL3 would be lower than existing grade in order to match the grade along the adjacent SAPL2 for a portion of the replacement. An estimated total of approximately 32,190 cubic yards of trench backfill materials would be imported to all of the sites. In addition, new pipeline and shoring materials would be trucked to the sites. In total, approximately 3,520 truck trips would be required for on-haul of these materials. Construction debris would be hauled away for disposal as described in Section 3.8.3, Spoils Disposal and Removal of Construction and Demolition Debris.

### ***Surface Restoration and Revegetation***

Topsoil would be replaced in disturbed areas, which would be re-vegetated with native plant seed mix. The ROW would generally be returned to pre-construction conditions. However, in accordance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy (SFPUC, 2007c), trees generally would not be replanted along the pipeline because their roots could damage the pipeline. Vegetation would be monitored for up to a year to ensure it has become established. Permitted structures in the ROW that would be removed during construction would

be replaced; however, unpermitted structures would not be replaced, in accordance with the SFPUC's Right-of-Way Encroachment Policy (SFPUC, 2007b).

## **Unique Construction Elements for Pipeline Stabilization or Replacement**

### ***Creek Culvert Work at Colma Site***

The box culvert that conveys waters of a tributary to Colma Creek across the Colma site is located above the existing SAPL2 pipe. To allow access to SAPL2 for construction activities, the portion of the culvert that is located within the trench area for SAPL2 may need to be demolished. Construction methods used to collect and discharge the water in the culvert during construction may include temporary piping around the demolished culvert section, or construction of a cofferdam. If temporary piping is used, flexible piping would be installed between the source of the water and a point of discharge—either a storm drain or another inlet to the culvert. If a cofferdam is used, a collection liner and shoring, such as sand bags or steel and wood, would be installed to collect the water in the culvert, which would then be pumped out and discharged through temporary piping to a storm drain or another inlet to the culvert. Once the new water transmission pipe is installed, the culvert would be replaced in kind.

### ***Access Pits and Tunnel Work at San Bruno North Site***

Construction activities at the San Bruno North site would stabilize the SAPL2 pipeline that extends through an existing tunnel. Activities would include excavation of access pits and tunnel work. Project construction activities would include excavation of two access pits above the existing tunnel, removal of portions of the tunnel roof to gain access to the tunnel, and the injection of grouting to fill the void under the pipeline within the tunnel, or the installation of pipe stabilization structures within the tunnel.

Two access pits, approximately 10 feet wide by 10 feet in length, would be excavated above the tunnel; the precise locations of the pits would be determined during final design. One of the access pits would be constructed on the sidewalk and extend into a portion of the right-hand eastbound lane of San Bruno Avenue West, requiring closure of the lane during construction. The other pit would be located within a landscaped area on Caltrans property. The interior of the tunnel would be accessed by removal of portions of the tunnel roof. Grouting would be injected to fill the void under the pipeline within the tunnel, and/or new pipe supports, such as concrete, would be installed within the tunnel at intervals of approximately 50 feet. The roof of the tunnel would be repaired once tunnel work is completed. The access pits would be backfilled and graded to restore soils to pre-construction conditions. Topsoil would be replaced in disturbed areas, which would be re-vegetated with native plant seed mix. Vegetation would be monitored for up to a year to ensure it has become established. Construction debris would be hauled away for disposal, as described in Section 3.8.3, Spoils Disposal and Removal of Construction and Demolition Debris.

### ***Jack-and-Bore Construction at South San Francisco Site***

The jack-and-bore method would be used at the South San Francisco site for the approximately 170-foot section of the pipeline replacement that extends under Westborough Boulevard. In jack-and-bore construction, a tubular steel casing is pushed and drilled (i.e., "jacked" and "bored") horizontally underground through the soil, and a new "carrier" pipe is installed through the casing. Pits would be excavated at either end of the bore; a "jacking pit" would be excavated at

the beginning of a section and a “receiving pit” at the end. The pits, shown on Figure 3-3, would be approximately 20 feet wide, up to 50 feet long, and up to 30 feet deep, and would be shored by either the soldier pile or sheet pile shoring methods, as described above.

The boring machine would be placed in the jacking pit, tracks for the machine would be installed, an auger would be inserted in a 66-inch casing, and the machine would push the auger and casing into the ground simultaneously while the machine is turning a cutting head through the ground. The auger would carry the debris through the auger and back to the machine, where the dirt and debris would be removed from the pit.

A new 54-inch welded steel pipe (carrier pipe) would then be inserted, and the space between the casing and carrier pipe would be grouted. The ends of the carrier pipe would be connected with new pipe sections in the pits.

A new connection to the existing customer service turnout and other appurtenances would be installed. Construction activities would be completed as described above for the open-trench method. Dewatering of the insertion pits would be performed as described in Section 3.8.5, Dewatering. Truck trips associated with jack-and-bore construction are included in the estimates provided under Section 3.2, Excavation and Stockpiling of Soil, and Section 3.8.3, Spoils Disposal and Removal of Construction and Demolition Debris, above and in Table 3-2.

**Table 3-2  
Project Materials Transport**

Project Site	Estimated Excavation Volume (cubic yards) <sup>1</sup>	Estimated Off-Haul Truck Trips <sup>2</sup>	Estimated On-Haul Truck Trips	Estimated Total Truck Trips	Estimated Average Trips Per Day <sup>3</sup>	Estimated Maximum Trips per Day <sup>4</sup>
Colma	4,650	280	280	560	11	44
South San Francisco	12,090	680	680	1,360	27	80
San Bruno North	50	10	10	20	2	8
San Bruno South	38,500	2,040	2,040	4,080	21	118
Millbrae	5,650	530	510	1,040	12	65
<b>Total</b>	<b>60,940</b>	<b>3,540</b>	<b>3,520</b>	<b>7,060</b>	—	—

Source: Roche, 2011a.

Notes:

Truck trips are calculated based on a 10-cubic-yard truck capacity. Pipe and shoring import to site is based on a 40-foot-long flatbed truck.

Based on the conservative assumption that on-haul and off-haul trips would be separate, meaning the same truck would not bring materials to the site and then remove materials from the site.

Off-haul includes truck trips for tree and vegetation removal.

On-haul trips include construction materials, trench backfill materials, and new pipe.

Trip estimate conservatively assumes shoring would be removed post-construction.

<sup>1</sup> Not all excavated material would be off-hauled. Some materials would be reused on site.

<sup>2</sup> Up to 32,190 cubic yards of construction debris and excavated soils would be off-hauled.

<sup>3</sup> Estimated average trips per day is the total estimated trips divided by the anticipated duration of construction activities at the site.

<sup>4</sup> Estimated maximum trips per day is the maximum trips anticipated for any day during construction activities based on phasing of activities at the site.



### ***Tree Removal at the South San Francisco and Millbrae Sites***

While some tree removal could be required at most sites, more extensive tree removal efforts would occur at the South San Francisco and Millbrae sites to allow access to the pipeline, and in accordance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy (SFPUC, 2007c).

At the South San Francisco site, a grove of approximately 20 willows would be removed from the ROW along SAPL2, north of Westborough Boulevard. This would entail cutting the limbs, if necessary, and cutting the trunks into segments. Debris would be chipped and stumps would be ground to a specified depth below grade and may be treated with herbicide to prevent the trees from growing back. Debris would be removed by truck, as shown in Table 3-2. Tree stumps would be excavated and removed above the pipelines and within the area to be trenched.

At the Millbrae site, the dense grove of approximately 300 trees, primarily eucalyptus and oaks, would be removed from the ROW along SSBPL. This would generally be accomplished by first removing the limbs for chipping, cutting the trunks into segments for chipping, and then grinding stumps to a specified depth below grade. Tree limbs and trunk segments with a diameter too great to be chipped (approximately 20 inches or greater) would be removed by truck, as reflected in Table 3-2. Tree stumps would be excavated and removed above the pipelines and within the area to be trenched. For trees within the ROW that are not above the pipeline and not within the area to be trenched, tree stumps would be ground down to a maximum of 6 feet below grade and may be treated with herbicide to prevent the trees from growing back. As described in Section 3.8.7, Site Access and Construction Vehicle Routes, some tree removals and/or trimming would also occur along the access route through the City of Millbrae open space area.

### **3.8.2 Excavation and Stockpiling of Soil**

Excavated soils, including topsoil, would be stockpiled during construction at each site, and may be reused as backfill and/or off-hauled for recycling or disposal as described in Section 3.8.3, Spoils Disposal and Removal of Construction and Demolition Debris. Estimated spoils from excavation would range from approximately 50 to 38,500 cubic yards per site, as shown in Table 3-2. Approximately 61,000 cubic yards would be excavated for the entire project. Spoils would be temporarily stored in the SFPUC ROW, either in the area designated as the construction zone or in the staging and spoils areas, as shown on Figures 3-2 through 3-6. Additionally, spoils may be temporarily stockpiled in areas designated for staging and spoils areas outside of the ROW. Temporary stockpiling of tree debris may also occur at the sites, particularly at the South San Francisco and Millbrae sites, where tree debris would be chipped and stockpiled along the SFPUC ROW prior to removal. See Section 3.8.6, Construction Staging and Spoils Areas, for additional information.

### **3.8.3 Spoils Disposal and Removal of Construction and Demolition Debris**

Construction debris would include tree debris, soils, pavement, and existing pipelines that would be removed and trucked to Ox Mountain Sanitary Landfill in Half Moon Bay for recycling or disposal.

While each site would have a minimal amount of vegetation debris associated with preparing the sites for construction, the South San Francisco and Millbrae sites would have an estimated 50 cubic yards and 205 cubic yards of tree debris, respectively, associated with the removal of the dense groves that are established above the pipelines. An estimated 5 truck trips and 21 truck trips would be required to remove the debris from the South San Francisco and Millbrae sites, respectively.

Spoils excavated during construction would be reused as backfill, if they are of a suitable quality, and excess soil or soil that is inadequate for backfill (i.e., rocky) would be hauled off site for recycling or disposal. Construction debris, including shoring materials, old pipe materials, and pavement, would be off-hauled as needed during construction and once construction is completed. Up to 32,190 cubic yards of materials would be off-hauled. As shown in Table 3-2, an estimated total of approximately 3,540 truck trips would be required to off-haul spoils.

### **3.8.4 Pipeline Shutdown and Startup**

Pipeline shutdown activities, primarily dewatering of pipeline sections, would be required prior to pipeline construction activities. Pipeline startup activities, including hydrostatic testing and disinfection, would be completed prior to operation of the new pipelines following installation. During construction activities, including pipeline shutdown and startup, the existing water services to wholesale customers would not be interrupted (Huey, 2012).

For pipeline dewatering, a customized pump would be used that implements manufacturer-designed noise controls. This pump would be similar to the Godwin NC150, which is designed to limit noise from pumping operations (Godwin Pumps of America, 2005).

During pipeline shutdown, water would be drained from sections of the pipelines and would be discharged to the nearest storm drain system, open channel, natural creek, or overland in accordance with the San Francisco RWQCB's Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008), which stipulates requirements related to discharges of drinking water from the SFPUC's water transmission system, including dechlorination requirements, flow rates, effluent limitations, and monitoring. For planned discharges such as for pipeline shutdown, water would be dechlorinated prior to discharge through the addition of treatment chemicals such as sodium bisulfite and calcium thiosulfate. Project-related discharges would typically occur over an approximately 1-week period, and flow rates would be controlled (typically less than or equal to 3,500 gallons per minute) using best management practices to limit potential erosion and discharge of sediment to receiving waters. The discharges would be from low spots along the transmission system and would be conducted in compliance with the effluent limitations, monitoring requirements, and reporting procedures of RWQCB Order No. R2-2008-0102, the SFPUC's Erosion Control Standard Operating Procedure (RMC Water and Environment, 2008), and the SFPUC's Policies and Procedures for Transmission System Discharges (SFPUC, 2009a).

As shown in Table 3-3, an estimated 5.4 million gallons (MG) of water would be discharged from the pipeline sections for dewatering. Dewatering for shutdown of SAPL2 would be completed concurrently at the Colma, South San Francisco, San Bruno North, and San Bruno South sites.

**Table 3-3  
Discharge Estimates**

<b>Project Site</b>	<b>Dewatering during Shutdown (million gallons)</b>	<b>Dewatering Post-Hydrostatic Testing (million gallons)</b>	<b>Dewatering Post-Disinfection (million gallons)</b>
<b>SAPL2</b>			
Colma Site	2.1 <sup>2</sup>	0.1	5.3 <sup>2</sup>
South San Francisco Site		0.1	
San Bruno South Site <sup>1</sup>		0.1	
<b>SAPL3</b>			
San Bruno South Site	2.4	0.2	6.0
<b>SSBPL</b>			
Millbrae Site	0.9	0.1	2.1
<b>Total</b>	<b>5.41</b>	<b>0.6</b>	<b>13.5</b>
Source: Roche, 2011b.			
Notes:			
<sup>1</sup> The shutdown, dewatering, and disinfection activities for the San Bruno North site (SAPL2) are the same as those activities for the San Bruno South site (SAPL2), and are therefore not included separately here.			
<sup>2</sup> Only one shutdown of SAPL2 would be performed to complete the work at the Colma, South San Francisco, and San Bruno South sites. Separate hydrostatic testing and dewatering would be performed for each site.			

Prior to startup, the SFPUC would perform hydrostatic testing and disinfection of the pipes. Hydrostatic testing, which is used to verify the structural integrity of the pipeline, entails filling sections of the pipeline with clean water, maintaining a test pressure in excess of normal operating pressures for a specified period of time (typically 8 hours), and then discharging the water. Hydrostatic testing would be completed independently for each segment of pipeline replaced, except for SAPL2 at both the San Bruno North and San Bruno South sites, which would be tested concurrently. An estimated total of 0.6 MG of hydrostatic test water would be discharged. The hydrostatic test water would be discharged to the nearest storm drain system, open channel, natural creek, or overland in accordance with the San Francisco RWQCB's Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008) or with the State Water Resources Control Board's (SWRCB) National Pollutant Discharge Elimination System (NPDES) General Permit (Order 2003-0003-DWQ) for low-threat water quality discharges to land.

After hydrostatic testing, and prior to distribution of water through the pipelines, disinfection would be completed. Disinfection of the pipeline typically requires 1 week and includes filling, disinfecting, flushing, dechlorinating, and taking water samples from the disinfected pipelines for bacteriological analysis and residuals management in compliance with the SFPUC's Sanitary

Work Practices and Disinfection (SFPUC, 2009b). Water from the disinfection process would then be discharged from the pipe sections to the nearest storm drain system, open channel, natural creek, or overland, in accordance with the San Francisco RWQCB's Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008) or with the SWRCB's NPDES General Permit (Order 2003-0003-DWQ) for low-threat water quality discharges to land. An estimated total of approximately 13.5 MG of water would be discharged due to disinfection activities. Disinfection of SAPL2 would be conducted after project activities at both the San Bruno North site and the San Bruno South site have been completed.

### **3.8.5 Dewatering**

During construction, dewatering may be required for groundwater, rainwater, or other water that enters the trenches and pits, such as from potential pipe leakage at upstream valves. Once this water is pumped out of the trench or pit, it would be stored, tested, and treated to meet required standards, then discharged to a nearby sanitary sewer, stormwater culvert, creek, or overland, similar to the initial pipeline shutdown performed by the SFPUC. Discharge rates would not exceed 3,500 gallons per minute per pipeline. The construction contractor would be responsible for requesting a permit from the appropriate wastewater agency prior to discharge to the sanitary sewer. Discharge of water from dewatering activities must be performed in accordance with the requirements of the Statewide General Construction Permit for Stormwater Discharges Associated with Construction Activity issued by the SWRCB, the SWRCB's NPDES General Permit (Order 2003-0003-DWQ) for low-threat water quality discharges to land, and municipal stormwater permits.

### **3.8.6 Construction Staging and Spoils Areas**

Potential construction staging and spoils areas have been identified for the proposed project, as shown on Figures 3-2 through 3-6 and as summarized in Table 3-4 on the following page. In addition to the staging areas at or near each site, a common staging area in South San Francisco would be used for the duration of the project construction at all of the PPSU sites. This staging area would be used for temporary construction offices (trailers) and worker parking. Trailers would be installed on the site and gravel would be placed in areas used for worker parking. No ground-disturbing activities related to the PPSU project are proposed within the common staging area.

The SFPUC and/or its contractor may need to secure construction easements or access and use agreements for the use of staging and spoils areas on private property that are not within the SFPUC ROW. These proposed temporary staging and spoils areas would be used for materials and equipment staging and laydown, worker vehicle parking, temporary construction equipment trailers and office trailers, and temporary stockpiling of spoils and construction debris. No spoils would be left in these areas after project construction is completed. Temporary fencing would be installed around these staging areas to prevent public access. See Section 3.8.8, Project Workforce and Construction Vehicle Parking, which describes the use of the staging and spoils areas for proposed employee parking.

**Table 3-4  
Proposed Construction Staging Areas**

<b>Project Site</b>	<b>Staging Area</b>	<b>Approximate Size (acres)</b>	<b>Project Activities</b>	<b>Estimated Duration of Use</b>
Colma	Kohl's Department Store parking lot	0.24	Laydown staging area and staff parking	2 months
	Vacant SFPUC ROW	0.53	Laydown staging area	2 months
	<b>Subtotal</b>	<b>0.77</b>		
South San Francisco	Pacific Supermarket parking lot	0.05	Laydown staging area and staff parking	3 months
	<b>Subtotal</b>	<b>0.05</b>		
San Bruno North	Vacant Caltrans property	0.14	Laydown staging area	1 month
	<b>Subtotal</b>	<b>0.14</b>		
San Bruno South	San Bruno Chinese Church parking lot	0.18	Laydown staging area	9 months
	Vacant SFPUC ROW along San Bruno Chinese Church	0.96	Spoils storage	9 months
	Peninsula High School parking lot	1.08	Laydown staging area and staff parking	9 months
	Vacant land along SFPUC ROW	0.09	Laydown staging area	9 months
	<b>Subtotal</b>	<b>2.31</b>		
Millbrae	City of Millbrae open space area	1.1	Laydown staging area	4.5 months <sup>1</sup>
	Green Hills Country Club/ City of Millbrae property	0.2	Laydown staging area and vehicle access and turnaround	3 months
	Green Hills Country Club	0.31	Laydown staging area	3 months
	<b>Subtotal</b>	<b>2.03</b>		
<b>Common Staging Area</b>	Vacant land within SFPUC ROW on Baden Valve Lot	<b>0.32</b>	Construction offices and staff parking	12 months <sup>2</sup>
<b>All Project Sites</b>	<b>Total</b>	<b>5.62</b>		

Source: G&E Engineering Systems, Inc., 2012; PPSU project analysis, URS.

Notes:

<sup>1</sup> The duration of staging at the City of Millbrae open space area includes both the tree removal phase and project construction.

<sup>2</sup> The common staging area would be used for the duration of construction at all PPSU sites.

ROW = right-of-way

SFPUC = San Francisco Public Utilities Commission

### 3.8.7 Site Access and Construction Vehicle Routes

Construction access routes would include both public roadways and unpaved routes. New and existing unpaved routes through public and private lands would be required for the Millbrae site, as described below. As described in Section 3.8.6, Construction Staging and Spoils Areas, the SFPUC and/or its contractor would coordinate with the applicable public agencies and private property owners to obtain the necessary temporary construction easements or other access and use agreements to facilitate access to the sites.

On-haul of construction materials, including shoring materials, new pipes, and trench backfill materials; and off-haul of construction debris, including old pipe, shoring, tree debris and vegetation, and excavated spoils, would require a total of approximately 7,060 truck trips. As shown in Table 3-2, the estimated trips per day would range from approximately two to eight trips at the San Bruno North site to approximately 21 to 118 truck trips at the San Bruno South site. Truck trips for the other sites would fall within that range, as shown in Table 3-2.

Primary access to the sites that comprise the project and the common staging area would be from I-280, as shown on Figure 3-1. Local access is described below, and shown on Figures 3-2 through 3-6.

**Colma Site.** Access would be from I-280 via the Serramonte Boulevard or Hickey Boulevard exits, continuing on Serramonte Boulevard, Collins Avenue, or Junipero Serra Boulevard. Access to the northern portion of the site is proposed to be through Kohl's Department Store parking lot off Serramonte Boulevard. Staging areas south of the construction zone would be accessed from Collins Avenue.

**South San Francisco Site.** Access would be from I-280 via the Westborough Boulevard exit, continuing on Westborough Boulevard to Camaritas Avenue and Arroyo Drive or West Orange Avenue. Access to the northern portion of the construction zone and staging area would be from Arroyo Drive, while access to the construction zone south of Westborough Boulevard would be from West Orange Avenue. The temporary staging and spoils area proposed at the Pacific Supermarket parking lot would be accessed from Camaritas Avenue.

**San Bruno North Site.** Access would be from I-280 via the Sneath Lane/San Bruno Avenue West exit to San Bruno Avenue West. Due to the location of one of the access pits, the right-hand eastbound lane of San Bruno Avenue West would be required to be closed for up to 2 weeks during construction. The right-turn-only lane on the I-280 northbound off-ramp adjacent to the site would be temporarily closed for a period of up to 10 days. Throughout the 1-month construction period at this site, a flagger would be positioned at the entrance to the site.

**San Bruno South Site.** Access would be from I-280 via the Sneath Lane/San Bruno Avenue West exit to Shelter Creek Lane, Whitman Way, and Courtland Drive. Pipeline replacement across Whitman Way (a two-lane roadway with on-street parking) would require temporary closure of one travel lane at a time for up to 21 days (for each of the two pipelines to be replaced at this location), necessitating alternate one-way traffic operations for approximately 180 feet. Flaggers would direct traffic during the lane closures.

Construction activities associated with the pipeline replacement would temporarily displace about 24 of the 33 parking spaces in surface parking Lot B at the Shelter Creek Condominium complex (see Figure 3-5). In addition, during pipeline construction, access to the remaining nine spaces in Lot B, the lower level of parking Garage 4, and surface parking Lot C, which is provided from a driveway off Shelter Creek Lane, would be restricted during construction hours; access would be provided via an alternative route from a driveway off of Whitman Way. At the end of each day when daytime construction activities are completed, the excavated area would be covered with steel plates, and access from Shelter Creek Lane would be restored.

**Millbrae Site.** Access would be from I-280 via on-ramp and off-ramps at Larkspur Drive, and the southbound on-ramp at Hillcrest Boulevard, continuing on Highway 35 or Larkspur Drive to Ridgewood Drive and Lomita Avenue. Access to Bertocchi Lane would be from Highway 101 via El Camino Real to Millwood Drive. Access to the Millbrae site would be from unpaved access routes, which would require improvements as described below. Access routes to the construction zone and staging areas could include the SFPUC ROW through the side yards of residences at 1100 and 1094 Ridgewood Drive; via Larkspur Drive to an access route through the Green Hills Country Club golf course; via Lomita Avenue to an access route through the City of Millbrae open space area north of the project area; and/or via Bertocchi Lane through private open space to the access route through the City of Millbrae open space area.

Proposed improvements for these access routes at the Millbrae site are described below.

- The access route through the City of Millbrae open space area may require improvements at several locations. Access from Lomita Avenue may require trimming of trees near the trail and filling of potholes on the trail. In addition, the trail may need to be widened in one location, requiring the removal of approximately four trees. Telephone lines that extend across the trailhead would be raised by the installation of temporary telephone poles along the existing telephone line alignment, to accommodate the height of trucks and equipment that would be accessing the trail from Lomita Avenue. To the extent feasible, and as determined by the City of Millbrae, the trail would be open to the public for use when it is not required for construction access.
- For access from a cul-de-sac at the end of Bertocchi Lane, improvements that may be required include removal and/or modification to a portion of an approximately 3-foot-high retaining wall, plating over the existing culvert, and compaction of soils. Some trimming of native oaks may also be required.
- For access from Larkspur Drive through the Green Hills Country Club golf course, improvements would include the removal of the chain link fence at the end of the Larkspur Drive cul-de-sac, and placement of steel plates over the cement culvert.
- For access through the SFPUC ROW from Ridgewood Drive, existing small structures, fences, landscaping, and other encroachments would be removed from the side yards of 1100 and 1094 Ridgewood Drive prior to commencement of construction. A permanent retaining wall with approximately 10-foot footings would be constructed under the existing back yard fence at 1094 Ridgewood Drive to shore up the slope prior to excavation of the pipeline.

**Common Staging Area.** Access would be from I-280 via the Westborough Boulevard exit, continuing on Westborough Boulevard to El Camino Real to West Orange Avenue. Ingress/egress to the SFPUC's Baden Valve Lot is from a driveway off West Orange Avenue.

### 3.8.8 Project Workforce and Construction Vehicle Parking

The workforce at each site is anticipated to consist of one crew, with up to 20 personnel. A maximum of four sites would be under construction simultaneously, as shown on Figure 3-12, requiring up to 80 personnel. As described above, staff parking would be located at the common staging area for the duration of PPSU construction. Additionally, construction staff parking would be located in paved staging and spoils areas or on surface streets at the sites.

### 3.8.9 Construction Schedule and Equipment

Construction is estimated to begin in 2014 and end in 2015, with a total duration of approximately 12 months. The duration of construction activities at each site would range from 1 month to 9 months, as shown in Table 3-5.

**Table 3-5  
Construction Duration at Each Site**

<b>Project Site</b>	<b>Construction Duration</b>
Colma Site (SAPL2)	2 months
South San Francisco Site (SAPL2)	3 months <sup>1</sup>
San Bruno North Site (SAPL2)	1 month <sup>2</sup>
San Bruno South Site (SAPL2) and (SAPL3)	9 months
Millbrae Site (SSBPL)	4.5 months <sup>3</sup>

Source: G&E Engineering Systems, Inc., 2012.

Notes:

- <sup>1</sup> The 3-month duration of construction at South San Francisco includes approximately 2 weeks required for tree removal, which will be completed separately and in advance of the 2.5-month construction at the site.
- <sup>2</sup> The shutdown, dewatering, and disinfection activities for the San Bruno North site (SAPL2) are the same as those activities for the San Bruno South site (SAPL2) and are, therefore, not included in the construction duration.
- <sup>3</sup> The 4.5-month duration of construction at Millbrae includes the 1.5 months required for tree removal, which will be completed separately and in advance of the 3-month construction at the site.

As shown on Figure 3-12, construction activities would occur concurrently at multiple sites. Construction is anticipated to proceed at the South San Francisco and Millbrae sites first, with the removal of the trees in the SFPUC ROW during the fall (October to November). During the winter season (November through March), construction is anticipated to occur at the following sites: Colma, South San Francisco, San Bruno North, and San Bruno South (SAPL2 only). Construction at the San Bruno South (SAPL3 only) and Millbrae sites is anticipated to occur during spring/summer season (April through August). Approximately 1 month of construction closeout activities would occur, from August 2015 through September 2015.





Construction activities would occur primarily during weekdays, from 7 a.m. to 5 p.m. Weekend work may be required on a limited basis, although the nature of such work is not currently known. Weekend construction hours would be the same as those described for weekdays. Nighttime construction may be required at the San Bruno North site. The vibratory rollers and pile drivers would not be used during nighttime hours (10 p.m. to 7 a.m.). Nighttime activities would also include limited 24-hour pumping for dewatering of the pipelines at a few locations. For SSBPL, pumping would be required at four locations in Millbrae: near the intersection of Helen Drive and Banbury Lane; near the 5th green on the Green Hills Country Club; Millwood Drive and Barcelona Drive; and Millwood Drive and Magnolia Avenue (at the SFPUC's Capuchino Valve Lot). For SAPL2, pumping would be required for dewatering at a single location in the project construction zone on Whitman Way by Park Plaza Apartments. For SAPL3, pumping would be required at two locations: near the Shelter Creek Condominiums driveway on Shelter Creek Lane (near the project site); and farther north on Shelter Creek Lane, also adjacent to the Shelter Creek Condominiums. See Section 5.7, Noise, for further details and an analysis of the project's consistency with local noise ordinances and potential nighttime noise impacts. Figure 5.7-6, provided therein, shows the proposed dewatering locations.

There would be three phases of construction activities, with initial tree removal activities at a few sites, as shown in Table 3-6 on the following page. Initial tree removal would be completed at the South San Francisco and Millbrae sites, where dense groves of trees are present in the SFPUC ROW. The first construction phase would entail shutdown and dewatering of the pipeline and mobilization at the site, such as installation of fencing, grubbing, and preparation of laydown areas. The second phase would include excavation; pipeline removal and installation; hydrostatic testing; and backfill, landscaping, and site restoration. The third phase would include disinfection of the pipelines.

## **3.9 Operations and Maintenance**

Future operations and maintenance would be the same as existing operations and maintenance activities, and would continue to entail yearly visual inspections. Within the first 2 years after final construction, and approximately every 10 to 15 years thereafter, inspections would entail physically entering the manholes for visual inspections inside the pipelines. On an annual basis, water may be discharged from the manholes, as required by other SFPUC projects or inspections.

## **3.10 Required Permits**

In addition to the California Environmental Quality Act (CEQA), the proposed project would be subject to compliance and permitting requirements under federal, State, and local regulations. The anticipated agency permits/approvals necessary for the implementation of the proposed project are listed below. This Draft EIR is intended to provide the information and environmental analysis necessary to assist permitting agencies (also known under CEQA as "responsible agencies") in considering the approvals required for the proposed project.

### **3.10.1 Federal**

The following federal approval and consultation would be required for the proposed project, but these are not responsible agencies under CEQA:

**Table 3-6  
Typical Construction Activities and Equipment**

<b>Construction Activities</b>	<b>Estimated Duration</b>	<b>Anticipated Construction Equipment</b>
Tree Removal (South San Francisco and Millbrae sites only; at other sites, only a few tree removals may be required)	Approximately 2 months <sup>1</sup>	Chain saw Brush chipper Whole tree chippers Rubber tire skidder and track skid-steer loader Haul truck Flatbed truck
Shutdown and dewatering	Approximately 1 week	Pumps and Hoses Generator Pickup Truck Baker Tanks
Mobilization <sup>2</sup>	Approximately 2 weeks	Flatbed trucks Haul trucks Pickup trucks
Shoring and excavation, pipeline removal and installation, intermittent dewatering, hydrostatic testing, backfill and restoration	Approximately 2 to 3 months per pipeline depending on site <sup>3</sup>	Backhoe-Loader Cement/Mortar Mixer Compactor <sup>4</sup> Concrete Truck with Pump Crane (with hydraulic or diesel impact hammer attachments) <sup>4</sup> Dozer Excavator Forklift Grader Generator Loader Pump Street Sweeper Tractor Trucks (haul, water, flatbed, dump, pickup, various off-road) Welding Set Winch
Disinfection	Approximately 2 weeks	Pumps and Hoses Generator Pickup Truck Baker Tanks

Source: Manders, 2012.

Notes:

- <sup>1</sup> Tree removal activities would occur at the South San Francisco and Millbrae sites. Estimated duration for tree removal activities would be 2 months, inclusive of both the South San Francisco and Millbrae sites.
- <sup>2</sup> Mobilization would occur concurrently with shutdown and dewatering.
- <sup>3</sup> Segments of two pipelines (SAPL2 and SAPL3) would be sequentially replaced at the San Bruno South site; work at the other sites would only involve one pipeline.
- <sup>4</sup> Compactors (such as vibratory rollers) and cranes with impact hammer attachments (used for pile driving) would not be used during nighttime hours (10 p.m. to 7 a.m.).

- **U.S. Army Corps of Engineers** – Section 404 Clean Water Act permit; and
- **U.S. Fish and Wildlife Service** – Federal Endangered Species Act Section 7 consultation.

### 3.10.2 State

The following State agency approvals would be required for the proposed project:

- **California State Water Resources Control Board** – Section 401 Water Quality Certification (or waiver); compliance with the NPDES Construction General Permit for stormwater discharges associated with construction activities; and compliance with the NPDES General Permit for Low-Threat Water Quality Discharges to Land (e.g., for discharge of hydrostatic test water from pipes or groundwater from trenches);
- **San Francisco Bay Regional Water Quality Control Board** – Compliance with the SFPUC's existing NPDES permit for planned, unplanned, and emergency discharges from the drinking water transmission system;
- **Caltrans** – Encroachment and access permits;
- **California Department of Fish and Wildlife** – Section 1602 Streambed Alteration Agreement; for project construction activities that would substantially divert or obstruct the natural flow of any stream; substantially change or use any material from the bed, channel, or bank of any stream; or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any stream; and
- **State Historic Preservation Office** – Compliance with Section 106 of the National Historic Preservation Act.

### 3.10.3 Local

The following local agency actions, permits, or approvals would be required for the proposed project:

- **San Francisco Planning Commission** – Certification of the Final EIR;
- **SFPUC** – Review of the Final EIR, approval of the proposed project, and adoption of CEQA findings and mitigation monitoring and reporting program;
- **San Francisco Board of Supervisors** – Consideration of any appeals of the Planning Commission Final EIR certification, adoption of CEQA findings, appropriation of any funding related to implementation of the project, and approval of acquisition of property rights or interests, if necessary;
- **Various cities** – Haul permits, encroachment permits, temporary construction easements, and leases or other agreements as needed in connection with project construction; and
- **San Mateo Union High School District** – Memorandum of Agreement with school district.

### 3.10.4 Other Actions

In addition to the federal, State, and local permits and approvals described above, implementation of the proposed project would require temporary construction easements or other access and use agreements from private property owners and agencies for use of proposed staging and spoils areas, and in connection with project construction.

## 3.11 References

Fletcher, Angelic, 2012. Personal communication between Angelic Fletcher, Kohl's Department Store Manager, and Mara Feeney, Mara Feeney & Associates. September 20.

G&E/GTC Joint Venture, 2011. CUW 36702 Peninsula Pipeline Seismic Upgrade Project, Final Alternatives Analysis Report. September.

G&E Engineering Systems, Inc., 2012. CUW 36702 Peninsula Pipeline Seismic Upgrade Project, Final Conceptual Engineering Report. April.

Godwin Pumps of America, 2005. Critically-Silenced Dri-Prime Pumps Engineering Data, Engineering Catalog, Issue 4.

GTC (Geotechnical Consultants, Inc.), 2011a. Final Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade, CS-101, SF10016B, March.

GTC (Geotechnical Consultants, Inc.), 2011b. Final Addendum to the Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade, CS-101, SF10016C. November.

GTC (Geotechnical Consultants, Inc.), 2011c. Final Addendum to the Geotechnical Interpretive Report, Peninsula Pipelines Upgrade, CS-101, SF10016C, November.

Huey, Calvin, 2012. Personal correspondence with URS, Corporation. Project Manager for PPSU. SFPUC Infrastructure Division. January 20.

Kennedy/Jenks Consultants, 2012. Technical Memorandum – Review of Final Conceptual Engineering Report, Peninsula Pipelines Seismic Upgrade Project. August 28.

Manders, Heather, 2012. Personal e-mail communication between Heather Manders, PPSU Project Engineer, SFPUC and Hannah Young, URS Regarding Construction Equipment. June 22.

Roche, Anna, 2011a. Personal e-mail communication between Anna Roche, PPSU Environmental Project Manager, SFPUC and Hannah Young, URS Regarding Excavation Volumes and Truck Trips. November 8.

Roche, Anna, 2011b. Personal e-mail communication between Anna Roche, PPSU Environmental Project Manager, SFPUC and Hannah Young, URS Regarding Discharge Estimates. November 14.

RMC Water and Environment, 2008. Water Transmission NPDES Technical Support Services, Erosion Control Standard Operating Procedure. Technical Memorandum Reference No. 0092-004.09. July 16.

RWQCB (Regional Water Quality Control Board), 2008. Waste Discharge Requirements For The San Francisco Public Utilities Commission, San Francisco Public Utilities Commission Drinking Water Transmission System, Order No. R2-2008-0102, NPDES No. Ca0038857. Adopted December 10, 2008.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008a. San Francisco Public Utilities Commission Water System Improvement Program. Final EIR (Case No. 2005.0159E, State Clearinghouse No. 200509206). San Francisco Planning Commission. Motion No. 17734, October 30.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008b. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

SFPUC (San Francisco Public Utilities Commission), 2007a. SFPUC Standard Construction Measures to be included in Construction Contracts and Project Implementation. Susan Leal, SFPUC General Manager, February 27.

SFPUC (San Francisco Public Utilities Commission), 2007b. Right-of-Way Encroachment Policy, 2007.

SFPUC (San Francisco Public Utilities Commission), 2007c. Right-of-Way Integrated Vegetation Management Policy. February.

SFPUC (San Francisco Public Utilities Commission), 2009a. Water Supply and Treatment Division Policies and Procedures Transmission System Discharges. Last revision August 21.

SFPUC (San Francisco Public Utilities Commission), 2009b. Technical Specifications Division 01: General Requirements 01565: Sanitary Work Practices And Disinfection. October 1.

State of California. California Code of Regulations (CCR), Chapter 4, Section 1541, Excavation, General Requirements.

Young, Sam, and Manders, Heather, n.d. SFPUC Infrastructure Division Memorandum: Review Summary of Final Conceptual Engineering Report Peninsula Pipelines Seismic Upgrade Project.

# CHAPTER 4

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## Plans and Policies

### 4.1 Overview

Pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15125(d), this section describes land use plans and policies and the manner in which they apply to the Peninsula Pipelines Seismic Upgrade (PPSU) project, and then analyzes the project's consistency with applicable plans.

As described in Chapter 3, Section 3.10, Required Permits, the San Francisco Planning Commission is the agency responsible for certifying the environmental impact report (EIR) for the proposed project. The San Francisco Public Utilities Commission (SFPUC) is responsible for adopting the CEQA findings and deciding whether to approve the project.

Applicable plans and policies addressed in this chapter are organized by agency, and include:

- **City and County of San Francisco.** San Francisco General Plan, Accountable Planning Initiative, San Francisco Sustainability Plan, and San Francisco Municipal Green Building Program;
- **San Francisco Public Utilities Commission.** Water Enterprise Environmental Stewardship Policy, Right-of-Way Integrated Vegetation Management Policy, and Right-of-Way Encroachment Policy; and
- **Local Jurisdictions.** Town of Colma, cities of South San Francisco, San Bruno, and Millbrae, and San Mateo County.

Sections 5.2 through 5.19 of Chapter 5, Environmental Setting, Impacts, and Mitigation Measures, describe pertinent resource-specific plans (e.g., air quality management plans are discussed in Section 5.8, Air Quality; and plans to reduce greenhouse gas emissions are discussed in Section 5.9, Greenhouse Gas Emissions).

### 4.2 Plans and Policies Relevant to the PPSU Project

#### 4.2.1 City and County of San Francisco Plans and Policies

The City and County of San Francisco's (CCSF) land use plans and policies are primarily applicable to projects within the jurisdictional boundaries of the City of San Francisco, although

in some cases they may apply to projects outside of San Francisco. The SFPUC is guided by the San Francisco City Charter, and other City plans and policies, including: the San Francisco General Plan, which sets forth the comprehensive, long-term land use policy for San Francisco; the San Francisco Accountable Planning Initiative, which serves as the basis for resolving inconsistencies in the San Francisco General Plan; and the San Francisco Sustainability Plan, which addresses the long-term sustainability<sup>1</sup> of the City.

The SFPUC has adopted various plans and policies that further direct its activities, including the Water Enterprise Environmental Stewardship Policy, Right-of-Way Integrated Vegetation Management Policy, and Right-of-Way Encroachment Policy.

#### **4.2.1.1 Extraterritorial Lands**

The CCSF has authority (San Francisco City Charter, Section 4.112) over the management, use, and control of land it owns outside of the City, subject to SFPUC's exclusive charge of the construction, management, use, and control of City water supplies and utilities (San Francisco Charter, Section 8B.121). Accordingly, the CCSF gives consideration to its own plans and policies on its extraterritorial lands, when applicable.

Under the provisions of California Government Code Section 53090 et seq., the SFPUC receives intergovernmental immunity from the planning and building ordinances of other cities and counties. The SFPUC, however, seeks to work cooperatively with local jurisdictions where CCSF-owned facilities are sited outside of San Francisco, and to avoid conflicts with local land use plans and building and zoning codes, where possible. Also, the SFPUC is required under Government Code Section 65402(b) to inform local governments of its plans to construct projects or acquire or dispose of its extraterritorial property. The local governments have a 40-day review period to determine project consistency with their general plans. Under this requirement, the cities' or counties' determinations of consistency are advisory to the SFPUC rather than binding.

#### **4.2.1.2 San Francisco General Plan**

The San Francisco General Plan (CCSF, 2009) sets forth the comprehensive, long-term land use policy for San Francisco. One of the basic goals of the general plan is "coordination of the growth and development of the City with the growth and development of adjoining cities and counties and of the San Francisco Bay Region." The general plan consists of ten issue-oriented plan elements: Air Quality, Arts, Commerce and Industry, Community Facilities, Community Safety, Environmental Protection, Housing, Recreation and Open Space, Transportation, and Urban Design. The plan elements that may be relevant to the project are briefly described below.

**Air Quality Element** – This element promotes the goal of clean air planning through objectives and policies aimed at adhering to air quality regulations.

**Commerce and Industry Element** – This element serves as a guide for decisions related to economic growth and change in San Francisco. The three goals of the element are: continued

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<sup>1</sup> Sustainability or sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their needs.



economic vitality; social equity with respect to employment opportunities; and environmental quality. These goals address general citywide objectives, as well as objectives for each of the major sectors of San Francisco's economy.

**Community Safety Element** – This element addresses the potential for geologic, structural, and nonstructural hazards to affect City-owned structures and critical infrastructure. The goal of this element is to protect human life and property from hazards.

**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, and reflects San Francisco's responsibility to provide a permanent, clean water supply to meet present and future needs, and to maintain an adequate water-distribution system.

**Urban Design Element** – This element promotes the preservation of landmarks and structures with notable historic, architectural, or aesthetic value, and seeks to balance development with its site's natural environmental and visual features.

### 4.2.1.3 San Francisco 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 City Planning Code to establish the following eight priority policies as a preamble to the San Francisco General Plan (CCSF, 1986). The priority policies serve as the basis upon which inconsistencies in the general plan are to be resolved. Of the eight priority policies listed below, only the sixth policy is relevant to the proposed project:

1. That existing neighborhood-serving retail uses shall be preserved and enhanced, and future opportunities for resident employment in, and ownership of, such businesses enhanced;
2. That existing housing and neighborhood character shall be conserved and protected in order to preserve the cultural and economic diversity of our neighborhoods;
3. That the City's supply of affordable housing be preserved and enhanced;
4. That commuter traffic shall not impede San Francisco Municipal Railway transit service or overburden our streets or neighborhood parking;
5. That a diverse economic base shall be maintained by protecting our industrial and service sectors from displacement due to commercial office development, and that future opportunities for resident employment and ownership in these sectors be enhanced;
6. That the City achieves the greatest possible preparedness to protect against injury and loss of life in an earthquake;
7. That landmarks and historic buildings be preserved; and
8. That our parks and open space and their access to sunlight and vistas shall be protected from development.

#### **4.2.1.4 San Francisco Sustainability Plan**

The San Francisco Board of Supervisors endorsed the San Francisco Sustainability Plan in 1997 (CCSF, 1997), but has not committed the CCSF to perform the actions addressed in the plan. The plan serves as a blueprint for sustainability, with many of its individual proposals requiring further development and public comment. The underlying goals of the plan are to maintain the physical resources and systems that support life in San Francisco, and to create a social structure that will allow such maintenance. The plan is divided into fifteen topic areas, ten that address specific environmental issues (air quality; biodiversity; energy, climate change, and ozone depletion; food and agriculture; hazardous materials; human health; parks, open spaces and streetscapes; solid waste; transportation; and water and wastewater), and five that are broader in scope and cover many issues (economy and economic development; environmental justice; municipal expenditures; public information and education; and risk management). The topic “water” includes goals addressing water reuse, water quality, water supply, groundwater supply, and infrastructure. Each topic area in the plan contains a set of indicators to be used over time in determining whether San Francisco is moving in a sustainable direction in that particular area.

#### **4.2.2 SFPUC Plans and Policies**

##### **4.2.2.1 Water Enterprise Environmental Stewardship Policy**

Adopted in June 2006, the Water Enterprise Environmental Stewardship 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 (SFPUC, 2006). It also addresses rights-of-way (ROWs) and properties in urban surroundings under SFPUC management. The policy includes the following:

- The SFPUC will proactively manage the watersheds under its responsibility in a manner that maintains the integrity of the natural resources, restores habitats for native species, and enhances ecosystem function.
- To the maximum extent practicable, the SFPUC will ensure that all operations of the SFPUC water system (including water diversion, storage, and transport); construction and maintenance of infrastructure; land management policies and practices; purchase and sale of watershed lands; and lease agreements for watershed lands protect and restore native species and the ecosystems that support them.
- ROWs and properties in urban surroundings under SFPUC management will be managed in a manner that protects and restores habitat value where available, and encourages community participation in decisions that significantly interrupt or alter current land use in these parcels.

The Environmental Stewardship Policy calls for the update of the Watershed and Environmental Improvement Program, as well as specific integration of this policy into individual infrastructure projects.

#### 4.2.2.2 SFPUC Strategic Sustainability Plan

SFPUC's Strategic Sustainability Plan (SFPUC, 2011) provides a system for planning, managing, and evaluating SFPUC-wide performance that takes into account the long-term economic, environmental, and social impacts of business activities.

The five long-term goals of the plan are to promote a green and sustainable city; provide high-quality services; engage SFPUC's public and invest in its communities; plan for the future; and invest in SFPUC's people.

The applicable objectives pertaining to the proposed project are to optimize maintenance for water, wastewater, and power assets (objective j); improve capital facilities through construction (objective k); and advance security, emergency planning and response (objective r).

#### 4.2.2.3 Right-of-Way Integrated Vegetation Management Policy

The SFPUC adopted its Right-of-Way Integrated Vegetation Management Policy in February 2007 to manage vegetation that poses a threat or hazard to the system's operation, maintenance, and infrastructure. The roots of large woody vegetation can damage transmission pipelines by causing corrosion of the outer easements. Trees and other vegetation directly adjacent to pipelines can also make emergency and annual maintenance difficult, hazardous, and expensive, and can increase concerns for public safety. Fire danger within the SFPUC ROWs is also a concern. The SFPUC is required to comply with local fire ordinances, which require that existing vegetation be identified, reduced, and managed to prevent potential disruption to fire-protection services. One of the other objectives of this plan is to reduce and eliminate as much as practicable the use of herbicides on vegetation within the ROW. Specific elements of the ROW Integrated Vegetation Management Plan address the management and removal of vegetation, annual grasses, and weeds within the SFPUC ROW, and the management and removal of vegetation and trees on land leased or permitted by the SFPUC (SFPUC, 2007a).

#### 4.2.2.4 Right-of-Way Encroachment Policy

The SFPUC approved a revised ROW Encroachment Policy in February 2007 that clarifies how it will handle encroachments into its ROWs (SFPUC, 2007b). The policy provides overall guidance and procedures for prioritizing and implementing encroachment removal efforts. Specifically, removal efforts will focus on encroachments that would:

- Endanger water, sewer, or electrical transmission lines and appurtenances;
- Impair access to facilities for emergency repair, maintenance, or operational activity;
- Be detrimental to the efficient and effective maintenance of limited vegetation in the ROW, in accordance with the ROW Integrated Vegetation Management Plan described above;
- Cause an obstruction to the inspection and monitoring or equipment or the collection of land survey, corrosion control, and water quality data; or
- Increase liability of the SFPUC.

### 4.2.3 Other Land Use Plans and Policies

This section describes the local general plans adopted by other jurisdictions that would be applicable to the project.

The proposed project is located in the Town of Colma and cities of South San Francisco, San Bruno, and Millbrae, and in unincorporated San Mateo County. Although the SFPUC is not legally bound to the land use plans and policies of other jurisdictions, non-CCSF land use plans and policies are discussed in this section to the extent that they provide pertinent planning information with respect to evaluating the project under CEQA. For example, this EIR addresses aspects of compatibility with local land use planning if the project would:

- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts or bicycle racks), or would cause a substantial increase in transit demand that cannot be accommodated by existing or proposed transit capacity or alternative travel modes (analyzed in Section 5.6, Transportation and Circulation);
- Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (analyzed in Section 5.7 Noise);
- For a project located within an area covered by an airport land use plan (or within 2 miles of a public airport or public use airport where such a plan has not been adopted), expose people residing or working in the project area to excessive noise levels (analyzed in Section 5.7, Noise);
- Conflict with any local policies or ordinances protecting biological resources, such as a tree-preservation policy or ordinance (analyzed in Section 5.14, Biological Resources);
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (analyzed in Section 5.14, Biological Resources); or
- 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 (analyzed in Section 5.15, Geology and Soils).

#### 4.2.3.1 San Mateo County

The South San Francisco site is located at the intersection of West Orange Avenue and Westborough Boulevard (see Figure 3-3 in Chapter 3, Project Description), and is partially in unincorporated San Mateo County and partially in the City of South San Francisco; the portion of the project site that is south of Westborough Boulevard is located in unincorporated San Mateo County. The San Mateo County General Plan (San Mateo County, 1986) governs land use planning and development in unincorporated San Mateo County.

The General Plan promotes the conservation, enhancement, protection, maintenance, and managed use of the county's vegetative, water, fish, and wildlife resources, and seeks to balance open space, rural uses, and urban development within the county.

The General Plan encourages replacement of vegetation and trees removed during construction, as well as the placement of utilities underground to decrease visual impacts. The General Plan also recognizes the need to develop critical public facilities, such as water supply facilities, that can minimize service interruptions during emergencies. Policies pertaining to historical and archaeological resources state that construction should be temporarily suspended in the event of a discovery, and natural hazards policies address the protection of public utilities from the effects of natural disasters. The General Plan addresses the use of noise-reduction techniques during construction. It also recognizes SFPUC watershed lands as unique areas that should be protected for open space, wildlife, water supply, and recreational resources. Minimizing traffic congestion on recreational access routes is also addressed. Specific policies that pertain to the proposed project are listed, where relevant, in Chapter 5, Environmental Setting, Impacts and Mitigation Measures.

#### **4.2.3.2 Town of Colma**

The Colma site is located west of El Camino Real and south of Serramonte Boulevard (see Figure 3-2 in Chapter 3, Project Description) in Colma. The Town of Colma General Plan (Town of Colma, 1999) provides a comprehensive, long-term plan for the development of the Town and addresses circulation, open space, conservation, housing, noise, open space, conservation, and safety within the Town. The General Plan is intended to be used as the principal policy document guiding development matters. The community goals are aimed at sustaining economic, environmental, and social attributes of the Town. Emphasis is placed on the important greenbelt theme of Colma, enhancing its residential environment, and promoting its status as a regional center for cemeteries and commerce. Specific policies that pertain to the proposed project are listed, where relevant, in Chapter 5, Environmental Setting, Impacts and Mitigation Measures.

#### **4.2.3.3 City of South San Francisco**

The South San Francisco site is located at the intersection of West Orange Avenue and Westborough Boulevard (see Figure 3-3 in Chapter 3, Project Description) in South San Francisco; also, as described above, a portion of the site is located in unincorporated San Mateo County. The City of South San Francisco General Plan (City of South San Francisco, 2009) outlines long-range physical and economic development and resource conservation that reflect the aspirations of the community and provides strategies and specific implementing actions that would accomplish these goals. It establishes a basis for determining whether specific development proposals and public project are in consistent with the City's policies and standards. The General Plan also provides guidance to help enhance the character of the community, preserve and enhance critical environmental resources, and minimize hazards. The plan addresses issues such as neighborhood-oriented development; economic development and diversification; increased connectivity and accessibility, redevelopment of older industrial areas; land use/transportation correlation and promotion of transit; enhancement of community character; and sustainability. Specific policies that pertain to the proposed project are listed, where relevant, in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures.

#### **4.2.3.4 City of San Bruno General Plan**

There are two project sites located in the City of San Bruno: San Bruno North site located at Interstate 280 and San Bruno Avenue West (see Figure 3-4 in Chapter 3, Project Description), and San Bruno South located near Whitman Way and Shelter Creek Lane (see Figure 3-5 in Chapter 3, Project Description). The City of San Bruno General Plan (City of San Bruno, 2008) reflects the long-range vision for physical and economic development in the City. The plan promotes balanced development; fosters development of transit-supportive uses adjacent to the new and planned public transit stations; includes policies for expanding the affordable housing stock and promoting mixed-use development; and outlines strategies for conserving established neighborhoods, revitalizing aging commercial and industrial areas, and improving bicycle and pedestrian connections between residences, activity centers, and transit stations. The City of San Bruno General Plan identifies specific implementing policies addressing the development and redevelopment of land, provision of economic development, improvement of the circulation and transportation system, preservation of parks and open spaces, conservation of existing natural resources, control of noise and protection of life and property from hazards, provision of adequate public services, facilities and infrastructure, and provision of housing for current and future residents. Specific policies that pertain to the proposed project are listed, where relevant, in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures.

#### **4.2.3.5 City of Millbrae General Plan**

The Millbrae site is located near the intersection of Ridgewood Drive and Banbury Lane (see Figure 3-6 in Chapter 3, Project Description) in the City of Millbrae. The City of Millbrae General Plan (City of Millbrae, 1998) reflects the long range vision for physical development in the City. The plan addresses issues related to sustaining the City of Millbrae's quality of life, including protecting residential neighborhoods and environmental resources; balancing future development with the provision of adequate services, facilities and infrastructure; collaborating on regional planning efforts; meeting affordable housing needs; and providing for economic development. The City of Millbrae General Plan identifies policies and programs addressing the development and redevelopment of land, preservation of parks and open spaces, provision of housing for current and future residents, conservation of natural resources, improvement of the circulation and transportation system, control of noise and protection of life and property from hazards. Specific policies that pertain to the proposed project are listed, where relevant, in Chapter 5, Environmental Setting, Impacts, and Mitigation Measures.

### **4.3 Plan Consistency Evaluation**

#### **4.3.1 Approach to Analysis**

The evaluation of plan consistency is based on the applicability of relevant land use plans and policies described above to the PPSU project. An evaluation was undertaken to determine whether any inconsistencies existed between the project and these plans and policies, in accordance with Section 15125(d) of the CEQA Guidelines. However, because the policy language found in a land use plan is susceptible to varying interpretations, it is often difficult to determine whether a project is consistent or inconsistent with such policies. Furthermore, because

land use plans often contain numerous policies emphasizing differing legislative goals, a project may be consistent with the general plan, taken as a whole, even though it may appear to be inconsistent with specific policies within the plan. The board or commission that enacted the plan or policy generally determines the meaning of such policies; these interpretations prevail if they are “reasonable,” even though other reasonable interpretations may also exist. In light of these considerations, the consistency evaluation in this EIR is intended to advise decision-makers as to whether the project is consistent with applicable land use plans and policies. Direct and indirect physical impacts resulting from project implementation are addressed in the appropriate technical sections of the EIR.

As stated above, the San Francisco General Plan and San Francisco Sustainability Plan are primarily applicable to projects located in San Francisco; however, they may also be applicable to projects on CCSF extraterritorial lands.

### **4.3.2 Consistency with San Francisco Plans and Policies**

Consistency of the PPSU with the plans and policies of San Francisco, the SFPUC, and local jurisdictions is described below.

#### **4.3.2.1 San Francisco General Plan**

The San Francisco General Plan sets forth the CCSF’s comprehensive, long-term land use policy and, therefore, is primarily applicable to projects within its jurisdictional boundaries. The proposed project, which is located outside the CCSF boundaries, would improve the seismic reliability of transmission pipelines between the Harry Tracy Water Treatment Plant and the Capuchino, Baden, and San Pedro Valve Lots in the event of a major earthquake on the San Andreas Fault. The proposed project consists of seismic upgrades to three SFPUC water transmission pipelines—San Andreas Pipeline No. 2, San Andreas Pipeline No. 3, and Sunset Supply Branch Pipeline—at five locations on the San Francisco Peninsula. The upgrades would improve segments of pipelines to increase reliability during potential seismic events.

Consistent with the General Plan’s air quality objectives, the proposed project would implement dust control and other emission reducing measures to reduce construction air quality impacts and adhere to air quality regulations. The project would contribute to the economic vitality of San Francisco in support of the General Plan’s goals by ensuring a continued reliable water supply. By seismically retrofitting the city’s critical infrastructure, the project would support General Plan goals pertaining to the protection of human life and protecting property from hazards. The proposed project would be consistent with policies pertaining to providing a clean water supply and maintaining an adequate water distribution system. Therefore, the project would support the health and safety of SFPUC water customers within the City and within the region. Overall, the project would be consistent with the spirit and intent of the San Francisco General Plan.

The compatibility of the project with San Francisco General Plan policies that do not relate to physical environmental issues will be considered by decision-makers as part of their decision whether to approve or disapprove the proposed project. Any potential conflicts identified as part of the process would not alter the physical environmental effects of the proposed project.

### **4.3.2.2 San Francisco Accountable Planning Initiative**

Of the eight Priority Policies, Policy 6 (concerning earthquake preparedness) is relevant to the proposed project. The other policies are not relevant because the project: would be constructed outside of San Francisco and would not affect San Francisco neighborhoods; would not affect or create the need for affordable housing; would not result in commuter traffic; would not result in commercial office development or employment; would not affect landmarks or historic buildings; and would not affect open space.

- Maximization of earthquake preparedness: One of the primary goals of the proposed project is to provide seismic improvements to existing facilities, which would in turn improve the seismic reliability of the SFPUC water supply system.

The proposed project would be consistent with Policy 6 as it would result in seismic upgrades to the water transmission system and protect against losses in an earthquake. Therefore, on the whole, the proposed project would be consistent with the San Francisco Priority Policies.

### **4.3.2.3 San Francisco Sustainability Plan**

The San Francisco Sustainability Plan was developed for the purpose of addressing San Francisco's long-term environmental sustainability. The proposed project would increase the overall reliability of the regional water system for SFPUC water users and be consistent with goals to maintain physical resources. The proposed project would also be consistent with goals related to ensuring an adequate water supply system.

## **4.3.3 Consistency with SFPUC Plans and Policies**

### **4.3.3.1 Water Enterprise Environmental Stewardship Policy**

The implementation strategies of the Water Enterprise Environmental Stewardship Policy specifically require the integration of the policy into individual WSIP facility improvement projects such as the PPSU project. As discussed in Sections 5.14, Biological Resources, and 5.16, Hydrology and Water Quality, significant impacts on natural resources, habitats, or ecosystems could be mitigated to a less-than-significant level through mitigation measures identified in this EIR. Therefore, the proposed project would be consistent with the underlying goals of the Water Enterprise Environmental Stewardship Policy.

### **4.3.3.2 SFPUC Strategic Sustainability Plan**

The proposed project would improve the reliability of transmission pipelines between Harry Tracy Water Treatment Plant and the Capuchino, Baden, and San Pedro Valve Lots in the event of a major earthquake on the San Andreas Fault, which would be consistent with Strategic Sustainability Plan objectives of optimizing maintenance for water (objective j) and improving capital facilities through construction (objective k). By optimizing maintenance of water infrastructure and improving existing capital facilities (the pipelines), the project would ensure that, in the event of an emergency, transmission pipelines would be able to convey water to communities. Additionally, the seismic upgrade of the PPSU project constitutes advanced



preparation for emergencies; it would be consistent with the objectives of the Strategic Sustainability Plan, which call for advanced security, emergency planning, and response (objective r). Therefore, the proposed project would be consistent with this plan.

#### **4.3.3.3 Right-of-Way Integrated Vegetation Management Policy**

Part of the overall goal of the Right-of-Way Integrated Vegetation Management Policy is to manage vegetation that poses a threat or hazard to the regional water system's operation, maintenance, and infrastructure. After project construction, topsoil would be replaced in disturbed areas and would be re-vegetated with native plant seed mix. While some tree removal could be required at most sites, more extensive tree removal efforts would occur at the South San Francisco and Millbrae sites to allow access to the pipeline. In accordance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy, trees generally would not be replanted along the pipeline, because their roots could damage the pipeline. Vegetation would be monitored for up to a year to ensure it has become established. Therefore, the proposed project would be consistent with this policy.

#### **4.3.3.4 Right-of-Way Encroachment Policy**

The Right-of-Way Encroachment Policy provides guidance on how encroachment removal efforts should be handled. Site mobilization and preparation of the proposed project would include the preparation of the site for excavation including removal of existing structures, pavement, and vegetation. Existing encroachments on SFPUC property would be removed prior to construction. Where construction activities would require removal of improvements on private property over which the SFPUC has a ROW pursuant to an easement, the removal and reinstallation of those improvements after construction would be undertaken in accordance with the terms of the easement. Encroachments and/or improvements include small structures, fences, and landscaping. Survey work and potholing would be completed first to precisely locate the pipeline and other underground utilities. Therefore, the proposed project would be consistent with the Right-of-Way Encroachment Policy.

### **4.3.4 Consistency with Other Land Use Plans and Policies**

As described above, the SFPUC is not legally bound by the land use policies of other local governments. Determinations of project consistency with local general plans would be made by the pertinent land use jurisdictions following preparation of this EIR, and through notification by the SFPUC pursuant to State law. The local jurisdictions in which the PPSU project facilities would be located are primarily built out, established communities. Current general plans (or proposed general plan updates) of these jurisdictions generally seek to preserve the existing community character, protect natural resources and unique physical features, protect the health and safety of residents, and support appropriate levels of economic growth.

The intent of general plans is to preserve and improve the quality of life for citizens and to consider growth in a manner that appropriately reflects the community's values. An adequate, sanitary, and reliable water supply is a fundamental public service requirement to accomplish these goals. Each of the cities and counties in which the proposed project would be located receive all or part of their water supply from the SFPUC.

As described above, the general plans of the jurisdictions generally include policies that address environmental resources, including locating utilities to avoid or minimize damage from seismic and geologic hazards; protecting sensitive wildlife habitats and plants; implementing erosion control measures and stormwater quality controls; locating utility lines underground to minimize visual impacts; conserving and protecting archaeological and historic resources; implementing dust and exhaust control measures during construction; implementing a noise-control plan that includes source controls, barriers, and limiting hours of construction to the extent feasible to minimize noise impacts on surrounding uses; and implementing a traffic control plan to reduce impacts on traffic flows as well as on emergency services, bicycles, and pedestrians. In addition, several general plans include policies specifically relate to the protection of SFPUC water supply and watershed lands and call for coordination with the SFPUC to ensure a reliable source of water. All of these policies are addressed where relevant in Chapter 5, Environmental Setting, Impacts and Mitigation Measures, and in Chapter 6, Section 6.1, Growth Inducement.

The proposed project would be consistent with the objectives and policies of local land use plans and policies through implementation of the mitigation measures included in Sections 5.7, Noise; and 5.14, Biological Resources; and 5.17, Hazards and Hazardous Materials. With implementation of these measures, on the whole, the proposed project would mitigate impacts to the extent feasible and be consistent with environmental protection policies.

Overall the project would conform to the broader goals of their respective general plans to maintain and improve the quality of life of the local population through increasing water supply reliability, meeting water supply needs, and maintaining high water supply quality.

## 4.4 References

City of Millbrae, 1998. General Plan. Adopted November 24, 1998.

City of San Bruno, 2009. City of San Bruno General Plan. Adopted March 24.

City of South San Francisco, 2009. General Plan.

San Mateo County, 1986. County of San Mateo General Plan. Adopted November 1986.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 1986. Accountable Planning Initiative, Planning Code Section 101.1. November.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 1997. Environmental Planning, The Sustainability Plan for the City of San Francisco.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2009. San Francisco General Plan, 1988, as amended through 2009.

SFPUC (San Francisco Public Utilities Commission), 2006. SFPUC Final Water Enterprise Environmental Stewardship Policy. June 27.

SFPUC (San Francisco Public Utilities Commission), 2007a. Right-of-Way Integrated Vegetation Management Policy. February.

SFPUC (San Francisco Public Utilities Commission), 2007b. Right-of-Way Encroachment Policy, 2007.

SFPUC (San Francisco Public Utilities Commission), 2011. Strategic Sustainability Plan, March.

Town of Colma, 1999. Colma General Plan. Adopted June 1999.

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# CHAPTER 5

## Environmental Setting, Impacts, and Mitigation Measures

### 5.1 Overview

This chapter provides a project-level impact analysis of the physical environmental effects of implementing the Peninsula Pipelines Seismic Upgrade (PPSU) project. This chapter describes the environmental setting, assesses impacts, and identifies mitigation measures for significant impacts.

#### 5.1.1 Scope of Analysis

This chapter is organized by environmental resource topic, as follows, with references included within each section:

##### Sections

5.1 Overview	5.11 Recreation
5.2 Land Use and Land Use Planning	5.12 Utilities and Service Systems
5.3 Aesthetics	5.13 Public Services
5.4 Population and Housing	5.14 Biological Resources
5.5 Cultural and Paleontological Resources	5.15 Geology and Soils
5.6 Transportation and Circulation	5.16 Hydrology and Water Quality
5.7 Noise	5.17 Hazards and Hazardous Materials
5.8 Air Quality	5.18 Mineral and Energy Resources
5.9 Greenhouse Gas Emissions	5.19 Agricultural and Forest Resources
5.10 Wind and Shadow	

Each section of Chapter 5 contains the following elements, based on requirements of the California Environmental Quality Act (CEQA) and Chapter 31 of the City and County of San Francisco Administrative Code:

- **Setting.** This subsection presents a description of the existing physical environmental conditions in the vicinity of the project with respect to each resource topic at an appropriate level of detail to allow the reader to understand the impact analysis.
- **Regulatory Framework.** This subsection describes the relevant laws and regulations that apply to protecting the environmental resources within the proposed project area, and the governmental agencies responsible for enforcing those laws and regulations.

- **Impacts and Mitigation Measures.** This subsection evaluates the potential for the proposed project to adversely affect the physical environment described in the setting. Significance criteria for evaluating environmental impacts are defined at the beginning of each impact analysis section, followed by the Approach to Analysis, which describes how the significance criteria are applied in evaluating the PPSU project. Each impact analysis concludes with the impact significance, as described further in Section 5.1.2 below. This subsection also identifies mitigation measures for all of the impacts considered significant or potentially significant, consistent with the CEQA Guidelines (Section 15126.4[a][1]), which state that an environmental impact report (EIR), “shall describe feasible measures which could minimize significant adverse impacts...”
- **Cumulative Impacts and Mitigation Measures.** Cumulative impacts are analyzed at the end of each section in Chapter 5. The analysis describes the effects of the proposed project together with those of other past, present, or reasonably foreseeable future projects proposed by the SFPUC and other entities. The analysis of cumulative impacts is based on the setting, regulatory framework, and significance criteria that is used for the analysis of direct project impacts. If it is determined that the cumulative projects would result in a significant cumulative impact, then the PPSU project’s level of contribution to cumulative impacts is described (prior to implementation of any project-specific mitigation measures identified for direct project impacts). If the PPSU project would have a cumulatively considerable contribution to a significant cumulative impact, then mitigation measures are identified, where feasible, to reduce the PPSU project’s contribution. If the PPSU project’s contribution to cumulative impacts would not be cumulatively considerable (with mitigation, if appropriate), the project’s cumulative impacts would be less than significant.

### 5.1.2 Significance Determinations

The significance criteria used in this EIR are based on the San Francisco Planning Department’s Environmental Planning Division (formerly Major Environmental Analysis Division) guidance regarding the thresholds of significance used to assess the severity of the environmental impacts of the proposed project. The San Francisco Planning Department’s guidance is based on CEQA Guidelines Appendix G, with some modifications. The significance criteria used to analyze the various environmental resource topics are presented in each section of Chapter 5 before the discussion of impacts. If an impact is described as “potentially significant,” then there is a potential for the impact to occur but there is either not enough project information or site-specific information to determine definitively whether it qualifies under the significance criteria as significant. An impact identified as “potentially significant” is treated the same as significant impacts in this EIR. The categories used to designate impact significance are:

- **No Impact (NI).** An impact is considered not applicable (no impact) if there is no potential for impacts, or the environmental resource does not occur within the project area or the area of potential effect. For example, there would be no impacts related to tree removal if there is no tree removal proposed at a project site.
- **Less-than-Significant impact, no mitigation required (LS).** This determination applies if there is a potential for a limited impact that would not qualify as a significant impact under the significance criteria.

- **Less-than-Significant impact with Mitigation (LSM).** This determination applies if the project would result in an adverse effect that meets the significance criteria, but feasible mitigation is available that would reduce the impact to a less-than-significant level.
- **Significant impact (S).** This determination applies if the project would result in a substantial, or potentially substantial, adverse change that meets the significance criteria, before mitigation.
- **Significant and Unavoidable impact for which feasible mitigation is not available (SU).** This determination applies if the project would result in an adverse effect that meets the significance criteria, but for which there appears to be no feasible mitigation available to reduce the impact to a less-than-significant level. Therefore, the impact would be significant and unavoidable.
- **Significant and Unavoidable impact with implementation of feasible Mitigation (SUM).** This determination applies if it is certain that the project would result in an adverse effect that meets the significance criteria and mitigation is available to lessen the impact, but the residual effect after implementation of the measure would remain significant. Therefore, the impact is significant and unavoidable with mitigation.

A table at the beginning of the impact discussion in each section summarizes the potential impacts and indicates the level of impact significance. For each impact statement, the overall impact conclusion represents the worst case of all project sites, while the impact analysis describes the impacts that would occur at each site. The analysis also specifies the sites at which mitigation is required, if any. Environmental impacts are numbered throughout this EIR, using an abbreviation for the resource topic, followed by sequentially numbered impacts. Mitigation measures are numbered to correspond with the impact numbers; for example, Mitigation Measure M-LU-1 addresses Impact LU-1.

### 5.1.3 Cumulative Impacts

Cumulative impacts, as defined in Section 15355 of the CEQA Guidelines, refer to two or more individual effects that, when taken together, are “considerable” or that compound or increase other environmental impacts. A cumulative impact from several projects is the change in the environment that would result from the incremental impact of the project when added to those of other closely related past, present, or reasonably foreseeable future projects. Pertinent guidance for cumulative impact analysis is provided in Section 15130 of the CEQA Guidelines:

- An EIR shall discuss cumulative impacts of a project when the project’s incremental effect is “cumulatively considerable” (i.e., the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects, including those outside the control of the agency, if necessary).
- An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.
- A project’s contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

- The discussion of impact severity and likelihood of occurrence need not be as detailed as for effects attributable to the project alone.
- The focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than on attributes of the other projects that do not contribute to the cumulative impact.

The cumulative impact analysis for each individual resource topic is described in each subsection of this chapter, immediately following the description of direct project impacts and identified mitigation measures. A summary of all cumulative impacts is provided in Chapter 6, Other CEQA Issues, Section 6.2.

### 5.1.3.1 Approach to Cumulative Impact Analysis

Two approaches to a cumulative impact analysis are discussed in CEQA Guidelines Section 15130(b) (1): (a) the analysis can be based on a list of past, present, and probable future projects producing related or cumulative impacts, or (b) a summary of projections contained in a general plan or related planning document or in an adopted or certified environmental document that described or evaluated regional or area-wide conditions contributing to the cumulative impact can be used to determine cumulative impacts. For the purpose of this EIR, the analysis employs the list-based approach. The following factors were used to determine an appropriate list of projects to be considered in this cumulative analysis:

- **Similar Environmental Impacts** – A relevant project would contribute to effects on resources also affected by the PPSU project. A relevant future project is defined as one that is “reasonably foreseeable,” such as a proposed project that has approved funding or for which an application has been filed with the approving agency.
- **Geographic Scope and Location** – A relevant project is located within the defined geographic scope for the cumulative effect.
- **Timing and Duration of Implementation** – Effects associated with activities for a relevant project (e.g., short-term construction or demolition, or long-term operations) would likely coincide in timing with the effects of the PPSU project.

#### *Similar Environmental Impacts*

Projects that are relevant to the cumulative analysis include those that could contribute incremental effects on the same environmental resources and would have environmental impacts similar to those discussed in this EIR. The cumulative impact discussions in Sections 5.2 through 5.19 of this chapter analyze the cumulative impacts that could occur when the impacts of the PPSU project are considered in combination with the impacts of other past, present, and reasonably foreseeable future projects, which are generally subject to independent environmental review and consideration by the approving agencies. Consequently, it is possible that some of the reasonably foreseeable future projects will not be approved or will be modified prior to approval (e.g. as a result of the CEQA alternatives analysis process or permitting requirements). For the purpose of assessing worst-case cumulative impacts, however, the cumulative impact analysis is



premised on the approval and construction of all of the reasonably foreseeable projects identified in this analysis.

### *Geographic Scope and Location*

The geographic scope of cumulative projects is dependent on the resource topic affected, and is specifically described for each resource topic in Sections 5.2. through 5.19. In general, the geographic scope includes the areas within and adjacent to the project area. However, for some resource topics the geographic scope can extend further, such as the regional roadway network or the regional air basin.

### *Timing and Duration of Implementation*

Construction of the PPSU project would span approximately 12 months, between 2014 and 2015; the duration of construction activities at each site would range from 1 month to 9 months. For temporal impacts such as noise and traffic, cumulative effects from other projects are considered if the planned construction of those projects could overlap with PPSU project construction, or could occur immediately prior to or after construction of the PPSU project, and would affect the same environmental resources. Cumulative effects related to operations, such as operational energy consumption, are also considered if PPSU project operations would affect the same resources as the operations of other projects and have the potential to occur within a similar timeframe.

#### **5.1.3.2 List of Relevant Projects**

Table 5.1-1 lists the past, present, and reasonably foreseeable projects and activities within and near the project area, and provides a brief description of the projects and their expected schedules. The table also identifies the areas of potential cumulative effects associated with each of the cumulative projects. Figure 5.1-1 shows the general location of the cumulative projects listed. The cumulative impact analysis is presented under each resource topic in the subsections that follow. A summary of all cumulative impacts is provided in Chapter 6, Other CEQA Issues, Section 6.2. The projects listed in Table 5.1-1 include projects proposed by the SFPUC and other parties that would potentially contribute to cumulative impacts when considered together with the PPSU project.

The list of projects was developed through: review of online information from CEQAnet; review of available information on the websites of the jurisdictions in which the project sites are located; personal communications with the planning departments of these cities; review of City and County of San Francisco information regarding planned SFPUC projects; personal communications with SFPUC staff regarding the project schedules for planned projects in the PPSU project vicinity; review of other agency websites, including the California Department of Transportation and the Pacific Gas and Electric Company; and review of recent environmental documents for nearby projects.

The initial list of projects was then narrowed to focus on planned and potential projects within the general vicinity of the PPSU project sites, including the project construction access routes, and on projects having tentative construction schedules that could overlap with construction of the PPSU project.

**Table 5.1-1  
Cumulative Project List**

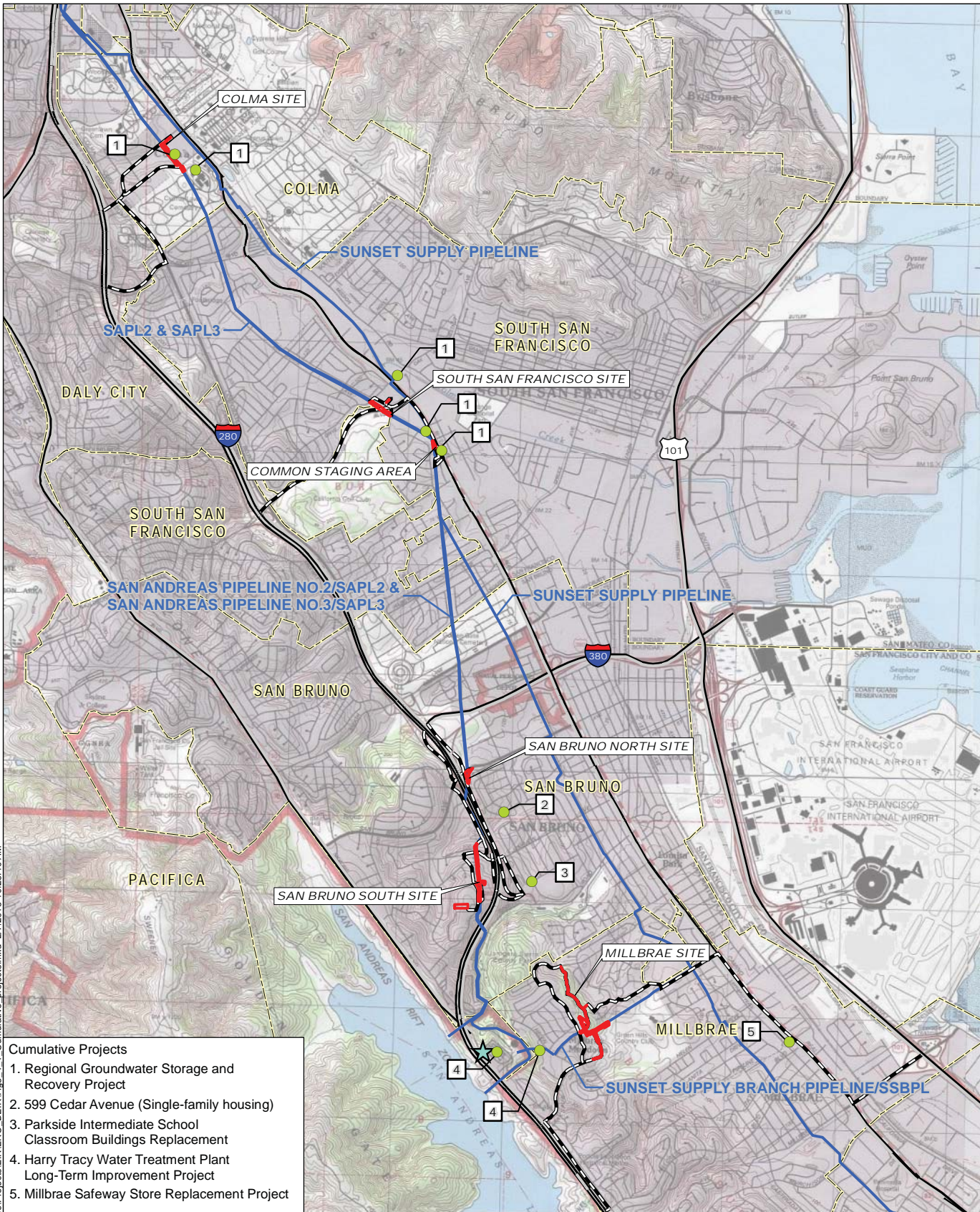
<b>Project Number</b>	<b>Project Name</b>	<b>Project Summary</b>	<b>Location</b>	<b>Estimated Construction Schedule</b>	<b>Potential Cumulative Resource Impacts</b>
1	Regional Groundwater Storage and Recovery Project	SFPUC proposes the Regional Groundwater Storage and Recovery Project to further the use of the South Westside Groundwater Basin as an underground storage reservoir, by storing water in the basin during wet periods for subsequent recapture during dry periods. This new dry-year water supply would be made available to the cities of Daly City and San Bruno, the California Water Company in its South San Francisco service area, and SFPUC wholesale water customers. The SFPUC has selected the 16 potential well facility sites it proposes to develop; three alternate sites are also evaluated and would be developed in the event one or more of the 16 sites is not successful. The new groundwater well facilities as a whole would have an annual average pumping capacity of 7.2 mgd, which is equivalent to 8,100 acre-feet per year, and a peak pumping capacity of 8.3 mgd (Zhang, 2012).	The Town of Colma; Peninsula cities including Daly City, South San Francisco, San Bruno, Millbrae; and unincorporated San Mateo County	Overall: June 2014 through May 2016; Colma: June 2014 to November 2015; <sup>1</sup> South San Francisco: August 2014 to February 2016 <sup>2</sup> (Illingworth and Rodkins, Inc., 2012)	Land Use, Aesthetics, Cultural and Paleontological Resources, Transportation and Circulation, Noise, Utilities and Service Systems, Biological Resources, Hydrology and Water Quality, Hazards and Hazardous Materials
2	599 Cedar Avenue (single-family homes)	Proposal to construct 14 single-family homes with a new private access road. (City of San Bruno, 2011)	599 Cedar Avenue, San Bruno	Project initiation December 2011. Timeline for completion unknown.	Land Use, Cultural and Paleontological Resources, Transportation and Circulation, Noise, Utilities and Service Systems, Biological Resources, Hydrology and Water Quality, Hazards and Hazardous Materials

**Table 5.1-1  
Cumulative Project List (Continued)**

Project Number	Project Name	Project Summary	Location	Estimated Construction Schedule	Potential Cumulative Resource Impacts
3	Parkside Intermediate School Classroom Buildings Replacement	Demolition of three older existing classroom wings (21,186 square feet) to be replaced with two new earthquake-resistant classroom buildings (36,500 square feet). Several aged trees would be removed from the western part of the site, and the current landscaping would be replaced with new water-efficient and fire-resistant landscaping (CEQAnet, 2011).	Donner Avenue and Niles Avenue, San Bruno	Notice of Exemption February 2011; Construction schedule unknown.	Land Use, Cultural and Paleontological Resources, Transportation and Circulation, Biological Resources, Hydrology and Water Quality, Hazards and Hazardous Materials
4	Harry Tracy Water Treatment Plant Long-Term Improvements Project	The project entails improvements to water treatment processes to meet water quality and delivery reliability goals, seismic reliability improvements, and other improvements to the HTWTP such as pipeline distribution, access, and site improvements. The primary differences in treatment process resulting from the project would be changes to solids handling, whereby solids from the sludge holding tank would be transferred to a solids dewatering facility before being trucked off site, and to the treated water storage, which would occur in a single new tank north of the main plant site instead of two tanks southeast of the main plant (SF Planning, 2011).	2901 Crystal Springs Road, San Bruno (East of I-280)	Completion date for HTWTP is March 2015 (Roche, 2012).	Land Use, Cultural and Paleontological Resources, Transportation and Circulation, Noise, Utilities and Service Systems, Biological Resources, Hydrology and Water Quality, Hazards and Hazardous Materials

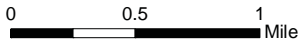
**Table 5.1-1  
Cumulative Project List (Continued)**

<b>Project Number</b>	<b>Project Name</b>	<b>Project Summary</b>	<b>Location</b>	<b>Estimated Construction Schedule</b>	<b>Potential Cumulative Resource Impacts</b>
5	Millbrae Safeway Store Replacement Project	Demolition of the existing store and reconstruction of a new, podium style 59,001-square-foot store that would be on the second floor, with 181 surface parking spaces beneath. The new store would have two loading docks at the south end of the property (CEQAnet, 2011).	El Camino Real Between Taylor Boulevard and Silva Avenue, Millbrae	Mitigated Negative Declaration published December 2010; Construction schedule unknown	Land Use, Cultural and Paleontological Resources, Transportation and Circulation, Biological Resources, Hydrology and Water Quality, Hazards and Hazardous Materials
<p>Sources: CEQAnet, 2011; City of San Bruno, 2011; Illingworth and Rodkins, Inc., 2012; Roche, 2012; SF Planning, 2011; Zhang, 2012.</p> <p>Notes:</p> <p><sup>1</sup> GSR well sites proposed at or within the vicinity of the PPSU Colma site are well sites 8 and 17 (alternate).</p> <p><sup>2</sup> GSR well sites proposed at or within the vicinity of the PPSU South San Francisco site are well sites 11, 12, and 19 (alternate).</p> <p>GSR = groundwater storage and recovery  HTWTP = Harry Tracy Water Treatment Plant  I-280 = Interstate 280  mgd = million gallons per day  PPSU = Peninsula Pipelines Seismic Upgrade  SFPUC = San Francisco Public Utilities Commission</p>					



- Cumulative Projects**
1. Regional Groundwater Storage and Recovery Project
  2. 599 Cedar Avenue (Single-family housing)
  3. Parkside Intermediate School Classroom Buildings Replacement
  4. Harry Tracy Water Treatment Plant Long-Term Improvement Project
  5. Millbrae Safeway Store Replacement Project

- Project Site
- Access Route to Project Site
- SFPUC Water Transmission Line
- ★ Harry Tracy Water Treatment Plant
- Cumulative Projects
- City Limits



**CUMULATIVE PROJECTS**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.1-1**

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NOTE: Locations for Regional Groundwater Storage and Recovery Project extend north and south beyond the extent of the map.

Source: USA Topo Maps (National Geographic Society, 2011); SFPUC 2011; Cumulative projects compiled by URS, 2012.

## 5.1.4 References

CEQAnet, 2011. Official Website. Available online at: [www.ceqanet.ca.gov/QueryForm.asp](http://www.ceqanet.ca.gov/QueryForm.asp). Accessed December 2011.

City of San Bruno, 2011. Current Development Projects. Official Website. Available online at: [sanbruno.ca.gov/developments.html](http://sanbruno.ca.gov/developments.html). Accessed December 2011.

Illingworth and Rodkins, Inc., 2012. Final Air Quality Technical Report Regional Groundwater Storage and Recovery Project. Prepared for GHD. July 25.

Roche, Anna, 2012. Email communication with URS. Environmental Project Manager, SFPUC. February 28.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2011. Harry Tracy Water Treatment Plant Long-Term Improvements Project, Draft EIR. SCH No. 2008052106. March.

Zhang, YinLan, 2012. Personal communication between YinLan Zhang, SFPUC Environmental Project Manager and Hannah Young, URS, regarding the Regional Groundwater Storage and Recovery Project. December 20.

## 5.2 Land Use and Land Use Planning

This section provides an overview of existing land use and land use planning conditions within the Peninsula Pipelines Seismic Upgrade (PPSU) project area, evaluates the potential impacts to land use that could result from implementation of the project, and identifies mitigation measures, as appropriate. For a description of applicable land use plans, please refer to Chapter 4, Plans and Policies.

### 5.2.1 Setting

Land uses in the vicinity of the five sites, and near the proposed common staging area, are described below.

#### 5.2.1.1 Colma Site

The Colma site is located in a mixed commercial area situated between Interstate 280 (I-280) and El Camino Real in the Town of Colma (see Figure 3-2 in Chapter 3, Project Description). The proposed construction zone would be predominantly within the San Francisco Public Utilities Commission's (SFPUC) right-of-way (ROW), on unpaved, vacant land stretching between Serramonte Boulevard to Collins Avenue, just east of the Serra Shopping Center, behind Kohl's department store. One staging area would be located in an auxiliary parking area behind Kohl's department store, immediately adjacent to the existing ROW, and another would be located at the southern end of the construction zone. Access would be from I-280, via Serramonte Boulevard or Hickey Boulevard exits, continuing on Serramonte Boulevard, Collins Avenue, or Junipero Serra Boulevard. Access to the northern part of the proposed construction zone and staging area would be through Kohl's Department Store parking lot, via Serramonte Boulevard. Staging areas south of the construction zone would be accessed from Collins Avenue.

There is one single-family home in the vicinity of the Colma site, as well as the Home Sweet Home assisted-living facility. Commercial uses in the site vicinity include car dealerships, retail stores, auto repair shops, a car rental agency, a plumbing supply store, and a bank. In addition, numerous cemeteries are located in the area, including Cypress Lawn Memorial Cemetery to the south of the site, and the Greek Orthodox Memorial Park to the north of the site. The Colma Town Hall/Clerk's office is located about 500 feet north of the proposed construction zone.

#### 5.2.1.2 South San Francisco Site

The South San Francisco site is west of Camaritas Avenue and El Camino Real, in a predominantly residential area, with a mix of single-family and multi-family homes and community services. This site is located partially in the City of South San Francisco, and partially in unincorporated San Mateo County (see Figure 3-3 in Chapter 3, Project Description). Construction activities would occur predominantly in the SFPUC's ROW between Arroyo Drive and West Orange Avenue. The construction zone extends under Westborough Boulevard, and along the northern edge of the California Golf Club of San Francisco, which lies in unincorporated San Mateo County, where the ROW separates the active play area of the golf course from a triangular, landscaped area at the intersection of Westborough Boulevard and West

Orange Avenue. A portion of the site proposed to be used as a staging area would be located within the Pacific Market parking lot in the shopping center north of Camaritas Avenue. Access would be from I-280 via Westborough Boulevard exit. Access to the northern portion of the construction zone and staging area would be from Arroyo Drive, while access to the construction zone south of Westborough Boulevard would be from West Orange Avenue. The Pacific Supermarket parking lot would be accessed from Camaritas Avenue.

Land uses closest to the site include the golf course, the Clubview Apartments, a dialysis laboratory, a liquor store, and a bank. The closest single-family residences are to the northwest of the site, located along Arroyo Drive. A South San Francisco public library branch lies about 300 feet south of the site on Orange Avenue.

### **5.2.1.3 San Bruno North Site**

The northernmost of the two proposed sites in the City of San Bruno is located on and adjacent to the SFPUC ROW, south of the Bayhill Shopping Center (see Figure 3-4 in Chapter 3, Project Description). The site is accessible from I-280 via the Sneath Lane/San Bruno Avenue West exit. Proposed construction activities would occur on the south side of San Bruno Avenue West, between the I-280 off-ramp and the immediately adjacent single family residential neighborhood. Construction activities would occur predominantly within the SFPUC ROW easement that extends between San Bruno Avenue West and the I-280 north off-ramp. The ROW extends over California Department of Transportation property and the rear yard of residences on Cedarwood Court (1840 and 1841). The closest residences would be homes on Cedarwood Court and Pepper Drive. Access would be from I-280 via the Sneath Lane/San Bruno Avenue West exit to San Bruno Avenue West.

### **5.2.1.4 San Bruno South Site**

The San Bruno South site lies east of I-280 in a predominantly suburban residential area in the San Bruno hills, in the vicinity of Shelter Creek Lane and Whitman Way (see Figure 3-5 in Chapter 3, Project Description). This area has a mix of single-family and multi-family housing and institutional uses. The construction zone would be located within the SFPUC ROW, which extends along a ridge between a single family development and vacant open space on a hill overlooking I-280. At the north end, the construction zone is surrounded by multi-family housing developments, including the 1,296-unit Shelter Creek Condominium complex and the 48-unit Park Plaza Apartment complex at the intersection of Shelter Creek Lane and Whitman Way, and an apartment complex at 2001 Whitman Way. The construction zone would pass through a strip of mature vegetation that buffers the Shelter Creek condominiums from Whitman Way, extending beneath Whitman Way, then behind a row of single-family homes on the west side of Courtland Drive. The construction zone would terminate at the access road leading from Courtland Drive to the San Bruno Chinese Church.

Across Courtland Drive from the church is a sports field complex associated with the adjacent former Crestmoor High School campus. Crestmoor High School was closed in 1980 due to declining enrollment in the San Mateo Union High School District. The site now serves as the home for Peninsula High School, a small continuing high school education program that aids students who need additional credits to earn their high school diplomas. Approximately 250 to



270 students are enrolled for school year 2010 to 2011 (McManus, 2011). The school district also uses the complex for other programs such as special education programs (currently serving about 30 students) and sports programs (especially for other schools in the district whose sports facilities may be undergoing renovations). The district also leases building space to Crayon College, a private daycare center that operates on weekdays year-round, and Central Peninsula Church that holds services in the theater on Sundays. The athletic fields immediately adjacent to the proposed staging area are actively used year-round for youth soccer games and other community recreation activities. In addition, basketball courts are located on a portion of the northern school parking lot, which is also used on Sundays for church parking (San Francisco Examiner, 2010; Carlisle, 2011; Russell, 2011).

Proposed access routes include Shelter Creek Lane, Whitman Way, and Courtland Drive, which are the primary access streets serving this residential neighborhood, the church, the school, and the sports fields. At a meeting held with representatives of groups that use the Peninsula High School facilities, community members expressed concerns about speeding traffic, limited parking, and pedestrian safety issues in this area (Zhang, 2012).

Staging areas are proposed in a portion of the north high school parking lot that is currently fenced off and used for maintenance and storage, and at the small auxiliary parking lot of the San Bruno Chinese Church. Another proposed staging area extending about 200 feet along the unpaved area directly east of Courtland Drive, between the north and south driveways of the San Bruno Chinese Church, is used for parking during soccer practices and/or games, and can accommodate about 15 to 20 vehicles; parking is not officially permitted at this location.

### 5.2.1.5 Millbrae Site

The Millbrae site is located in an open-space area that stretches through a single-family residential neighborhood known as the Meadows Tract that was developed in the late 1950s and 1960s, adjacent to the private Green Hills Country Club (see Figure 3-6 in Chapter 3, Project Description). The construction zone for the Millbrae site would be located entirely within the SFPUC ROW easement. The western part of the construction zone would extend between two existing single-family homes on Ridgewood Drive at Banbury Lane (1100 and 1094 Ridgewood Drive), through a portion of the City of Millbrae open space area (City of Millbrae, 1998), then extending along the northern edge of the Green Hills Country Club—through a stand of mature oak trees just north of the driving range, and extending eastward about 100 feet into an active play area of the golf course. The Green Hills Country Club is a private membership club with an 18-hole golf course that was designed in 1929 by the world-renowned golf course designer, Dr. Alister MacKenzie. The course was opened in 1930. In addition to the golf course and driving range, other on-site amenities include tennis courts, a swimming pool, and a new club house (which replaced a former club house in 2009) that includes a pro shop and bar/restaurant facilities.

Four access routes are proposed, all of which would follow, at least to some extent, existing city streets through the existing single-family, residential neighborhood. One route would entail access from Ridgewood Drive immediately adjacent to the construction zone. Another route would require minor improvements to the trail that extends through the City of Millbrae open space area from Lomita Avenue to the SFPUC ROW. A third route would involve accessing the construction zone from Larkspur Drive via the Green Hills Country Club driving range. The fourth route would involve accessing the construction zone from Capuchino Drive to Bertocchi

Lane to the trail described for route two above. This route would pass approximately 150 feet south of two Montessori schools and a preschool, including their school gardens and playing fields. A 1.1-acre staging area is proposed to be located north of the SFPUC ROW in the City of Millbrae open space area behind the residences on Ridgewood Drive, and staging would also be located south of the SFPUC ROW and at the eastern terminus of the construction zone on the golf course.

### **5.2.1.6 Common Staging Area**

The common staging area proposed for all five sites would be located on a portion of the SFPUC's Baden Valve Lot, a fenced facility located within the SFPUC ROW, on the west side of El Camino Real at West Orange Avenue in the city of South San Francisco (see inset on Figure 3-3 in Chapter 3, Project Description). The Baden Valve Lot is a triangular-shaped property approximately two acres in size. The northern portion of this property (approximately 1/3 acre in size) would be used as a common staging area for the PPSU project, for uses such as construction office trailers and employee parking. Surrounding land uses include single-family residences to the west, a funeral home (Garden Chapel Funeral Directors) to the north, and mixed commercial uses along El Camino Real to the east and south of the Baden Valve Lot.

## **5.2.2 Regulatory Framework**

The section below describes applicable regulations pertaining to land use resources within the project area. For a list of specific permits required for implementation of the proposed project, see Section 3.10, Required Permits.

### **5.2.2.1 Federal Regulations**

No federal land use regulations directly apply to the proposed project.

### **5.2.2.2 State Regulations**

No State land use regulations directly apply to the proposed project.

### **5.2.2.3 Local Regulations**

Under California Government Code Section 53090, et seq., the SFPUC receives intergovernmental immunity from city and county zoning and building ordinances. Refer to Chapter 4, Plans and Policies, for a discussion of the regulatory setting related to land use plans and policies and more detailed information concerning intergovernmental immunity.

## **5.2.3 Impacts and Mitigation Measures**

### **5.2.3.1 Significance Criteria**

The CCSF has not formally adopted significance standards for impacts related to land use, but generally considers that implementation of the proposed project would have a significant impact on land uses if it would:

- Physically divide an established community;
- 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;<sup>1</sup>
- Have a substantial impact on the existing character of the vicinity; or
- Substantially impact or disrupt existing land uses or land use activities.

### 5.2.3.2 Approach to Analysis

Because of the nature of the proposed project, there would be no construction or operational impacts related to the following significance criteria. Therefore, an impact discussion is not provided for these topics for the reasons described below.

- **Physically divide an established community.** There is no potential for dividing established communities. The project would occur within established communities, but since the project involves replacing below-ground pipelines within the existing SFPUC ROW and restoring landscaping, there would be no displacement of community facilities or introduction of a new linear facility that would divide a community. Therefore, this significance criterion is not applicable to the proposed project and is not discussed further.
- **Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.** No applicable land use plans, policies, or regulations that pertain to subsurface water transmission pipelines have been adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, this significance criterion is not discussed further in this section. Land use plans and policies are discussed more generally in Chapter 4 of this Draft Environmental Impact Report.

This analysis considers the proposed project's potential to adversely affect the existing character of the vicinity and the project's potential to substantially impact or disrupt existing land uses or land use activities either directly or indirectly during construction or operation. Direct impacts could include temporary displacement or disruption of access to existing land uses, or a substantial impact on the existing character of the vicinity. Indirect impacts on land uses or land use activities could result from a combination of short-term effects, including emissions of criteria air pollutants, increased noise levels, traffic safety hazards, and impeded access related to traffic congestion and detours. These temporary effects could indirectly disturb or disrupt land uses in the vicinity of the project area in a way that substantially alters the land use character. The direct physical impacts related to each of these topics are analyzed separately in Sections 5.6, Transportation and Circulation; 5.7, Noise; and 5.8, Air Quality. Findings are summarized in this section to evaluate their indirect effects on existing land uses.

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<sup>1</sup> See Section 5.14, Biological Resources, for analysis pertaining to conflicts with applicable habitat conservation plan or natural community conservation plan.

### 5.2.3.3 Summary of Impacts

Table 5.2-1 summarizes the project’s land use impacts and significance determinations. These are discussed further in the subsections below.

**Table 5.2-1  
 Summary of Impacts – Land Use and Land Use Planning**

Impacts	Significance Determination					
	Colma	South San Francisco	San Bruno North	San Bruno South	Millbrae	Common Staging Area
<b>Impact LU-1:</b> Project construction could have a substantial temporary direct or indirect impact on the existing character of the vicinity, or could substantially impact or disrupt existing land uses or land use activities.	LSM	LSM	LSM	LSM	LSM	NI
<b>Impact LU-2:</b> Project operations would not result in substantial long-term or permanent impacts on the existing character of the vicinity or could substantially impact or disrupt existing land uses or land use activities.	NI	LS	NI	NI	LS	NI
<b>Impact C-LU:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts on existing land uses.	LSM	LSM	LSM	LSM	LSM	NI
Notes: NI = No Impact LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant impact with Mitigation SUM = Significant and Unavoidable with Mitigation						

### 5.2.3.4 Construction Impacts and Mitigation Measures

***Impact LU-1: Project construction could have a substantial temporary direct or indirect impact on the existing character of the vicinity or could substantially impact or disrupt existing land uses or land use activities. (Less than Significant with Mitigation)***

Figures 3-2 through 3-6 in Chapter 3, Project Description, show proposed construction zones, staging areas, and proposed access routes in relation to existing land uses at each of the sites. The potential for construction-related direct or indirect land use impacts would vary for each site, as discussed below and as reflected in Table 5.2-1.

#### ***Direct Impacts***

Direct impacts on the character of the project area or disruption to land use or land use activities could occur if the project were to temporarily displace or impede access to existing land uses during construction. Access to an existing land use could be impeded by blocking commonly used entryways, or by removing parking resources that are needed for users of a particular community facility. Most of the project sites (proposed construction zones and staging areas) consist of vacant land. In some cases, however, facilities have been developed within or near the ROW that could be displaced or disrupted during excavation and construction activities, or access to adjacent land uses could be disrupted by construction activities. Potential impacts are examined by site below.

#### **Colma Site (Less than Significant)**

At the Colma site, construction would occur entirely within the existing SFPUC ROW, on fenced and vacant land. The proposed staging area, however, would temporarily displace a strip (approximately 200 feet in length) of paved area at the rear of the Kohl's department store, immediately adjacent to the SFPUC ROW. This area is striped for parking, and it is occasionally used by nearby automotive-related businesses for temporary vehicle storage, but it is not used by Kohl's department store customers. Kohl's uses the area behind the store mainly for merchandise deliveries and trash collection (Fletcher, 2012).

The staging area would be designed so as not to impede access to and circulation along the rear of the store, and none of the customer parking in front of the department store would be displaced. However, because construction is proposed to begin at the Colma site in mid-December, during the busy holiday shopping period that extends over the last 6 weeks of the calendar year, construction-related traffic could delay or disrupt deliveries or customer access to parking that facilitates use of the store. Because the area designated for construction staging is not used for customer parking, the temporary removal of the 40 parking spaces would not substantially affect the overall use of the Kohl's department store. The project would not displace or substantially disrupt any existing land uses or change the character of the existing commercial area; therefore, this land use impact would be *less than significant*.

Although parking and traffic impacts at the Colma site would be less than significant, **Mitigation Measure M-TR-3: Traffic Control Plan** (see Section 5.6, Transportation and Circulation) would reduce any adverse impacts related to merchandise delivery and trash collection at Kohl's by requiring the preparation of a Traffic Management Plan. A Traffic Management Plan would

identify special issues, such as heavy use of the area during the holiday shopping period, and the appropriate actions to address these issues (such as the use of flaggers if necessary).

#### **South San Francisco Site (Less than Significant)**

The construction zone at the South San Francisco site would be located entirely within the existing SFPUC ROW on predominantly vacant land between residential uses on Arroyo Drive and commercial uses on Camaritas Avenue, extending beneath Westborough Boulevard and along the northern edge of the California Golf Club of San Francisco. Construction would not displace any existing structures or other community facilities or golf course amenities, nor would it change the character of the mixed use area. Construction would involve some removal of vegetation, but this would occur at the side of the adjacent residence and at the back of the adjacent commercial uses, and sufficient vegetation would remain to buffer views of the construction zone from the golf course. Therefore, project construction would not displace or impede access to existing land uses at the South San Francisco site, and this impact would be *less than significant*.

#### **San Bruno North Site (No Impact)**

Construction at the San Bruno North site would occur within the existing SFPUC ROW and on adjacent open space between the ROW and the I-280 freeway off-ramp. No buildings or community facilities would be displaced by the project, the character of the vicinity would not be changed, and access to other adjacent land uses would not be disrupted. Therefore, there would be *no impacts* related to direct displacement or land use access disruption at this site.

#### **San Bruno South Site (Less than Significant)**

Construction would occur entirely within the existing SFPUC ROW on vacant land. No buildings or other facilities would be displaced by activities within the construction zone, nor would the character of the vicinity be altered. Construction activities at Shelter Creek Condominiums could temporarily disrupt access to the lower level of Garage 4, Parking Lot B, and Parking Lot C; and would also temporarily remove some parking spaces in Lot B for the duration of construction. However, alternative access would be provided for the parking lots and garage, as described in Section 5.6, Transportation and Circulation.

Staging of construction activities would partially occur at the north parking lot on the San Bruno Chinese Church property. This parking lot is generally not used on weekdays, but does accommodate church members on weekends (Wong, 2012; Wu, 2012). The project construction activities would occupy this parking area during the week and would return the area during the weekend for church parking, as described in Chapter 3, Project Description. This parking area would be available during the weekend so that adequate parking would be maintained during the most attended church activities.

The portion of the Peninsula High School parking lot that is proposed for construction staging is a fenced-off maintenance yard that is not used for parking. The adjacent parking lot is heavily used on weekends and at other times for athletic events at the nearby athletic fields, as well as for church parking for the Central Peninsula Church that meets in the high school gymnasium on Sundays (Russell, 2011); however, this parking area would not be used or otherwise affected by project construction. On weekends during heavily attended athletic events, some drivers park

off-street, within the SFPUC ROW, east of Courtland Drive. That area is proposed for construction staging. The proposed staging area along the unpaved area of Courtland Drive would not reduce the availability of legal street parking spaces, but would displace the unofficial off-street parking within that SFPUC ROW. People currently parking in those areas would be required to park farther from the athletic fields, either in the parking lots on the southern end of the high school or on Courtland Drive. There is ample parking in the high school parking lots to accommodate those vehicles, as documented in a traffic study performed for Central Peninsula Church, which was approved by the San Bruno Planning Commission in September 2011 (City of San Bruno, 2011).

Therefore, because the project would not substantially conflict with existing parking resources that facilitate access to nearby community facilities or other land uses, impacts would be *less than significant*.

#### **Millbrae Site (Less than Significant with Mitigation)**

Construction would occur within the SFPUC ROW where it extends between two single-family homes on Ridgewood Drive at Banbury Lane, across city-owned open space that is used for passive recreational purposes, and into the Green Hills Country Club property. One existing structure, a gazebo built within the SFPUC ROW in the side yard of the single family home at 1094 Ridgewood Drive, would be displaced. Mature trees would be removed from the ROW, as well as from an approximately 50-foot by 150-foot area of the rough and fairway adjacent to the fifth hole at the Green Hills Country Club golf course. In addition, a proposed access route on the trail from Lomita Avenue and an approximately 1.1-acre staging area would be located within the City of Millbrae open space area. Another proposed access route may extend through the driving range at the Green Hills Country Club golf course. These activities could temporarily result in substantial disruption and displacement of recreation facilities associated with the golf course, or a temporary change to the recreational character of the vicinity, a potentially significant land use impact. (The potential impact to adjacent homes is addressed below under Indirect Impacts).

Both the City of Millbrae open space area and the golf course are recreational facilities that are analyzed in greater detail in Section 5.11, Recreation. As noted in this section, the City of Millbrae would determine whether to keep the trail open when not needed for construction access; the temporary impact would not be significant. In addition, implementation of **Mitigation Measure M-RE-1: Coordination with Green Hills Country Club Facility Managers** would facilitate the continued use of the golf course during project construction. With this mitigation measure, the impact to the golf course would be reduced to less than significant. Therefore, associated land use impacts related to the disruption of recreation land uses would be *less than significant with mitigation*.

#### **Common Staging Area (No Impact)**

Project activities at the common staging area would be located within the SFPUC's Baden Valve Lot. These activities would include use of the area for temporary staging and spoils storage for materials and equipment; worker vehicle parking; and installation of temporary construction equipment trailers and office trailers. The character of the vicinity would not be changed, and

access to other adjacent land uses would not be disrupted. Therefore, there would be *no impacts* related to direct displacement or land use access disruption at the common staging area.

### ***Indirect Impacts***

The project sites are located in the vicinity of land uses that could be sensitive to temporary construction impacts such as increased traffic, noise, vibration, dust, and exhaust emissions, or nighttime lighting. These factors would be considered indirect impacts because they could contribute to changes in the character of land uses, but would not directly alter or displace them. PPSU project construction periods would range from 1 month at the San Bruno North site to approximately 9 months at the San Bruno South site; however, the duration of indirect impacts would typically be shorter for specific sensitive receptors (e.g., residences) depending on the type of construction activities at any given time.

PPSU project construction activities would occur concurrently at multiple sites. Work would take place primarily on weekdays from 7 a.m. to 5 p.m. Weekend work may be required on a limited basis, although the nature of such work is not currently known. Weekend construction hours would be the same as those described for weekdays. Weekend work could conflict less with certain land uses, such as schools and daycare centers, which operate only during the weekdays; but more with other uses, such as homes, athletic fields, golf courses, or churches, which are generally more heavily used on weekends. In addition, nighttime construction may be required at the San Bruno North site. Nighttime activities would also include limited 24-hour pumping for dewatering of the pipelines at a few locations, as described in Chapter 3, Project Description.

Construction activities associated with the proposed project would involve the operation of diesel-powered construction equipment and vehicles, and would increase noise, traffic, dust and emissions of criteria air pollutants. In addition, project construction would increase vehicle and truck traffic along neighborhood roadways, which would generate noise and diesel emissions and potentially increase traffic safety risks for adjacent land uses, due to the increased potential for conflicts between construction vehicles and pedestrians, bicyclists, and non-construction-related automobiles. The combination of construction-related traffic, noise/vibration, and dust/exhaust emissions could adversely affect daytime residential land use activities nearby. Similarly, disruptions could occur to recreational activities such as playing golf, or to educational activities. These disruptions would be temporary; however, during the construction period they could substantially change the character of the vicinity or disrupt adjacent land uses or land use activities, resulting in significant land use impacts.

**Mitigation Measure M-LU-1a: Notice of Construction Activities** would address these indirect impacts by providing advance notice to affected land uses. Mitigation measures that address direct impacts of other resource topics but that relate to indirect land use impacts are described in Sections 5.3, Aesthetics; 5.6, Transportation and Circulation; 5.7, Noise; and 5.8, Air Quality.

#### **Mitigation Measure M-LU-1a: Notice of Construction Activities**

This mitigation measure applies to all the project sites. The following notification procedures shall be implemented prior to construction:



1. The SFPUC shall provide advance notification to businesses, property owners, facility managers, and residents of adjacent areas potentially affected by the PPSU project about the nature, extent, and duration of construction activities, at least 1 week prior to construction. The SFPUC shall also provide interim updates to these parties during periods of active construction to inform them of the status of the construction activities and schedule. Notices shall be sent to sensitive receptors and affected adjacent properties identified below:
  - **Colma Site** – Kohl’s Department Store; Home Sweet Home Assisted Living Facility; and Cypress Lawn Memorial Cemetery;
  - **South San Francisco Site** – Residences adjacent to the construction zone along Arroyo Drive; Clubview Apartments; and California Golf Club of San Francisco;
  - **San Bruno North Site** – Residences adjacent to the construction zone along Cedarwood Court and Pepper Drive;
  - **San Bruno South Site** – Park Plaza Apartments and Shelter Creek Condominiums; Residences adjacent to the construction zone along Courtland Drive; Peninsula High School and other uses at the former Crestmoor High School campus; Peninsula High School Athletic Fields; and San Bruno Chinese Church; and
  - **Millbrae Site** – Green Hills Country Club; Meadows Elementary School; Residences adjacent to the construction zone along Ridgewood Drive, Hacienda Way, Helen Drive, Banbury Lane; Millwood Drive and Barcelona Drive; and Glen Oaks and Millbrae Montessori Schools;
2. The SFPUC shall coordinate with managers of facilities including, but not limited to, Kohl’s Department Store, San Bruno Chinese Church, Peninsula High School, and the Green Hills Country Club to minimize disruptions to facility operations and activities, to the extent feasible.
3. Should weekend work be necessary, the SFPUC shall notify adjacent properties, including reasonable advance notification to the businesses, owners, and residents of adjacent areas potentially affected by the proposed project, and interim updates shall be provided.

Nighttime construction activities, which may be required at the San Bruno North site, would use lighting. They could result in substantial light and glare impacts (refer to Section 5.3, Aesthetics), and temporarily result in a significant indirect land use impact. The noticing requirements contained in **Mitigation Measure M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts** (described below), would alert residents to upcoming nighttime construction activities, and provide a toll-free number for reporting construction-related complaints, reducing impacts to a less-than-significant level.

As detailed in Section 5.7, Noise, for certain homes located in very close proximity to the construction zones, or in certain locations where building heights or elevations make noise barriers infeasible or ineffective, noise and vibration impacts would remain significant and unavoidable, even with implementation of mitigation measures summarized under Noise, above. In these cases, the speech or sleep interference thresholds could be exceeded for greater than 2 weeks. This aggravating new source of noise could be compounded by a sense of loss of privacy on decks or in backyards associated with these homes, especially if residents are at home during daytime construction hours. This would be a potentially significant land use impact. These affected homes are listed below in **Mitigation Measure M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts**, which would reduce temporary land use conflicts associated with the project by requiring advance notification to adjacent residences of construction activities.

**Mitigation Measure M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts**

This mitigation measure applies to the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites only. The SFPUC or its contractor shall provide 14-day advance notice by mail or hand delivery to all residents, tenants, and/or property owners in those homes listed below as being potentially subject to significant and unavoidable noise impacts, even after administrative and source controls are implemented.

- **South San Francisco Site** – Arroyo Drive (address numbers 105, 107 and 108);
- **San Bruno North Site** – Cedarwood Court (address numbers 1790, 1791, 1800, 1801, 1820, 1821, 1840, and 1841); and Pepper Drive (address numbers 763, 769, 773, 779, 783, 789, 793, and 795);
- **San Bruno South Site** – Courtland Drive (address numbers 300, 306, 310, 316, 320, 326, 330, 336, 340, 350, 360, and 370); Shelter Creek Condominiums Buildings 4A, 4B, and 4D; and Park Plaza Apartments; and
- **Millbrae Site** – Hacienda Way (address numbers 859, 869, 873, 877, 881, 885, 889, 913, and 917); Ridgewood Drive (address numbers 1078, 1086, 1094, 1100, 1101, 1106, 1110, 1116, 1120, 1126, and 1130); and Banbury Lane (address number 971).

The notice will state the construction location, anticipated activities, and schedule, including whether nighttime construction is proposed. The notice will provide information about anticipated construction-related noise impacts and provide suggestions for avoiding or reducing exposure to such impacts (e.g., planning alternative schedules, closing windows facing the planned construction sites). The SFPUC shall identify and provide a public liaison person before and during construction to respond to the concerns of neighboring property owners. Procedures for contacting the public liaison officer via a toll-free telephone number, email, or in person will be included in the notices. Prior to construction, the SFPUC communications manager, resident engineer,

and construction manager shall develop and review procedures for receiving and responding to questions and complaints.

Although the direct impact resulting from construction noise is considered significant and unavoidable (refer to Section 5.7, Noise), implementation of Mitigation Measures M-LU-1a and M-LU-1b would reduce indirect land use impacts resulting from construction activities by providing sufficient notification, options, and suggestions for occupants; therefore, the impact would be *less than significant with mitigation*.

### 5.2.3.5 Operational Impacts and Mitigation Measures

***Impact LU-2: Project operations would not result in substantial long-term or permanent impacts on the existing character of the vicinity or impacts to or disruption of existing land uses or land use activities. (Less than Significant)***

Long-term impacts related to land use disruption could occur if the PPSU project were to permanently displace or disrupt established land uses or change the character of the vicinity due to project siting or operation. The proposed facilities and improvements would be constructed underground within the existing SFPUC ROW, with only temporary staging areas and access roads outside of the existing ROW. Permitted structures in the ROW that would be removed during construction would be replaced; however, unpermitted structures—including the gazebo at the Millbrae site—are not proposed to be replaced. Such changes to existing facilities would be minor and would not represent a change in land use character of the vicinity or a disruption to existing land uses.

The character of the project vicinity, following implementation of the proposed project, would be similar to, and consistent with, the existing land use character of the immediate vicinity. At the Colma, San Bruno North, and San Bruno south sites long-term changes to the existing character of the vicinity would be negligible after revegetation of the project sites. Although the existing wooded character along portions of the South San Francisco and Millbrae sites would change because trees would not be replanted, consistent with the SFPUC ROW Integrated Management Policy, other trees outside of the ROW would remain and would continue to contribute to the natural character of the area, as described in Section 5.3, Aesthetics.

These long-term changes to the existing character and removal of encroaching trees and structures are considered *less than significant* at the South San Francisco and Millbrae sites because they would not result in the substantial disruption of the ongoing residential, institutional, and recreational uses in the vicinity or in substantial changes to the land use character of the area. At the other three sites and the common staging area, there would be *no impact*.

### 5.2.3.6 Cumulative Impacts and Mitigation Measures

***Impact C-LU: Project construction could result in a cumulatively considerable contribution to cumulative impacts on existing land uses. (Less than Significant with Mitigation)***

The geographic scope for potential cumulative land use impacts encompasses land uses in the vicinity of the PPSU project sites, including the access roads. Cumulative impacts on the existing character of the project vicinity or impacts on, or disruption to, land uses or land use activities resulting from increases in construction-related noise, traffic and traffic safety hazards, or emissions of criteria air pollutants, could be significant if the construction schedule for the proposed project overlapped with the schedules for other projects in the same vicinity.

The cumulative projects identified in Table 5.1-1 would be located near PPSU project sites and could overlap in schedule. If construction of these projects overlaps with construction of the PPSU project, the PPSU project could contribute to cumulative impacts related to the existing character of the project vicinity or disruption of existing land uses. Most of the cumulative projects listed in Table 5.1-1, however, would not directly affect the same land uses as the PPSU project, because they are not located in the same immediate vicinity (e.g. within 150 feet) as the proposed project construction sites, with the exception of the Groundwater Storage and Recovery (GSR) project, which would be located at the PPSU Colma site and near the common staging area in South San Francisco. The GSR project would share the same construction area as the PPSU Colma site; it would be located in the SFPUC ROW, near or adjacent to the common staging area, depending on the GSR location alternative implemented. GSR activities at these sites would include the installation of a groundwater well or the conversion of a test well to a groundwater production well, water and other utility connections, and installation of a chemical treatment/filtration building.

At the Colma site, because the construction activities for the PPSU and GSR projects are not substantial, and the direct land use impacts associated with these two projects are minor, there would be a *less-than-significant* cumulative impact to land uses. At the common staging area, the PPSU project would have no direct land use impacts, the character of the vicinity would not be changed, and access to other adjacent land uses would not be disrupted, as described in the project analysis above. Therefore, at the common staging area there would be *no impacts*.

Air quality, traffic and traffic safety hazards, or noise impacts from the cumulative projects could result in indirect cumulative land use impacts, if such impacts were to occur at the same time and in similar locations as similar impacts associated with the PPSU project. This could result in indirect land use impacts, because they could contribute to changes in the character of land uses (although they would not directly alter or displace them). Two of the identified cumulative projects have the potential to overlap with the PPSU project schedule at four PPSU locations: the GSR project could overlap with construction activities at the Colma and South San Francisco sites, as well as the common staging area (as described above); and the Harry Tracy Water Treatment Plant Long-Term Improvements project could overlap with PPSU tree removal activities at the Millbrae site (this project would not be in close enough proximity to the PPSU project at this site to result in direct cumulative land use impacts). Depending on the severity of the impacts and the degree to which they overlap, indirect cumulative impacts on land use could

be significant. The discussion of direct cumulative construction impacts related to other resource topics is provided in Sections 5.3, Aesthetics; 5.6, Transportation and Circulation; 5.7, Noise; and 5.8, Air Quality. To address indirect land use impacts, the proposed project would implement **Mitigation Measure LU-1a: Notice of Construction Activities** and **Mitigation Measure LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Impacts**, which would reduce the project's contribution to temporary and indirect land use impacts. Therefore, the project's contribution to the indirect impacts on land use would not be cumulatively considerable with the implementation of mitigation measures.

For all of the reasons described above, the PPSU project would not have a cumulatively considerable contribution to cumulative land use impacts during construction (*less than significant with mitigation*).

## 5.2.4 References

Carlisle, Jackie, 2011. Telephone conversation between Jackie Carlisle, City of San Bruno Community Services Department, Parks and Recreation Division, and Mara Feeney of Mara Feeney & Associates, May 20.

City of Millbrae, 1998. City of Millbrae General Plan. Adopted November 24, 1998.

City of San Bruno, 2011. City of San Bruno Planning Commission Staff Report, Item No. 5.A (Request for Conditional Use Permit, 300 Piedmont Avenue). September 20.

Fletcher, Angelic, 2012. Personal communication between Angelic Fletcher, Kohl's Department Store Manager and Mara Feeney, Mara Feeney & Associates. September 20.

McManus, Elizabeth, 2011. Telephone conversation between Elizabeth McManus, Deputy Superintendent, San Mateo Union High School District, and Mara Feeney of Mara Feeney & Associates. May 20.

San Francisco Examiner, 2010. "Crestmoor School Debate Not Over," November 24, 2010. Accessed December 3, 2010.

Wong, Stephanie, 2012. Personal conversation between Stephanie Wong, San Bruno Chinese Church, and Mara Feeney, Mara Feeney & Associates.

Wu, Andrew, 2012. Personal communication between Daniel Jaimes, SFPUC Communications Coordinator, and Pastor Wu, San Bruno Chinese Church and Meeting Notes from conference call with San Bruno Chinese Church. September 14 and September 20.

Zhang, YinLan, 2012. Personal communication between YinLan Zhang, SFPUC Environmental Project Manager, and Hannah Young, URS. December 5.

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## 5.3 Aesthetics

This section describes existing aesthetics and visual resources in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project, and evaluates the potential aesthetic impacts of the proposed project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.3.1 Setting

The proposed project is located in the Town of Colma and the cities of South San Francisco, San Bruno, Millbrae, and in unincorporated San Mateo County, in the northern portion of the San Francisco Peninsula (see Figure 3-1 in Chapter 3, Project Description). To the west of the cities are the Pacific Coast Range foothills and intervening valleys, and to the east are the flatland areas that extend to San Francisco Bay.

The existing water transmission pipelines are located within the San Francisco Public Utilities Commission (SFPUC) right-of-way (ROW). The pipelines in the study area<sup>1</sup> are underground, and are therefore not visible. The SFPUC ROW is an existing utility corridor that passes through neighborhoods and community areas, cemeteries, and commercial and recreational areas. The SFPUC ROW contains minimal visible utility facilities. The few visible facilities include manhole covers, aboveground valve boxes, and customer service connections, with storm drains crossing the SFPUC ROW at some locations.

Views of the five sites and the common staging area can be seen by pedestrians, bicyclists, and motorists on surrounding roadways, by recreationists (including those using the trail through the City of Millbrae open space area accessible from Lomita Avenue, and the Green Hills Country Club at the Millbrae site), by staff and patrons of nearby commercial and institutional establishments, from the San Bruno Chinese Church, and from a limited number of neighboring residences.

#### 5.3.1.1 Scenic Vistas

Scenic vistas are views of an area or landscape that are visually or aesthetically pleasing. Scenic routes or corridors contain views of these vistas.

Scenic vistas in the study area can be seen from designated scenic highways and corridors, as well as from local roadways. A scenic corridor can be described as a roadway or highway with unique or distinctive physical or cultural features. According to the California Department of Transportation's (Caltrans) Scenic Highway Guidelines, a scenic highway passes through an area of outstanding scenic quality, containing striking views, flora, geology, and other unique natural attributes (Caltrans, 2011).

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<sup>1</sup> The aesthetics study area consists of the five sites and the common staging area, as well as surrounding areas with publicly accessible views of the sites.

The general plans for the Town of Colma (Town of Colma, 1999 and 2000) and for the cities of South San Francisco (City of South San Francisco, 1999) and Millbrae (City of Millbrae, 1998) do not identify any scenic vistas in the study area.

The San Bruno General Plan (City of San Bruno, 2009) recognized the following as local scenic corridors:

- Skyline Boulevard (identified in the general plan as a State scenic highway) – approximately 1.3 miles and 0.6 mile from the San Bruno North and San Bruno South sites, respectively;
- Crystal Springs Road (County Scenic Road) – approximately 0.9 and 0.5 mile from the San Bruno North and San Bruno South sites, respectively;
- Sharp Park Road (identified in the general plan as a County Scenic Road) – approximately 2.5 and 2.7 miles from the San Bruno North and San Bruno South sites, respectively; and
- Sneath Lane – approximately 0.5 and 0.9 mile from the San Bruno North and San Bruno South sites, respectively.

The San Mateo County General Plan defines a scenic corridor as land adjacent to a scenic road which, when seen from the road, provides outstanding views of natural landscapes and attractive manmade development (San Mateo County, 1986). The General Plan identifies Cabrillo Highway (also known as State Route [SR] 1) from Junipero Serra Freeway to the northern limits of the City of Half Moon Bay as a scenic road in Colma within a distance of 0.7 mile from the Colma site; and Westborough Boulevard between Skyline Boulevard and Junipero Serra Freeway as a scenic road in South San Francisco, approximately 0.9 mile from the South San Francisco site. The San Mateo County General Plan also identifies Crystal Springs Road as a scenic road in San Bruno; as stated above, this road is approximately 0.5 and 0.9 mile from the San Bruno North and San Bruno South sites, respectively.

In San Mateo County, portions of SR 35 and SR 1 have been designated as scenic highways by Caltrans (Caltrans, 2011). However, the portion of SR 35 listed as a scenic highway is approximately 7 miles from the closest site, the Millbrae site. The portion of SR 1 listed as a scenic highway is approximately 9 miles from the closest site, the Millbrae site. Interstate 280 (I-280) is the only Caltrans-designated scenic highway in close proximity to the project. I-280 is discussed in the State regulatory section (Section 5.3.2.2), below. The San Mateo County General Plan (San Mateo County, 1986) also identified these portions of I-280 as a scenic road.

### 5.3.1.2 Visual Resources

Visual resources are generally defined as both the natural and built features of the landscape that add to or result in the visual quality of an area. Visual resources may include trees, rock outcroppings, viewsheds, ridgelines, gateways, waterways, open-space corridors, and built features such as structures and roads. The following discussion summarizes visual resources as identified in the General Plan of the respective jurisdiction.



### *San Mateo County*

As noted above, the San Mateo General Plan (San Mateo County, 1986) identifies I-280 from Millbrae to the Santa Clara County line as a State-designated scenic road. I-280 is also discussed in the State regulatory section (Section 5.3.2.2), below.

### *Town of Colma*

The Town of Colma General Plan identifies tree masses as contributing to the visual quality of the town. The general plan identifies pine, cypress, acacia, and eucalyptus as the typical tree species planted in these groupings.

The Colma General Plan Land Use Element identifies six distinct gateways where motorists, bicyclists, and pedestrians view the town. These gateways and their distance to the Colma site are shown in Table 5.3-1.

**Table 5.3-1  
Gateways and Scenic Corridors**

<b>Gateway/Scenic Corridor Location</b>	<b>Approximate Distance to Nearest Project Site</b>
<b>Town of Colma</b>	
Mission Street at the intersection of B Street	0.7 mile
El Camino Real and Mission Road	0.2 mile
Serramonte Boulevard and Collins Avenue where they intersect Junipero Serra Boulevard	0.4 mile
Hillside Boulevard at the intersection of Hoffman Street	0.6 mile
Hillside Boulevard at the Hickey Boulevard extension (a proposed future gateway)	0.9 mile
Mission Road at the Hickey Boulevard extension (a proposed future gateway)	0.6 mile
<b>City of San Bruno</b>	
<i>San Bruno North Site</i>	
Skyline Boulevard (at northern city limits)	2.2 miles
Skyline Boulevard (at southern city limits)	1.3 miles
Sharp Park Road (at western city limit)	2.5 miles
I-280 (at the northern city limits)	1.1 miles
I-280 (at the southern city limits)	1.3 miles
El Camino Real (at the northern city limits)	1.1 miles
El Camino Real (at the southern city limits)	1.3 miles
San Mateo Avenue (at the northern city limit)	1.4 miles

**Table 5.3-1  
 Gateways and Scenic Corridors (Continued)**

<b>Gateway/Scenic Corridor Location</b>	<b>Approximate Distance to Nearest Project Site</b>
I-380 (at the eastern city limit)	1.3 miles
San Bruno Avenue West (at the eastern city limits)	1.3 miles
San Bruno Avenue West (at the western city limits)	0.9 mile
Skyline Boulevard scenic corridor	1.3 miles
I-280 scenic corridor	0.6 mile
Crystal Springs Road scenic corridor	0.85 mile
Sharp Park Road scenic corridor	2.5 miles
Sneath Lane scenic corridor	0.53 mile
<b><i>San Bruno South Site</i></b>	
Skyline Boulevard (at northern city limits)	2.5 miles
Skyline Boulevard (at southern city limits)	0.6 mile
Sharp Park Road (at western city limit)	2.5 miles
I-280 (at the northern city limits)	1.4 miles
I-280 (at the southern city limits)	0.6 mile
El Camino Real (at the northern city limits)	1.5 miles
El Camino Real (at the southern city limits)	1.1 miles
San Mateo Avenue (at the northern city limit)	1.7 miles
I-380 (at the eastern city limit)	1.6 miles
San Bruno Avenue West (at the eastern city limits)	1.4 miles
San Bruno Avenue West (at the western city limits)	0.8 mile
Skyline Boulevard scenic corridor	0.6 mile
I-280 scenic corridor	0.6 mile
Crystal Springs Road scenic corridor	0.14 mile
Sharp Park Road scenic corridor	0.9 mile
Sneath Lane scenic corridor	0.9 mile
Sources: City of San Bruno, 2009; Town of Colma, 1999. Notes: I-280 = Interstate 280 I-380 = Interstate 380	

### *City of South San Francisco*

The City of South San Francisco General Plan does not identify any visual resources in the study area.

### *City of San Bruno*

The City of San Bruno General Plan identifies seven gateways that serve as entrances to the city limits or district boundaries, informing visitors and residents that they have entered a special place. These gateways contain coordinated landscape design, signage, and street furniture, and are considered visual resources in the study area. The roadways and highways that serve as gateways to the City of San Bruno, and their distances to the San Bruno North and San Bruno South sites, are shown in Table 5.3-1.

The City of San Bruno General Plan also identifies the tall, shady trees along San Bruno roadways as the scenic characteristic contributing to designation of several corridors as scenic. These corridors, and their distances to the San Bruno North and San Bruno South sites, are shown in Table 5.3-1.

### *City of Millbrae*

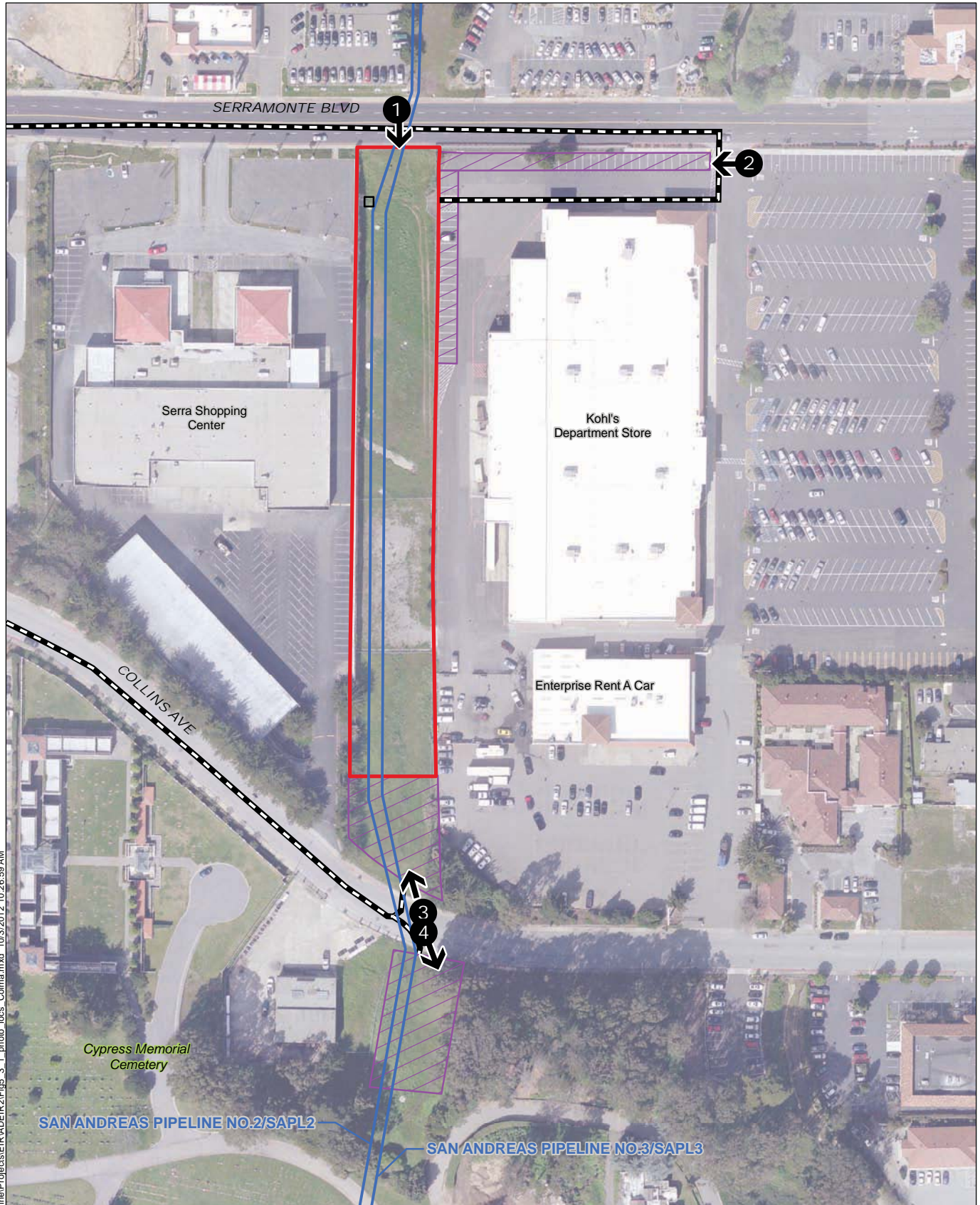
The City of Millbrae General Plan (City of Millbrae, 1998) does not identify specific visual resources in Millbrae.

## **5.3.1.3 Visual Character**

Visual character is a general description of the visual attributes of a particular area. The purpose of defining the visual character of an area is to provide the context within which the visual quality of a particular site or locale is most likely to be perceived from public vantage points. For urban areas, visual character is typically described on the neighborhood level or in terms of areas with common land use, intensity of development, socioeconomic conditions, and/or landscaping and urban design features. For natural and open space settings, visual character is most commonly described in terms of areas with common landscape attributes, such as landform, vegetation, or water features.

The individual visible elements in an area contribute to the overall visual character of the area. This section identifies the visible elements, including the presence of any unique features, in the project sites and describes the overall visual character of each site.

Figures 5.3-1 through 5.3-10 show the visual character of the five sites as viewed from nearby, publicly accessible locations. Across the five sites, the visible elements in, or adjacent to, the SFPUC ROW include residential and community structures such as single-family homes, apartments and condominiums, schools, a church, commercial establishments, and recreational features such as golf courses and trails. Within the SFPUC ROW, utility features such as manholes, vaults (up to approximately 3.5 feet in height), and customer service connections are visible.

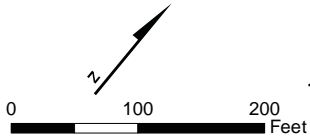


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**1** Photo Point Location and Direction

Project Components

- Construction Zone
- Staging and Spoils Area
- Access Route



**PHOTO POINT LOCATIONS  
COLMA SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.3-1**

Source: SFPUC 2011



**View 1:** View to the south from Serramonte Boulevard to the construction zone in the SFPUC ROW



**View 2:** View to the west from Serramonte Boulevard to the staging and spoils area



**View 3:** View to northwest from Collins Avenue to the construction zone in the SFPUC ROW



**View 4:** View to the south from Collins Avenue to the staging and spoils area in the SFPUC ROW

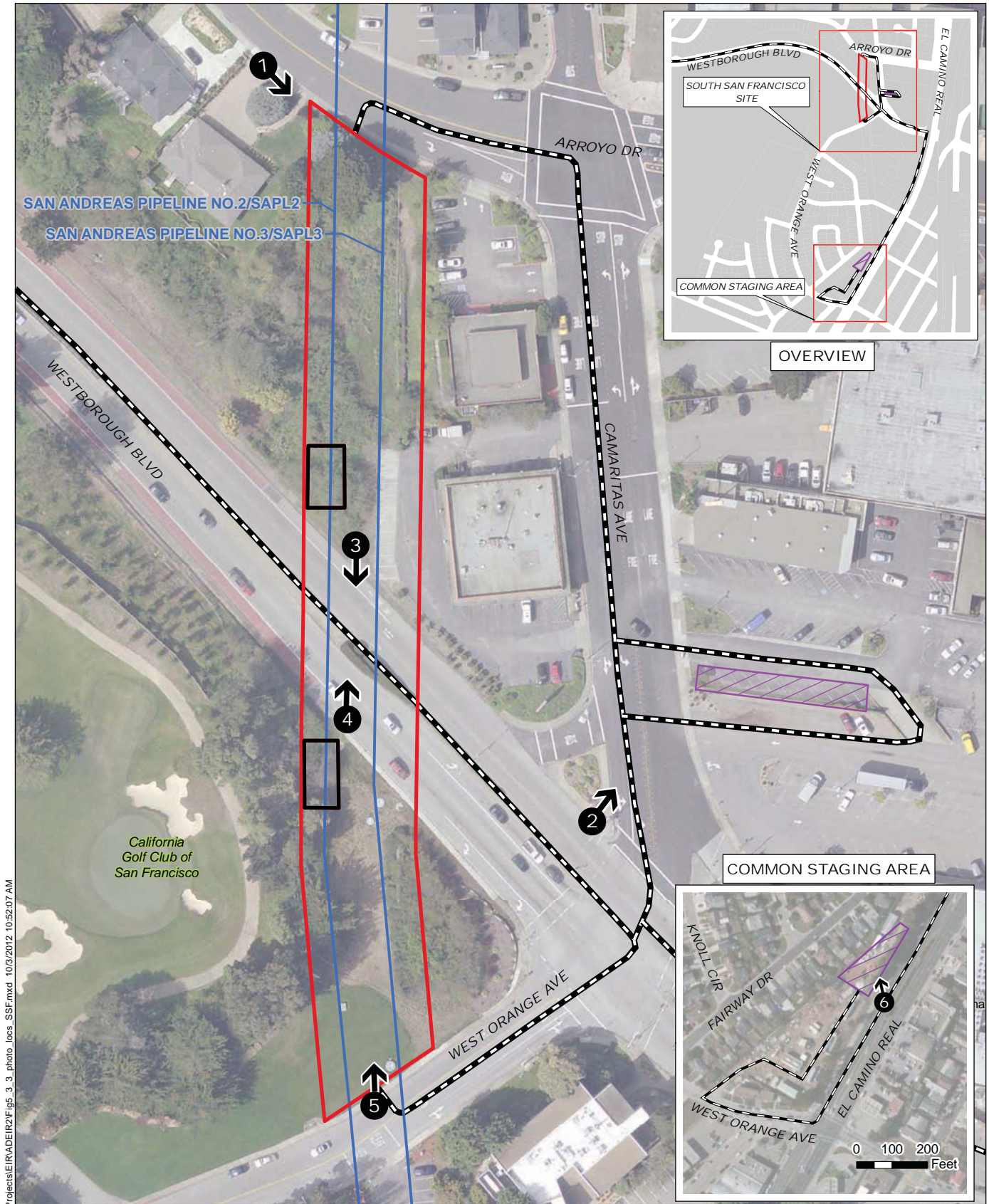
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**VIEWS OF COLMA SITE**






Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

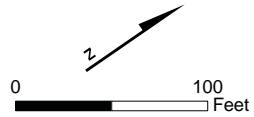
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**FIGURE 5.3-2**



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 Source: SFPUC 2011

-  Photo Point Location and Direction
- Project Components**
-  Construction Zone
-  Staging and Spoils Area
-  Boring Pit
-  Access Route



**PHOTO POINT LOCATIONS  
SOUTH SAN FRANCISCO SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.3-3**



**View 1:** View to east from the driveway at 106 Arroyo Drive to the construction zone in the SFPUC ROW



**View 2:** View to the north from Westborough Boulevard and Camaritas Avenue to the staging and spoils area



**View 3:** View to southeast from Westborough Boulevard to the construction zone in the SFPUC ROW



**View 4:** View to the northwest from Westborough Boulevard to the construction zone in the SFPUC ROW



**View 5:** View to the northwest from Orange Avenue to the construction zone in the SFPUC ROW

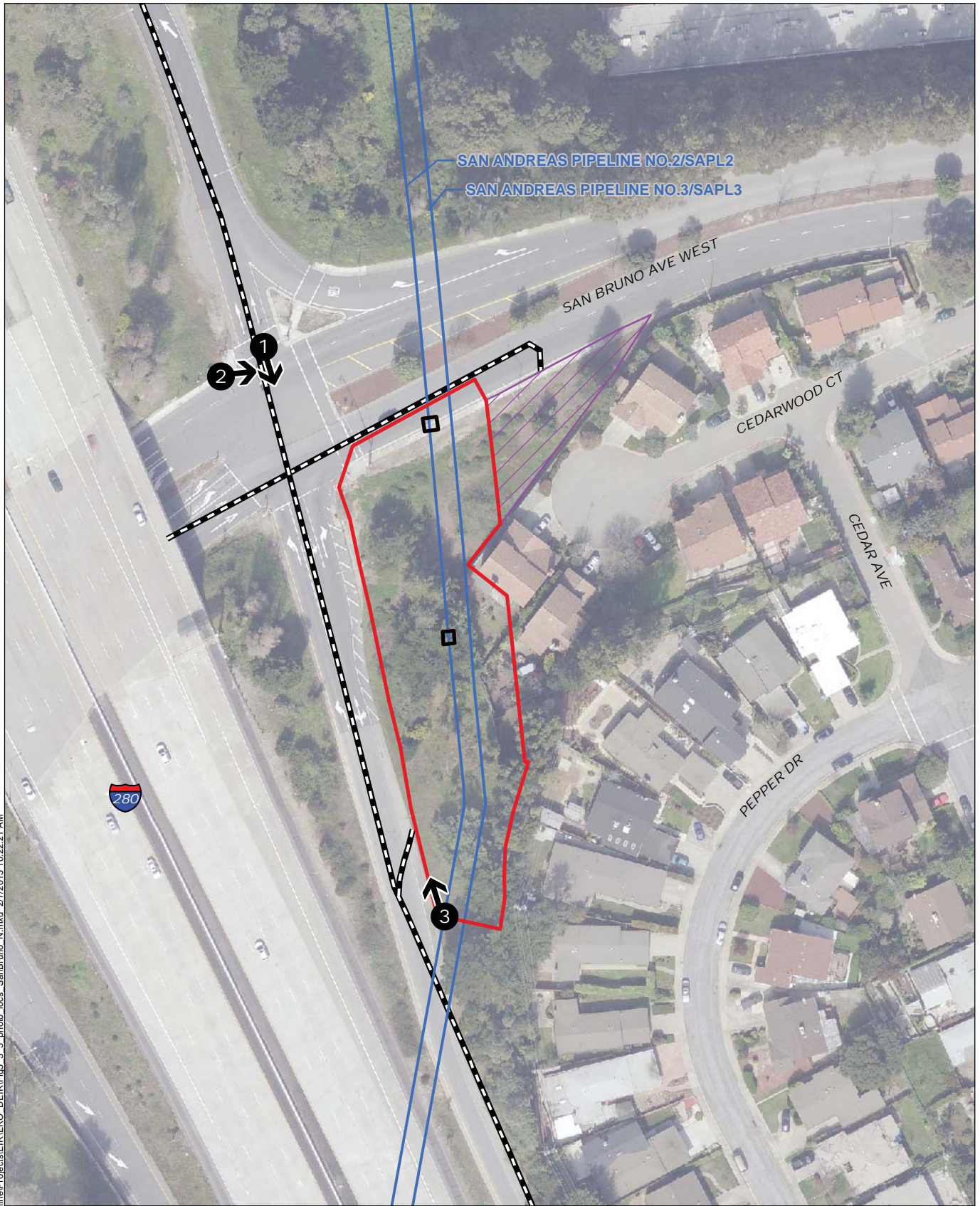


**View 6:** View to the northwest from El Camino Real to the common staging area in the SFPUC ROW

**VIEWS OF SOUTH SAN FRANCISCO SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

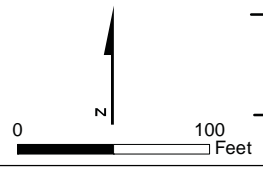
**FIGURE 5.3-4**



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 Source: SFPUC 2011

**1** Photo Point Location and Direction

- Project Components**
- Construction Zone
  - Staging and Spoils Area
  - Access Portal
  - Access Route



**PHOTO POINT LOCATIONS  
SAN BRUNO NORTH SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.3-5**





**View 1:** View to the south from San Bruno Avenue to the construction zone, adjacent to the I-280 off-ramp



**View 2:** View to the southeast from San Bruno Avenue to the construction zone, adjacent to San Bruno Avenue

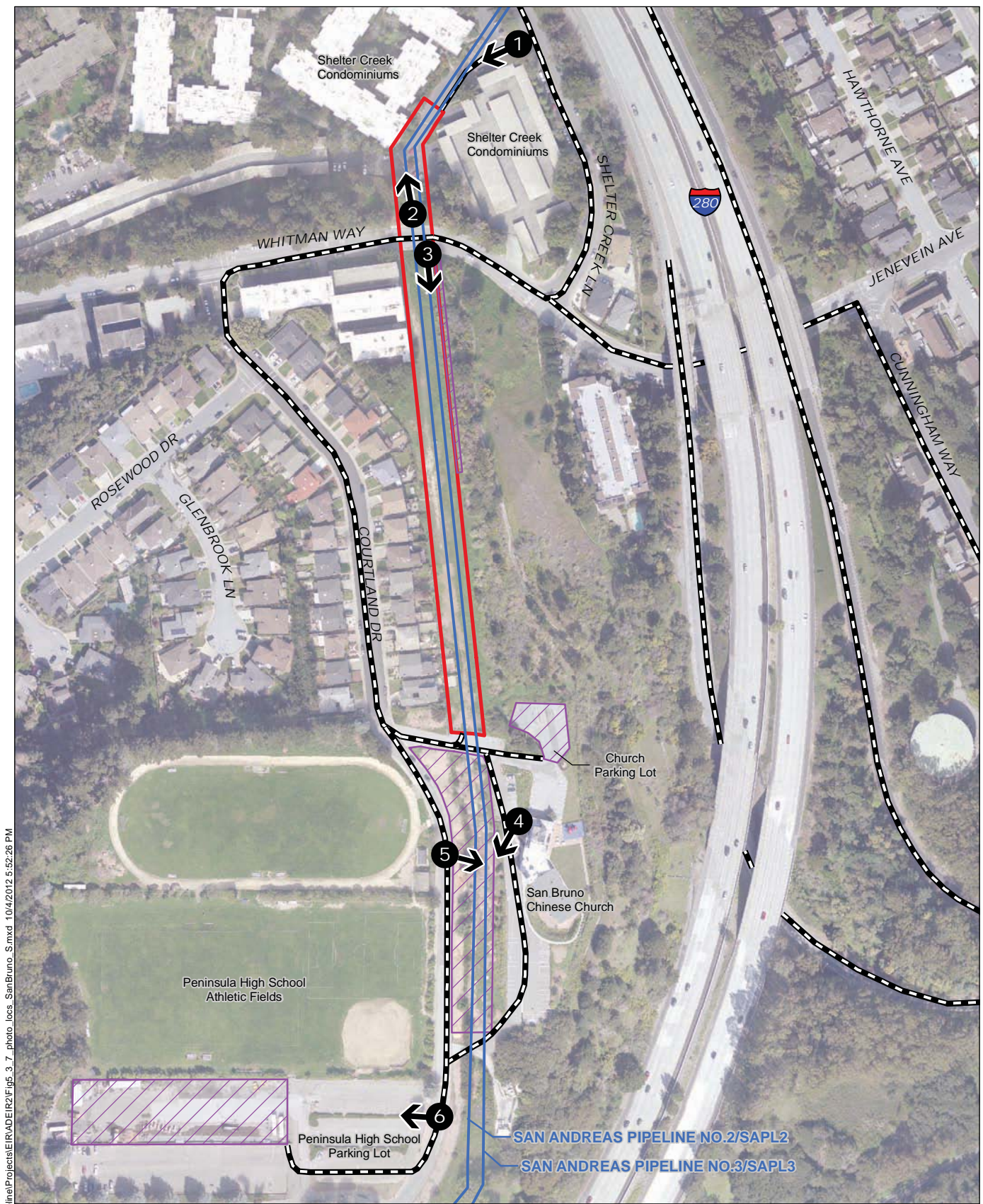


**View 3:** View to the north from the I-280 off ramp, toward San Bruno Avenue, with the access route and construction zone to the right

**VIEWES OF SAN BRUNO NORTH SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

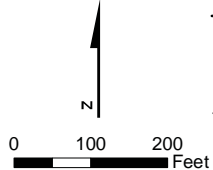
**FIGURE 5.3-6**



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 Source: SFPUC 2011

**1** Photo Point Location and Direction

- Project Components**
- Construction Zone
  - Staging and Spoils Area
  - Access Route



**PHOTO POINT LOCATIONS  
 SAN BRUNO SOUTH SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.3-7**



**View 1:** View to the west from Shelter Creek Lane toward the Shelter Creek Condominiums parking lot along the SFPUC ROW, with the construction zone in the background



**View 2:** View to the north from Whitman Way to the construction zone in the SFPUC ROW



**View 3:** View to the south from Whitman Way to the construction zone in the SFPUC ROW, with the Park Plaza Apartments to the west



**View 4:** View to the south from San Bruno Chinese Church parking lot to the staging and spoils area



**View 5:** View to the southeast from Courtland Drive toward the staging and spoils area beyond the fence, in the SFPUC ROW, with the San Bruno Chinese Church in the background

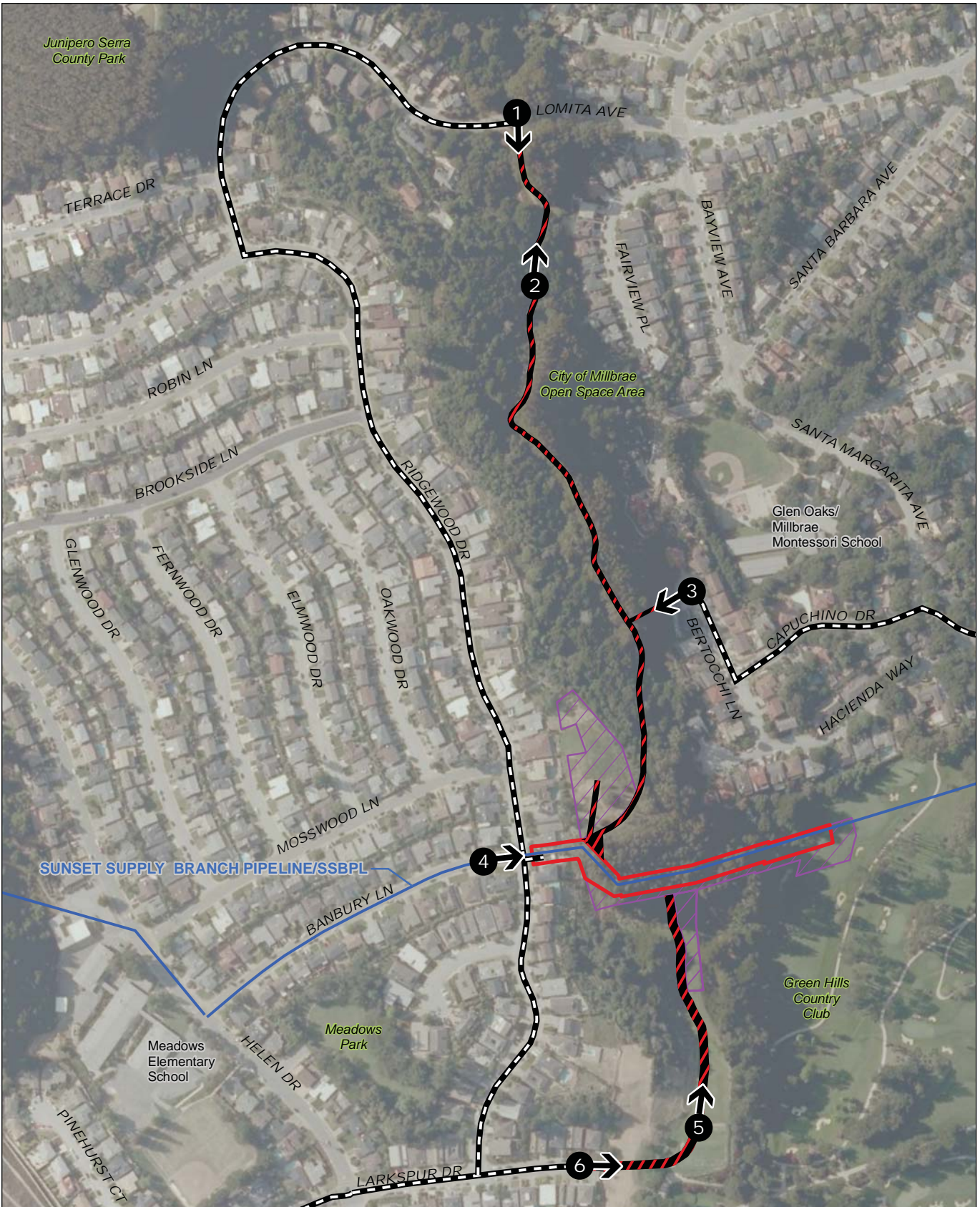


**View 6:** View to the west from the sidewalk along Courtland Drive toward the staging and spoils area at Peninsula High School

**IEWS OF SAN BRUNO SOUTH SITE**

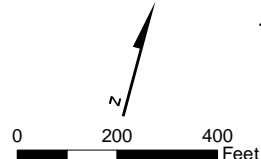
Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.3-8**



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- 1** Photo Point Location and Direction
- Project Components**
- Construction Zone
- Staging and Spoils Area
- Access Route Requiring Upgrade
- Access Route



**PHOTO POINT LOCATIONS  
MILLBRAE SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.3-9**

Source: NAIP Imagery Summer 2010/ SFPUC 2011



**View 1:** View to the south from Lomita Avenue to the access route along the Lomita Avenue Trail



**View 2:** View to the north from the Lomita Avenue Trail along the access route



**View 3:** View to the southwest from Bertocchi Lane to the Lomita Avenue Trail access route



**View 4:** View to east from Ridgewood Drive to the construction zone in the SFPUC ROW



**View 5:** View to the north of the Green Hills Country Club driving range (access route from Larkspur Drive); staging and spoils area and construction zone in the distance



**View 6:** View to the east from Larkspur Drive to the access route at the Green Hills Country Club

**VIEWS OF MILBRAE SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.3-10**

At the Colma site, the SFPUC ROW extends through a vacant parcel and a grassy sloped area (Views 1, 3, and 4 on Figure 5.3-2). The site is located between commercial developments, including car dealerships, vacant stores, and retail establishments and associated parking lots. The area has wide, multilane roads, providing access for large retail stores and car dealerships. The staging and spoils area would be located in the Kohl's Department Store parking lot (View 2 on Figure 5.3-2).

At the South San Francisco site, the SFPUC ROW passes through a densely wooded area (Views 1 and 4 on Figure 5.3-4) and a landscaped, grassy area (View 5 on Figure 5.3-4). A residence is located adjacent to the northern end of the site on Arroyo Road (Figure 5.3-3 shows the residence adjacent to photo point 1). A staging and spoils area would be located in a parking lot across Camaritas Avenue (View 2 on Figure 5.3-4).

The San Bruno North site is a triangular-shaped site bordered by the exit ramp of I-280 (Views 1, 2, and 3 on Figure 5.3-6), San Bruno Avenue West, and residences. Trees and other vegetation grow on the site. A fence, along with the trees and vegetation, screens the site, San Bruno Avenue West, and the exit ramp from the residents. Across San Bruno Avenue West to the north is the Bayhill Shopping Center. The shopping center structure and large trees block views of the site from the shopping center.

The San Bruno South site contains a mix of single-family dwellings, condominiums and apartments, a church, and a school. The SFPUC ROW extends through the driveway and parking area of the condominiums (View 1 on Figure 5.3-8), past single-family homes on Courtland Drive, adjacent to the San Bruno Chinese Church, and across from the Peninsula High School (Views 2 through 6 on Figure 5.3-8). Adjacent to the single-family dwellings, the site is an undeveloped, unpaved strip of open land with vegetation. Views of San Francisco Bay are visible from the SFPUC ROW. The SFPUC ROW adjacent to the San Bruno Chinese Church is an open vegetated area with some landscaping that is a vegetative buffer between Courtland Drive and the church, its driveway, and its parking lot (Views 4 and 5 on Figure 5.3-8). At the San Bruno South site, the topography plays a key role in shaping the visual character. Hills to the north and west provide a prominent visual backdrop to the commercial areas adjacent to El Camino Real.

At the Millbrae site, the SFPUC ROW extends through a residential neighborhood of single-family dwellings, through the City of Millbrae open space area, and through the Green Hills Country Club (Views 1 through 6 on Figure 5.3-10). The SFPUC ROW is unpaved, and a dense grove of trees is established on the SFPUC ROW (Views 4 and 5 on Figure 5.3-10). The trail from Lomita Avenue through the open space area is a unique feature to the area, offering publicly accessible open space within the residential neighborhood. The visual character of the area is defined by the residential neighborhood, open spaces, and dense trees.

The common staging area is located on a portion of the SFPUC's Baden Valve Lot, a 2-acre site at the corner of El Camino Real and West Orange Avenue, and is surrounded by commercial and residential development (SF Planning, 2008). The common staging area is a 0.32-acre area at the north of the Baden Valve Lot, which is generally vegetated with grass. Views of the lot from passing pedestrians, bicyclists, and motorists on El Camino Real are obscured by a line of trees that generally blocks views to the common staging area (View 6 on Figure 5.3-4).

#### 5.3.1.4 Visual Sensitivity

The overall visual sensitivity is related to the visual quality of the site and viewer exposure conditions. Visual sensitivity is the overall measure of a site's susceptibility to adverse visual

changes. Visual sensitivity is rated as high, moderate, or low and is determined based on the combined factors of visual quality, viewer types and volumes, and exposure conditions to the proposed project. These topics are further defined below.

Visual quality is defined as the overall visual impression or attractiveness of a site or locale, as determined by its aesthetic qualities (such as color, variety, vividness, coherence, uniqueness, harmony, and pattern). For this analysis, the visual quality of a site or locale is defined according to three levels:

- **Low.** The location is lacking in natural or cultural visual resource amenities typical of the region. A site with low visual quality will have aesthetic elements that are relatively unappealing and perceptibly uncharacteristic of the surrounding area.
- **Moderate.** The location is typical or characteristic of the natural or cultural visual amenities of the area. A site with moderate visual quality maintains the visual character of the surrounding area, with aesthetic elements that do not stand out as either contributing to, or detracting from, the visual character of an area.
- **High.** The location has visual resources that are unique or exemplary of the natural or cultural scenic amenities for the area. A site with high visual quality is likely to stand out as particularly appealing and makes a notable positive contribution to the visual character of an area.

Affected viewers are those who have a strong stake or interest in the quality of the landscape and have a greater sensitivity to changes that degrade or detract from the visual character of an area. Examples of sensitive viewers might include motorists on designated scenic routes, bikers, pedestrians, other recreationists, or tourists. The identification of viewer types and volumes describes the type and quantity of potentially affected viewers within the visual study area. Land uses that derive value from the quality of their settings are considered potentially sensitive to changes in visual conditions.

Exposure conditions address the variables that affect the viewing conditions of a site. Exposure conditions considers some or all of the following factors: landscape visibility (the ability to see the landscape); viewing distance (i.e., the proximity of viewers to the project); viewing angle (whether the project would be viewed from a superior, inferior, or level line of sight); extent of visibility (whether the line of sight is open and panoramic to the project area or restricted by terrain, vegetation, and/or structures); and duration of view.

### *Colma Site*

#### **Visual Quality**

At the Colma site, the SFPUC ROW is a vegetated grassy strip of land. Public use and access is restricted between Serramonte Boulevard and Collins Avenue. To the south of Collins Avenue, the proposed staging and spoils area is also vegetated with grasses. The section of the site between Serramonte Boulevard and Collins Avenue does not contain any features with notable aesthetic qualities, but does provide views of an undeveloped parcel of land located within the commercial developments in the area. Bordering the staging and spoils area are eucalyptus trees. The area itself does not offer striking visual features, and, therefore, the visual quality is considered low.

### **Affected Viewers and Exposure Conditions**

A security fence around the portion of the site north of Collins Avenue restricts unauthorized individuals from entering, and the site is lower in elevation than the adjacent Serramonte Boulevard and Collins Avenue. To the west of the construction zone is a car dealership, and to the east is the loading and overflow parking for the Kohl's Department Store and the Enterprise Rent-A-Car car wash. Views of the site are screened or blocked by large retail buildings or cars. Motorists, bicyclists, and pedestrians traveling on Serramonte Boulevard might have brief and limited views of the construction zone because the roadway passes the site. Motorists, bicyclists, and pedestrians travelling on Collins Avenue would also have brief views of the construction zone or staging and spoils area as they pass by. Therefore, the site has low viewer exposure, and is visible only briefly as motorists, bicyclists, pedestrians, or customers of the area stores pass by or park.

### **Visual Sensitivity**

Because the site has low visual quality and low viewer exposure, the Colma site is considered to have low visual sensitivity.

### ***South San Francisco Site***

#### **Visual Quality**

The South San Francisco site is restricted from public use and access between Arroyo Drive and Westborough Boulevard. It is predominantly densely vegetated with trees and dense understory north of Westborough Boulevard, and some cleared and scrubby areas. To the west of the site along Arroyo Drive are residences, and northwest of Westborough Boulevard is an impenetrable grove of willows. Northeast of the site is a commercial strip with a liquor store and restaurant. South of Westborough Boulevard, the site is a grassy, landscaped area, and is adjacent to the California Golf Club of San Francisco. North of Westborough Boulevard, the visual quality is considered low due to the commercial strip and surrounding commercial business. The visual quality is moderate south of Westborough Boulevard due to the landscaped area.

### **Affected Viewers and Exposure Conditions**

A security fence around the site restricts unauthorized individuals from entering the dense wooded portion of the site between Arroyo Drive and Westborough Boulevard. Motorists, bicyclists, and pedestrians traveling along Arroyo Drive have obstructed views of the site as they approach the area due to existing vegetation. For motorists, bicyclists, and pedestrians traveling along Westborough Boulevard, the site is visible. Motorists, bicyclists, and pedestrians travelling eastbound along Arroyo Drive and Westborough Boulevard and northbound along West Orange Avenue also have views of the nearby commercial areas, which are characterized by commercial establishments such as supermarkets, restaurants, and furniture stores. Motorists, bicyclists, and pedestrians traveling westbound along Arroyo Drive and southbound along West Orange Avenue have views of the site in the context of a residential setting, with dense vegetation and green spaces. Motorists, bicyclists, and pedestrians traveling westbound on Westborough Boulevard, a four-lane road, have views of the wooded and landscaped areas on either side of the road. Motorists, bicyclists, and pedestrians traveling eastbound on Arroyo Drive or Westborough Boulevard, or northbound on West Orange Avenue, have views of the commercial area toward El Camino Real. The site has moderate viewer exposure and is visible to motorists, bicyclists, pedestrians, and customers of area stores, and nearby residents.



## **Visual Sensitivity**

The site has low to moderate visual quality because there are views of both wooded and landscaped areas, and of commercial parking lots and structures. Combined with the site's moderate viewer exposure, it is considered to have low to moderate visual sensitivity.

### ***San Bruno North Site***

#### **Visual Quality**

The San Bruno North site is a triangular-shaped area immediately east of I-280 and south of San Bruno Avenue. The site runs along the San Bruno Avenue West exit off-ramp from I-280, continues to its intersection with San Bruno Avenue West, and west along San Bruno Avenue West. The site is vegetated, with low grasses, trees, and dense underbrush in some locations. The visual quality is considered moderate because portions of the site are framed by a major road and freeway, but are landscaped and maintained, resulting in aesthetically pleasing views.

#### **Affected Viewers and Exposure Conditions**

Views from the freeway off-ramp offer glimpses to the east of the residential area bordering the site, and views across San Bruno Avenue West to the on-ramp for I-280. Motorists, bicyclists, and pedestrians traveling along San Bruno Avenue West would view the site as they pass. San Bruno Avenue West, a major four-lane divided road, lies immediately north of the site and slopes downhill to the east. There are residential areas to the south of San Bruno Avenue West, and commercial businesses to the north. The project site would be partially visible from the second stories of a few residents on Cedarwood Court and Pepper Drive. In the vicinity of the project site, wooded areas are located on either side of San Bruno Avenue West. The site has moderate viewer exposure along San Bruno Avenue West, and would be visible only briefly to motorists, bicyclists, and pedestrians. Motorists exiting I-280 would view the site for a longer duration. Therefore, this site is considered to have a moderate to high viewer exposure.

#### **Visual Sensitivity**

The site has moderate visual quality because it is landscaped with trees and brush, offering a pleasant view for motorists exiting I-280 or motorists, bicyclists, and pedestrians at the intersection of the site and San Bruno Avenue West. However, the duration of the views is brief for these viewers, and is quickly replaced with views of the underpass for I-280 or the commercial and residential development along San Bruno Avenue West. Therefore, the San Bruno North site is considered to have low to moderate visual sensitivity.

### ***San Bruno South Site***

#### **Visual Quality**

The San Bruno South site extends through a driveway and parking area of Shelter Creek Condominiums, past single-family homes, the San Bruno Chinese Church, and the Peninsula High School. Along the back yards of single-family homes along Courtland Drive, the site is a grassy vegetated area. Some residences have views of San Francisco Bay. The views of the San Francisco Bay are exemplary representatives of the natural scenic amenities of the area, and offer views from the Peninsula across San Francisco Bay to the East Bay hills. Along the San Bruno

Chinese Church, the site is vegetated with trees and shrubs. The site includes a portion of the northern parking lot of the San Bruno Chinese Church, and a portion of the Peninsula High School parking lot. The visual quality is considered moderate to high because the views of the San Bruno Church and Peninsula High School parking lot, which are typical and have a moderate quality, are augmented by the higher-quality views of San Francisco Bay and the hills beyond the foreground views.

### **Affected Viewers and Exposure Conditions**

The San Bruno South site may be viewed from single-family dwellings, condominiums, and parking lots for the San Bruno Chinese Church and Peninsula High School. The church parking lot that would be used for staging and spoils storage is located on the side of the church and is not readily visible from Courtland Drive, but would be highly visible to churchgoers and others using educational facilities within the church building. The SFPUC ROW along the front of the church is visible from Courtland Drive, although it is somewhat screened by vegetation. The Peninsula High School parking lot is visible from Courtland Drive. Motorists, bicyclists, and pedestrians on Whitman Way have a view of the site upon immediate approach to the area. The site has low to moderate viewer exposure; it is visible only briefly as motorists, bicyclists, and pedestrians pass, and for longer periods for attendees of church activities and classes, high school attendees, and for residents along Courtland Drive.

### **Visual Sensitivity**

The site has moderate to high visual quality because it is vegetated with trees and shrubs, offering a pleasant view for area residents and those attending the church or high school. These viewers would have a longer exposure to the site than passing motorists, bicyclists, and pedestrians, whose exposure would be relatively short. These two combined sensitivities result in the site having a moderate visual sensitivity.

### ***Millbrae Site***

#### **Visual Quality**

The Millbrae site is unpaved where it extends through residential yards, and a dense grove of trees is established on portions of the site. Staging and spoils areas would be on flat, grassy areas near the back yards of residences on Ridgewood Drive, along the SFPUC ROW, and on landscaped portions of the Green Hills Country Club golf course. Access routes requiring improvements would extend through the City of Millbrae open space area and the golf course. The visual quality is considered moderate to high.

### **Affected Viewers and Exposure Conditions**

The project site is visible to patrons of the Green Hills Country Club and from the back yards of some residents on Ridgewood Drive and Hacienda Way. The site is visible to recreationists using the trail accessible from Lomita Avenue, and to residents at the end of the cul-de-sac on Bertocchi Lane. Passing motorists, bicyclists, and pedestrians would have very limited views of the site at a few locations on Ridgewood Drive, Lomita Avenue, and Bertocchi Lane. The site has moderate viewer exposure.

### **Visual Sensitivity**

The site has moderate to high visual quality, and moderate viewer exposure. It is considered to have moderate to high visual sensitivity.

### ***Common Staging Area***

#### **Visual Quality**

The common staging area at the Baden Valve Lot in South San Francisco (shown on Figure 2-3) is located in an urbanized area. Surrounding land uses consist of commercial uses along El Camino Real to the east, a funeral home to the north, residential uses along Fairway Drive to the west, and the remainder of the Baden Valve Lot to the south. The Baden Valve Lot contains numerous water supply valves and vaults, a water quality control building, storage sheds, an electrical transformer, other ancillary buildings and structures, and the Baden Pump Station (SF Planning, 2008). The common staging area is an undeveloped portion of the Baden Valve Lot; it is covered with gravel and interspersed with vegetation and exposed soils. Because of the water supply facilities on the Baden Valve Lot, the visual quality of the common staging area is low.

#### **Affected Viewers and Exposure Conditions**

A security fence surrounds the common staging area and restricts unauthorized individuals from entering. The Garden Chapel Funeral Directors and associated parking lot are located to the north of the common staging area. For motorists, bicyclists, and pedestrians traveling along El Camino Real, the site is partially obscured by large trees between the site and El Camino Real. Because of its elevated grade, the site is further separated from the street. El Camino Real is a six-lane road with a vegetated median in the middle. The site has low viewer exposure due to its obscured visibility to motorists, bicyclists, pedestrians.

#### **Visual Sensitivity**

The site has low visual quality due to the water supply facilities, including parking lots and structures, and scattered vegetation. Combined with the site's low viewer exposure, it is considered to have low visual sensitivity.

## **5.3.2 Regulatory Framework**

### **5.3.2.1 Federal**

There are no applicable federal standards.

### **5.3.2.2 State**

California's Scenic Highway Program was adopted by the State legislature in 1963. Its purpose is to protect and enhance the natural scenic beauty of California highways and adjacent corridors, through special conservation treatment. The scenic highway program consists of eligible and officially designated routes. A highway may be designated as eligible for listing as a State scenic highway if it offers travelers scenic views of the natural landscape, largely undisturbed by development. Eligible routes achieve officially designated status when the local jurisdiction adopts ordinances to establish a scenic corridor protection program, and approval is received from Caltrans.

I-280 is an officially designated State scenic highway (Caltrans, 2011) from its southern intersection with SR 17 in Santa Clara County, to the Millbrae city limits. From the Millbrae city limits until its intersection with Interstate 80, north of First Street in San Francisco, the route is eligible for designation as a State scenic highway but is not officially designated as such. The study area is greater than 1 and 0.6 mile from the officially designated portion of I-280 at the Millbrae and San Bruno sites, respectively.

### **5.3.2.3 Local**

#### *San Mateo County*

The San Mateo County General Plan contains policies regarding visual resources related to the protection of visual quality, protection of shorelines, protection of vegetation, and the appearance of rural and urban development (San Mateo County, 1986).

#### *Town of Colma*

The Town of Colma General Plan policies pertaining to visual resources focus on the preservation of selected tree masses, landscape features, and other scenic elements, and maintaining visual distinction from surrounding cities (Section 5.04.361) (Town of Colma, 2000).

#### *City of South San Francisco*

South San Francisco General Plan Guiding Policy 3.4 G-1 requires the development of El Camino Real as a boulevard that accommodates its role as a regional corridor, but with streetscape and development that provides identity to the street. It is the only policy pertaining to visual resources for the City of South San Francisco.

#### *City of San Bruno*

Visual policies in the San Bruno General Plan are intended to help preserve and enhance the unique natural features that constitute San Bruno's scenic roadways, as well as the visual quality of major gateways into the city and scenic corridors (City of San Bruno, 2009). General Plan policies address coordination with Caltrans, San Mateo County, and adjacent cities to maintain a consistent approach in applying scenic conservation standards in roadway design, improvements, and maintenance.

#### *City of Millbrae*

Visual policies in the Millbrae General Plan are included in the Land Use Element. These policies primarily concern the preservation of neighborhood character and quality; impacts of new development on existing residential views; and the need for proper site planning and architectural review (City of Millbrae, 1998).

## **5.3.3 Impacts and Mitigation Measures**

### **5.3.3.1 Significance Criteria**

The City and County of San Francisco has not formally adopted significance standards for impacts related to aesthetics and visual resources, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- Have a substantial adverse effect on a scenic vista;
- 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;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or substantially affect other people or properties.

### 5.3.3.2 Approach to Analysis

This section evaluates potential impacts on visual resources that could occur during project construction and operations. For the purpose of the analysis, the visual sensitivity, as detailed in Section 5.3.1.4, is determined by a site's visual quality combined with viewer exposure conditions. The visual quality of a given area results from the unique combination of natural landscape features including landform, water, and vegetation patterns, as well as built features such as buildings, roads, and other structures.

The visual analysis is based on: field observations of the project area and surrounding vicinity; review of project development plans and drawings; review of existing California Environmental Quality Act documentation for other SFPUC projects on the Peninsula; evaluations of aerial and ground-level photographs of the project area; review of relevant planning documents; and the area's visual quality and viewer exposure, the latter two of which, in combination, determine visual sensitivity. The evaluation of temporary or short-term visual impacts considers whether construction activities could substantially degrade the existing visual character or quality of the site or surrounding area, as well as the duration over which any such changes would take place, and exposure to viewers. Construction activities occurring in an area for less than 1 year typically have only temporary effects on visual quality, and are therefore generally considered to have a less-than-significant impact on visual quality.

Permanent visual impacts were assessed based on the aforementioned visual quality and viewer exposure, which combine to determine visual sensitivity; and the project's potential to substantially alter scenic vistas and scenic resources (through such actions as removing trees or permanently altering the landscape) in a manner that would adversely affect the visual quality of the area.

Because of the nature of the proposed project, two of the significance criteria noted above are not applicable to the project. Therefore, an impact discussion is not provided for these topics for the reasons described below.

PPSU project construction would have no impacts related to the following significance criterion:

- **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.** Because damage to scenic resources such as trees, rock outcroppings, and other features of the built or natural environment would typically constitute a long-term effect, the potential for project implementation to damage scenic resources was evaluated solely as a long-term project operations impact. Therefore, this significance criterion is discussed below under Impact AE-3 only as it applies to project operational activities.

PPSU project operations would have no impacts related to the following significance criterion:

- **Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or substantially affect other people or properties.** No aboveground structures or lighting features would be built or remain during operation of the PPSU project. Therefore, operational impacts related to light or glare not applicable, and this significance criterion is discussed below under Impact AE-2 only as it applies to project construction activities.

### 5.3.3.3 Summary of Impacts

Table 5.3-2 lists the proposed project's visual impacts and significance determinations.

**Table 5.3-2  
Summary of Impacts – Aesthetics**

Impacts	Significance Determination					
	Colma	South San Francisco	San Bruno North	San Bruno South	Millbrae	Common Staging Area
<b>Impact AE-1:</b> Project construction would not result in substantial adverse effects on scenic vistas or temporarily degrade the visual character of the site and its surroundings	LS	LS	LS	LS	LS	LS
<b>Impact AE-2:</b> Project construction could result in significant impacts related to a new source of substantial light or glare.	LS	LS	LSM	LS	LS	LS
<b>Impact AE-3:</b> Project operations would not result in long-term adverse effects on scenic vistas or scenic resources, or degradation of the visual character of the site and its surroundings.	LS	LS	LS	LS	LS	LS
<b>Impact C-AE:</b> Implementation of the proposed project would not result in a cumulatively considerable contribution to cumulative impacts on scenic vistas, scenic resources, visual character, or light and glare.	LS	LS	LS	LS	LS	LS
Notes: LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant impact with Mitigation						

### 5.3.3.4 Construction Impacts and Mitigation Measures

***Impact AE-1: Project construction would not result in substantial adverse effects on scenic vistas or temporarily degrade the visual character of the site and its surroundings. (Less than Significant)***

During construction at the Colma, South San Francisco, San Bruno South and Millbrae sites, open-trench techniques would be used, and the existing pipeline would be excavated and removed; trench backfill materials would be supported; and the new pipeline would be installed in the same general location as the existing pipeline. Open-trench construction would generally include the following activities: (1) mobilization of the site, including removal of vegetation and grading; (2) trench excavation and shoring, as necessary; (3) removal of existing pipe and installation of new pipe; (4) trench backfill and compacting; and (5) surface restoration and landscaping. Excavated soils, including topsoil, would be stockpiled during construction at each site, and may be reused as backfill and/or off-hauled for recycling or disposal. Jack-and-bore construction would also be used at the South San Francisco site, to place new pipe under Westborough Boulevard. At the San Bruno North site, two access pits would allow for stabilization of the existing pipeline, as described in more detail below.

The PPSU project could result in temporary construction-related impacts on scenic vistas and resources, and the visual character of the project area and vicinity. Direct views of the project area, including views of construction work areas, are available from area roads. However, many of the views of the project areas contain sites with low visual quality and are absent of scenic vistas. Upon project completion, the construction contractor will return the SFPUC project site to its general condition before construction, including re-grading of the site and re-vegetation of disturbed areas. Potential impacts on scenic vistas and visual character as a result of construction activities are described below for each site. Long-term impacts related to tree removal and/or other alterations of the existing landscape are assessed under Impact AE-3.

#### **Colma Site**

Excavation activities and new pipeline installation would extend through a vacant parcel and a grassy sloped area at the rear of retail establishments, where typical uses include deliveries at Kohl's department store and some worker or vehicle parking associated with a car rental agency. There are no scenic vistas in the vicinity of the Colma site; therefore, there would be *no impacts* to scenic vistas at this location. The low visual quality and lower viewer exposure to construction activities at the Colma site would result in a low visual sensitivity. Additionally, construction activities at the Colma site would be temporary, lasting for approximately 2 months. For these reasons, impacts to visual character due to construction at the Colma site would be *less than significant*.

#### **South San Francisco Site**

Excavation activities and new pipeline installation would extend from a nearby residence adjacent to the northern end of the site on Arroyo Drive; southward through a fenced, densely wooded area between the rear of a commercial strip and Westborough Boulevard; and south near the intersection of Westborough Boulevard and West Orange Avenue through a grassy,

landscaped area. There are no scenic vistas in the vicinity of the South San Francisco site; therefore, there would be *no impacts* to scenic vistas at this location.

Removal of approximately 20 willows would occur at the South San Francisco site to allow access to the pipeline, in accordance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy. The trees that would be removed are within the ROW along San Andreas Pipeline No. 2, north of Westborough Boulevard and behind a commercial strip. This area is considered to have moderate visual sensitivity because of the low visual quality due to the adjacent commercial strip and surrounding commercial businesses, and the moderate viewer exposure for motorists, bicyclists, pedestrians, customers of area stores, and residents as they pass along Westborough Boulevard. Therefore, a significant impact on the existing visual character would not result from tree removal activities.

At the South San Francisco site, jack-and-bore construction would also occur with pits excavated at either end of the bore. The pits would be approximately 20 feet wide, up to 50 feet long, and up to 30 feet deep (see Figures 3-3 and 5.3-3 for pit locations). The areas where the proposed boring pits would be located are considered to have moderate visual sensitivity because they would be located in wooded and landscaped areas and have moderate viewer exposure for motorists, bicyclists, pedestrians, customers of area stores, and residents as they pass along Westborough Boulevard.

The offsite staging and spoils area would be located in a parking lot which has low visual sensitivity due to the low visual quality and moderate viewer exposure. Because construction activities at the South San Francisco site would be temporary, lasting for approximately 3 months, and due to the low to moderate visual sensitivity at this site, impacts on visual character would be *less than significant*.

### **San Bruno North Site**

The San Bruno North site lies immediately east of I-280 and south of San Bruno Avenue West. The San Bruno Avenue West exit off-ramp from I-280 extends along the site and the backyards of several residences are adjacent to the site. The site is vegetated, with low grasses, trees, and dense underbrush in some locations. Project construction activities at the San Bruno North site would include excavation of two access pits (see Figure 4.1-5 for pit locations), removal of portions of the tunnel roof, and injection of grouting between the pipeline and the tunnel, or the installation of pipe stabilization structures within the tunnel. The access pits would be approximately 10 feet wide by 10 feet long. The precise locations of the pits would be determined during final design. It is estimated that the roof of the tunnel is 10 feet below ground surface.

The I-280 scenic corridor is more than 0.6 mile from the San Bruno North site. A few landscaping trees would be removed and subsequently replaced. This would have no effect on this scenic corridor, because the distance and the higher elevation of I-280 would prevent motorists from having views of construction at the site. There are no other scenic vistas in the vicinity of the San Bruno North site. For these reasons, there would be *no impacts* to scenic vistas at this location.

The San Bruno North site has moderate visual quality because of the landscaped area that is visible to northbound motorists exiting off of I-280 at Sneath Avenue/San Bruno Avenue West. Motorists, bicyclists, and pedestrians along San Bruno Avenue West or accessing the northbound



onramp to I-280 at San Bruno Avenue West would have direct views of construction. The intersection of San Bruno Avenue West and the I-280 on- and off-ramps are controlled by a stoplight, which could result in an increase in the duration of views to the project site by roadway users. Due to the distance from the scenic highway, and the lower elevation of the San Bruno North site, motorists continuing on I-280 would not have views of construction.

People in the project area (e.g., motorists, bicyclists, pedestrians, residents, and business owners and visitors) would be subject to views of the construction for a short period of time. Visual quality and sensitivity at this site would be low, while viewer exposure would be moderate to high. For these reasons, and because construction would be temporary, lasting for 1 month, impacts on visual character due to construction at the San Bruno North site would be *less than significant*.

### San Bruno South Site

Construction at the San Bruno South site would include excavation and installation of new pipelines, extending from north of the San Bruno Chinese Church, past the rear lots of residences along Courtland Drive and the Park Plaza Apartments, to the Shelter Creek Condominiums. Additionally, staging and spoils areas would extend south to include frontage along the San Bruno Church and its northern parking lot, and a portion of the peninsula High School parking lot. The San Bruno South site would not be visible from either the I-280 scenic corridor or the Skyline Boulevard scenic corridor due to the distance from the site to the scenic corridor (approximately 0.6 mile), and because of intervening topography and landscaping features. No trees within these scenic corridors would be affected. There are no scenic vistas in the vicinity of the San Bruno South site except for views of San Francisco Bay and East Bay hills in the distance, which would not be disrupted. For these reasons, there would be *no impacts* to scenic vistas at this location.

Construction may be viewed from area motorists, bicyclists, pedestrians, and residents of or visitors to the Shelter Creek Condominiums, Park Plaza Apartments, the San Bruno Chinese Church, the Peninsula High School, Courtland Avenue, and Whitman Way. At the residential areas, viewer exposure would be moderate to low because construction would occur in a parking lot access area of the Shelter Creek Condominiums, adjacent to the rear of the Park Plaza Apartments; and at the rear lots of residences along Courtland Drive, where existing vegetation or fencing would partially obstruct views of the construction. The construction zone contains a grassy hill side that is briefly visible as motorists, bicyclists, and pedestrians use Whitman Way. The SFPUC ROW between the church and Courtland Drive used for staging and spoils would be visible from the church, Peninsula High School, and Courtland Drive in the vicinity of the site. Viewer exposure would be high at the church and high school. The San Bruno South site has a moderate to high visual quality due to the trees and shrubs and from some vantage points, views of the San Francisco Bay and hills beyond. Visual sensitivity is also moderate to high due to the aforementioned landscaping and because some views of construction would be of longer duration (approximately 9 months). Because higher viewer sensitivity would primarily occur at the church and high school, where viewers are intermittent and views are of staging and spoils areas instead of construction; because most residents would primarily have obstructed views (rear views, fenced views, and parking lot views); and because views of construction would be temporary (less than 1 year), impacts to visual character would be *less than significant*.

### Millbrae Site

Excavation and pipeline installation at the Millbrae site would occur from the northwestern portion of the Green Hills Country Club golf course driving range, extending west through a dense grove of trees and terminating at Ridgewood Drive. Flat, grassy areas near the back yards of residences on Ridgewood Drive, along the SFPUC ROW, and on landscaped portions of the Green Hills Country Club golf course would be used for staging and spoils storage. Access routes requiring improvements would extend through the City of Millbrae open space area and the golf course. There are no scenic vistas in the vicinity of the Millbrae site; therefore, there would be *no impacts* on scenic vistas at this location.

The grove of trees within the SFPUC ROW that extends through the northern portion of the golf course would be removed in accordance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy. This dense grove of approximately 300 trees, dominated by eucalyptus and inclusive of some coast live oaks, would be removed from the ROW to provide access to the Sunset Supply Branch Pipeline. The tree-removal activity would not generally be visible to the public because removal would occur in the grove located between private residential backyards and the private Green Hills Country Club golf course. The trees to be removed would be along the periphery of a larger grove of trees that would remain. This grove is considered to have a moderate to high visual sensitivity due to the area's high visual quality, but moderate viewer exposure because the trees are located behind resident backyards and at the edge of the Green Hills Country Club.

The access route through the City of Millbrae open space area may require tree trimming along the trail from Lomita Avenue and the filling of potholes on the trail. The trail may be widened in one location, which would result in the removal of approximately four trees. For access from the Bertocchi Lane cul-de-sac, removal and/or modification to a portion of an approximately 3-foot-high retaining wall, plating over the existing culvert, and compaction of soils may occur and some trimming of native oaks may also be required. The trail has a high visual quality and moderate viewer exposure from recreationalists on the trail and residents at the end of the Bertocchi Lane cul-de-sac. Construction would be visible to trail users; briefly to motorists, bicyclists, and pedestrians as they pass the trail's northern access point on Lomita Avenue; and to motorists, bicyclists, pedestrians, and residents on Bertocchi Lane. This area has moderate to high visual sensitivity.

For access from Larkspur Drive through the Green Hills Country Club golf course, the chain-link fence at the end of the Larkspur Drive cul-de-sac would be temporarily removed, and the cement culvert would be covered by steel plates. These construction elements would be visible to motorists, cyclists, pedestrians, and residents on Larkspur Drive and to persons using the golf course. The visual quality is considered moderate as it contains aesthetically pleasing views of the golf course and views of the chain-link fence and the paved end of the cul-de-sac. This combined with the moderate viewer exposure due to the limited number of passing motorists, bicyclists, pedestrians, and recreationists at the golf course results in a moderate visual sensitivity in the vicinity of Larkspur Drive and the Green Hills Country Club golf course.

Along the access route through the SFPUC ROW from Ridgewood Drive, existing small structures, fences and landscaping, and other encroachments are located within the SFPUC ROW. They would be removed from the side yards of 1100 and 1094 Ridgewood Drive prior to

commencement of construction. These construction activities would be visible to residents of these two homes, because construction would be immediately adjacent to them. They would also be visible to motorists, bicyclists, or pedestrians on Ridgewood Drive. A permanent retaining wall with approximately 10-foot footings would be constructed under the existing backyard fence at 1094 Ridgewood Drive to stabilize the slope prior to excavation of the pipeline. This construction would be visible from nearby backyards. The area's visual quality is high, but the exposure conditions, except for residents of 1100 and 1094 Ridgewood Drive, are low because motorists, bicyclists, and pedestrians would pass perpendicular to the construction area, and their views of construction would be limited. The visual sensitivity of this portion of the site is considered moderate.

For all of the reasons described above, and because construction would be temporary, lasting for 4.5 months, impacts to visual character would be *less than significant*.

### **Common Staging Area**

The common staging area in South San Francisco would be used for the duration of the project construction at all of the PPSU sites (approximately 12 months). This staging area would be used for temporary construction office trailers and worker parking. Trailers would be installed on the site, and gravel would be placed in areas used for worker parking. No ground-disturbing activities related to the PPSU project are proposed within the common staging area. The construction features that would be added to the site are consistent with the site's current layout and use. As described above, the common staging area is an undeveloped portion of the Baden Valve Lot with the other portion of the lot containing water supply facilities. The common staging area is surrounded by chain-link fencing and is partially obscured by large trees and is at an elevated grade. The staging area features are consistent with the site's current use, and the area is partially obscured from views from area motorists, bicyclists, or pedestrians.

There are no scenic vistas in the vicinity of the common staging area; therefore, there would be no impacts on scenic vistas at this location. The site has a low visual sensitivity due to the low visual quality of existing facilities at the site, and low viewer exposure due to being partially obscured by elevation and vegetation. The addition of the trailers and parking of cars would be consistent with current site usage and would not affect scenic vistas or degrade the visual character of the site and its surroundings. Therefore, the use of the common staging area would result in *less-than-significant* impacts to visual character.

### ***Impact AE-2: Project construction could result in significant impacts related to a new source of substantial light or glare. (Less than Significant with Mitigation)***

As discussed in Section 3.8.9 in Chapter 3, Project Description, the majority of construction activities would occur on weekdays from 7 a.m. to 5 p.m.; however, weekend construction work may be necessary. Additionally, nighttime construction may be required at the San Bruno North site to minimize traffic conflicts. Nighttime activities would also include limited 24-hour pumping for dewatering of the pipelines at a few locations. Lighting would not be required for nighttime dewatering activities, but would be required for nighttime construction at the San Bruno North site.

Daytime construction activities would not be anticipated to produce substantial light or glare; if lighting is used during the day, it would be directed toward areas of excavation, and would likely not be substantially different from the natural daytime condition. However, because lighting could be visible from the adjacent residences as well as from I-280, impacts from lighting or glare during nighttime construction at the San Bruno North site could result in a significant impact. Implementation of **Mitigation Measure M-AE-2: Site-Specific Construction Lighting Plan** would reduce light and glare impacts by requiring the SFPUC's contractor to develop a site-specific lighting plan that includes locations and methods to minimize light spillover and glare impacts. In addition, implementation of **Mitigation Measure M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts**, which requires 2-week advance notification of construction activities to adjacent residences at the San Bruno North site (among other sites), would alert residents to upcoming nighttime construction activities, and provide a toll-free number for reporting report problems regarding construction-related complaints. Therefore, impacts would be *less than significant with mitigation* at the San Bruno North site. Impacts at the Colma, South San Francisco, San Bruno South, and Millbrae sites and the common staging area would be *less than significant* because no nighttime lighting is proposed for these sites; and daytime lighting, if needed, would not create new sources of substantial light or glare.

#### **Mitigation Measure M-AE-2: Site-Specific Construction Lighting Plan**

This mitigation measure applies to the San Bruno North site only. The SFPUC shall require the contractor to develop and implement a site-specific nighttime lighting plan. A qualified lighting professional shall prepare the plan, which shall specify lighting sources for nighttime operations, and require that lighting be shielded and directed specifically onto work areas to minimize light spillover. The plan shall also provide for light source monitoring to ensure that feasible adjustments are made as necessary to provide maximum shielding during all phases of construction. The contractor shall submit the plan to the SFPUC for review and approval prior to commencing nighttime construction operations, at which time the plan shall be implemented continuously until the end of nighttime construction.

### **5.3.3.5 Operational Impacts and Mitigation Measures**

***Impact AE-3: Project operations would not result in long-term adverse effects on scenic vistas or scenic resources, or degradation of the visual character of the site and its surroundings. (Less than Significant)***

Once constructed, the proposed project pipelines would be underground and would not be visible. The only permanent aboveground components of the PPSU project that could affect visual character are tree and vegetation removal.

As part of construction mobilization activities for the proposed project, the project sites would be cleared of vegetation and debris and then graded, as necessary, and in compliance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy. At both the South San Francisco and Millbrae sites, dense groves of trees would be removed. At all other sites, only a few trees may be removed. As described in Chapter 3, Section 3.8.1, Pipeline Replacement and

Stabilization, upon the completion of construction activities, the SFPUC's contractor(s) would replace topsoil in disturbed areas, which would then be re-vegetated with native plant seed mix. In accordance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy, native non-woody plants and scrubs would be planted within the ROW; however, trees generally would not be replanted along the pipeline, because their roots could damage the pipeline. Vegetation would be monitored for up to a year to ensure it has become established. Because vegetation would be replaced and would appear generally as under existing conditions at the Colma, San Bruno North, San Bruno South sites, project impacts would be *less than significant* at these sites. At the common staging area, the project would not result in substantial visual changes, and impacts would also be *less than significant*.

However, at the South San Francisco site, trees would be permanently removed at the impenetrable grove of primarily willow trees (approximately 20 trees). This grove, as viewed from Westborough Boulevard, is considered to have moderate visual sensitivity, resulting from the low visual quality due to adjacent commercial strip and surrounding commercial businesses and the moderate viewer exposure for motorists, bicyclists, pedestrians, customers of area stores, and residents as they pass. The grove as viewed from Arroyo Drive is viewed in the context of a dense grove of trees in the vicinity of a residential street and a commercial area to the east. The visual quality of this area is also low due to the commercial strip and surrounding commercial businesses. Because the grove of trees has low visual quality and moderate viewer exposure, resulting in low to moderate visual sensitivity, the removal of the trees and the maintenance of the ROW would result in *less-than-significant* impacts.

At the Millbrae site, approximately 300 trees within a grove of eucalyptus and oak trees would be removed. These trees are located beyond the backyards of the residences on Ridgewood Drive, within the SFPUC ROW that extends to the fairway at the Green Hills Country Club. The grove of trees is a potential scenic resource. Viewer exposure from the Ridgewood Drive backyards is low to moderate, as the grove is located downhill from the homes and at a slight distance. The removal of trees in the grove would result in a less-than-significant impact on the scenic resources or visual character of the project site that is visible from the Ridgewood Drive homes, because only a portion of the grove would be removed downslope from backyard views; the remainder of the grove would remain visible, and the overall visual character of the backyard views would remain relatively similar to existing views. The grove of trees is also visible from a portion of the Country Club along the golf fairway. Viewer exposure from the country club fairway is moderate; in relation to the golf fairway, the grove of trees is along the perimeter of the property. The removal of a portion of the trees would be visible to those accessing the fairway. However, as described above, only a portion of the grove would be removed and the remainder of the grove would remain visible. The overall visual quality of the area, including the mature trees bordering the golf course, would remain essentially intact. Therefore, tree removal in this area would not adversely impact the visual character of the area, and the removal of the trees would be a *less-than-significant* impact.

### 5.3.3.6 Cumulative Impacts and Mitigation Measures

*Impact C-AE: Implementation of the proposed project would not result in a cumulatively considerable contribution to cumulative impacts on scenic vistas, scenic resources, visual character, or light and glare. (Less than Significant)*

The geographic scope of potential cumulative impacts on aesthetic resources encompasses the project work areas and areas that would contain views of both the project and other cumulative projects. The aesthetic and visual quality of the area of analysis for cumulative aesthetic impacts has been substantially affected by past activities, including urban and roadway development, and, as such, the visual quality of the area has been changed over time. The cumulative projects listed in Table 5.1-1 are within the vicinity of the PPSU project; however, only the Regional Groundwater Storage and Recovery (GSR) project is located in close enough proximity to contribute to cumulative aesthetics impacts in combination with the PPSU project, as discussed below.

The GSR project has the potential to have effects that could combine with the PPSU project to result in cumulative visual impacts during construction, because both the GSR and the PPSU Colma site are located within the same viewshed on the SFPUC ROW south of Serramonte Boulevard between Kohl's department store and a car dealership. Furthermore, the GSR project would be under construction during the entire PPSU construction period. The GSR project would include construction of a groundwater production well facility, including chemical treatment and filtration; underground distribution piping; and aboveground or underground utility connections. New pipelines would be installed below ground using standard open-cut construction methods, similar to the PPSU project. Site preparation for the GSR project would include vegetation clearing and stockpiling on site; grading; and installation of a gravel base rock for equipment support. After construction is complete, well sites would be restored to their general pre-construction conditions in accordance with the SFPUC's Vegetation Management Policy. Construction equipment for these activities could include mounted drill rigs, backhoes, excavators, bulldozers, front-end loaders, compactors, concrete trucks/pump trucks, trailers/flat beds/low boys, water trucks, contractor vehicles/pickup trucks, jackhammers, asphalt pavers, steam rollers, and hydraulic boring rigs.

The GSR project has identified an alternate location for a well facility on a vacant strip of land adjacent to Standard Plumbing Supply and Cypress Lawn Cemetery in Colma, south of Collins Avenue; this was also identified as a potential staging area for the PPSU project. One or more geotechnical borings may be needed at this location as part of project construction, if this alternate location is used.

As described in Section 5.3.1.4, the Colma site has low visual quality and low viewer exposure, because it is visible only briefly as motorists, bicyclists, pedestrians, or customers of the area stores pass by or park. The site is therefore considered to have low visual sensitivity. The combined adverse impacts of construction are primarily limited to the rear of the buildings, and the coincident construction period for the two projects is only approximately 2 months. For all of these reasons, the cumulative impacts on visual character and light and glare during construction would be less than significant. There are no scenic vistas in the vicinity of the Colma site; therefore, there would be no cumulative impacts to scenic vistas at this location. Cumulative impacts related to scenic resources, visual character, or light and glare during operation would also be less than

significant, as there would be no permanent degradation of scenic resources or visual character at the Colma site or the GSR facility in Colma, and no permanent sources of light or glare.

The GSR project has also identified a well facility and an alternate well facility location in South San Francisco northwest of the proposed PPSU common staging area. (A third GSR well facility would be constructed in the PPSU project vicinity near the South San Francisco site, on El Camino Real north of Chestnut Avenue, but would not be within the project's viewshed; therefore, it is not considered further in this cumulative analysis.) Construction of the GSR wells near the common staging area would be similar to that described for Colma, above, except that (1) construction would not occur in the same location as the PPSU project; (2) the primary well location would be somewhat smaller than at Colma, and (3) at the alternate location, the well would be fenced but there would be no chemical treatment or filtration, and the associated pump would be submersible rather than aboveground. As described in Section 5.3.1.4, the common staging area has low visual quality, and virtually no views or viewers except of vehicles entering or exiting the site. There are no scenic vistas in the vicinity of the common staging area; therefore, there would be no cumulative impacts to scenic vistas at this location. Cumulative impacts related to scenic resources, visual character, or light and glare during operation would also be less than significant, because there would be no permanent degradation of scenic resources or visual character at the common staging area or the GSR facility in South San Francisco, and no permanent sources of light or glare.

Therefore, cumulative impacts resulting from implementation of the proposed project along with the GSR project would be *less than significant*.

### 5.3.4 References

Caltrans (California Department of Transportation), 2011. California Scenic Highway Guidelines. Available online at: [http://www.dot.ca.gov/hq/LandArch/scenic/guidelines/scenic\\_hwy\\_guidelines\\_04-12-2012.pdf](http://www.dot.ca.gov/hq/LandArch/scenic/guidelines/scenic_hwy_guidelines_04-12-2012.pdf). Accessed on May 17, 2011.

City of Millbrae, 1998. City of Millbrae General Plan, Chapter 3, Land Use Element. Adopted November 24, 1998.

City of San Bruno, 2009. City of San Bruno General Plan. Adopted March 24, 2009.

City of South San Francisco, 1999. City of South San Francisco General Plan, Chapter 2, Land Use and Chapter 3, Planning Sub-Areas Element.

San Mateo County, 1986. County of San Mateo General Plan. Adopted November 1986.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

Town of Colma, 1999. Town of Colma General Plan, Chapter 5.02, Land Use Element. Adopted June 1999.

Town of Colma, 2000. Town of Colma General Plan, Chapter 5.04, Open Space/Conservation Element. Adopted April 2000.

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## 5.4 Population and Housing

This section evaluates the potential for the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project to affect population and housing by displacing residents and housing units, adding new housing units to the existing housing stock, or attracting new population to the area, thereby creating demand for additional housing resources in the project area. The overall growth-inducement effects of the PPSU project are analyzed in Section 6.1, Growth Inducement.

### 5.4.1 Setting

The project would be constructed at five sites in San Mateo County, located in the Town of Colma and the cities of South San Francisco, San Bruno and Millbrae; as well as in unincorporated San Mateo County on the San Francisco peninsula, immediately south of the City and County of San Francisco. San Mateo County is one of nine counties in the San Francisco Bay Area. The area had a region-wide population of approximately 7.3 million in 2010, and its population is expected to increase by approximately 19 percent to exceed 8.7 million by 2030 (ABAG, 2009). San Mateo County's population is expected to grow at a rate similar to the regional population growth rate during that period.

Table 5.4-1 below presents population and housing data from the decennial census for San Mateo County and the four communities in which the five project sites are located. In 2010, San Mateo County had a total population of 718,451, with just over 271,000 housing units and an average household size of 2.72 (U.S. Department of Commerce, Bureau of the Census, 2012). Of the four cities where sites are located, South San Francisco has the largest population and housing stock, and Colma has the smallest resident population and smallest number of housing units. Average household sizes in the four cities are comparable to the countywide average of 2.72, although they range from 2.65 in Millbrae to 3.13 in Colma.

**Table 5.4-1  
Population and Housing Data (2010)**

	<b>Colma</b>	<b>South San Francisco</b>	<b>Millbrae</b>	<b>San Bruno</b>	<b>San Mateo County</b>
Population	1,792	63,632	21,532	41,114	718,451
Housing Units	586	21,184	8,372	15,356	271,031
Average Household Size	3.13	3.01	2.65	2.77	2.72

Source: U.S. Department of Commerce, Bureau of the Census, 2012.

The San Francisco Bay Area labor force has fluctuated over the past decade, from 3.74 million persons in 2000 to 3.54 million persons in 2004-2005, to 3.68 million persons in 2009. The number of employed residents in the San Francisco Bay Area peaked in 2000, at 3.61 million, but declined by 8.4 percent, to 3.31 million workers in 2009. During the same time period, unemployment rates

have increased sharply in the region, from around 4 percent in 2000, to 10.1 percent in 2009 (SF Planning, 2010).

## 5.4.2 Regulatory Framework

There are no federal, State, or local regulations governing population and housing that apply to the proposed project.

## 5.4.3 Impacts and Mitigation Measures

### 5.4.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to population and housing, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

### 5.4.3.2 Approach to Analysis

Due to the nature of the proposed project, which would not create or eliminate any housing and which has limited demand for construction workers in a region with an ample labor force, there would be no construction or operational impacts related to the following significance criteria. Therefore, an impact discussion is not provided for these topics for the reasons described below:

- **Induce Substantial Population Growth in an area, either directly or indirectly.** Section 3.8.8, Project Workforce and Construction Vehicle Parking, describes the limited size of workforce requirements for the proposed PPSU project, which would be implemented over a period of 12 months, from 2014 to 2015. During that time, work crews of up to 20 personnel each would be engaged in construction activities. A maximum of four sites would be under construction simultaneously, as shown on Figure 3.12 in Chapter 3, Project Description, requiring a total of up to 80 personnel. Given the size and nature of the San Francisco Bay Area labor force, and the anticipated availability of skilled construction workers, it is expected that the existing regional labor force would readily meet these construction workforce requirements, and the project would not result in an influx of construction workers from outside the region to fill these jobs. Existing San Francisco Public Utilities Commission (SFPUC) staff would conduct the long-term operation and maintenance of the project, and additional personnel would not be required for operations. Furthermore, the project would not result in the construction of new homes or businesses in the area or directly remove existing constraints to development in the area. Therefore, the project would not result in any impacts to the local population. Therefore, this significance criterion is not applicable to the PPSU project and is not discussed further.

- **Displace Substantial Numbers of Housing Units or Create Demand for Additional Housing.** The project would not displace any existing housing units, or, as described above, attract new workers to the region to fill either temporary construction jobs or permanent operation jobs. Therefore, this significance criterion is not applicable to the PPSU project and is not discussed further.
- **Displace Substantial Numbers of People.** The proposed project, which would improve the SFPUC's water supply infrastructure, would be located in the existing SFPUC right-of-way (ROW). The project would not result in changes in land use in the ROW or ROW vicinity and would not displace substantial numbers of people. Therefore, this significance criterion is not applicable to the PPSU project and is not discussed further.

### 5.4.3.3 Construction and Operations Impacts and Mitigation Measures

As described above, the PPSU project would not result in an influx of construction workers, remove or create housing units, or directly remove existing constraints to growth in the study area, which is predominantly comprised of built-out suburban neighborhoods along the San Francisco Peninsula. Therefore, there would be *no impact* to population or housing resources, and no mitigation measures are required.

### 5.4.3.4 Cumulative Impacts and Mitigation Measures

Because the PPSU project would not result in any project-specific impacts related to population and housing, implementation of the project would not result in cumulative impacts or contribute to cumulative impacts resulting from other projects planned for the project vicinity, and there would be *no cumulative impact*.

## 5.4.4 References

ABAG (Association of Bay Area Governments), 2009. Building Momentum: Projections and Priorities 2009. San Francisco Bay Area Population, Household, and Job Forecasts. August.

SF Planning (City and County of San Francisco Planning Department), 2010. San Francisco Commerce & Industry Inventory 2010. October.

U.S. Department of Commerce, Bureau of the Census, 2012. ACS Demographic and Housing Estimates, 2006-2010 American Community Survey 5-year Estimates and San Mateo County QuickFacts. Available online at <http://factfinder2.census.gov/>. Accessed July 5, 2012.

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## 5.5 Cultural and Paleontological Resources

This section describes cultural and paleontological resources within the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project area, and identifies and assesses the potential impacts to these resources that could occur with implementation of the proposed project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.5.1 Setting

Cultural resources are broadly defined as buildings, sites, structures, landscapes, or objects, which may have historical, architectural, archaeological, cultural, or scientific importance (McGimsey and Davis, 1977; NPS, 1998). Under the California Environmental Quality Act (CEQA), impacts to paleontological resources are also addressed under the rubric of cultural resources (see CEQA Appendix G checklist).

#### 5.5.1.1 CEQA Area of Potential Effects

For the purpose of environmental review under CEQA, a CEQA Area of Potential Effects (C-APE) for each resource category (i.e., archaeology, historic architecture, paleontology) was developed and used for this analysis. The use of C-APE as presented herein is based on the concept and definition presented in Code of Federal Regulations (CFR) Title 36 800.16(d), where the:

Area of potential effects means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Although the definition of an area of potential effects as found in 36 CFR 800.16 (d) specifically addresses potential effects to “historic properties” (i.e., National Register-listed or eligible resources), the term is expanded herein to aid in the identification of potential impacts to cultural and paleontological resources as required by CEQA.

The PPSU project C-APE for archaeology and paleontology are similar in that the approved C-APE addresses only direct effects and is confined to those areas where ground-disturbing activities resulting from project implementation would occur. For the current undertaking, the direct impact areas were confined primarily to the San Francisco Public Utilities Commission (SFPUC) Right-of-Way (ROW), although some staging and spoil areas on adjacent parcels were also included within the C-APE.

The PPSU C-APE for historic architectural resources must also take into account indirect effects of construction-related vibrations or atmospheric intrusions which could impact historic structures. Therefore, the C-APE as it pertains to historic architectural resources is larger than the C-APE for either archaeological or paleontological resources. For the PPSU project, the C-APE for historic architectural resources includes the direct-impact area within the ROW, as well as the entire parcel through which these particular portions of the ROW passes. For the temporary

staging and spoils areas outside of the SFPUC ROW, only the portion of the parcel where the staging and spoils areas would occur were included in the C-APE for historic architectural resources. As permanent, aboveground, project-related features are not proposed, other indirect affects to the historic setting of cultural resources are not anticipated.

It should be noted that no ground-disturbing activities or permanent improvements are proposed for the common staging area. The project-related activities proposed at this location would not affect cultural or paleontological resources, and the Baden Valve Lot was not included within the C-APE for the PPSU project. Additionally, the common staging area is not further considered in this section. It should be noted, however, that impacts to cultural resources resulting from proposed improvements at the Baden Valve Lot were addressed in the Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration (SF Planning, 2008a). The Baden and San Pedro Valve Lots Improvement project included both ground-disturbing construction and the introduction of permanent improvements, none of which were found to result in impacts to known cultural or paleontological resources.

Discussions of the cultural and paleontological setting of the PPSU project area are presented in the individual technical reports prepared for the project (URS, 2012a; URS, 2012b; URS, 2012c; URS, 2012d; Sonoma State University, 2012; Sonoma State University, 2013).<sup>1</sup> Presented below are summary regional overviews of paleontology, prehistory, ethnography, and history, organized in basic chronological order. Following the background discussions, cultural resources inventory efforts and results are discussed with relationship to the PPSU project components in which they are located.

### *Paleontology*

Paleontological resources include fossils, fossil localities, and stratigraphic units which contain the preserved remains or traces of fossil organisms. Fossils may be found as individual specimens or as assemblages of many organisms. Of particular importance are fossils that are unique or unusual and that may make significant contributions to taxonomy, systematics, evolutionary theory, paleoecology, or stratigraphy, or enhance our understanding of regional geologic history.

The potential for an area to contain significant paleontological resources is determined by the area's geology. Full geologic descriptions including regional geologic mapping is found in the paleontological technical report from which the following text is derived (URS, 2012c).

The geology in and around the C-APE, as defined for paleontological resources, is primarily composed of six units: Cretaceous and Jurassic Franciscan Complex basement rock, Pleistocene and Pliocene Merced Formation, Late Pleistocene Colma Formation, Pleistocene slope debris and ravine fill deposits. Recent alluvial deposits, and historic artificial fill (Pampeyan, 1994; Brabb et al., 1998; Bonilla, 1998; FWLA, 2011) are also common in the area.

The principal basement rock on the San Francisco Peninsula is the Mesozoic (Jurassic and Cretaceous) Franciscan Complex (KJfm), which commonly consists of greenstone, sandstone,

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<sup>1</sup> Cultural resources technical reports prepared for the project are on file and available for public review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2011.0123E, except for the confidential Historic Context and Archaeological Survey Report and the confidential appendix for the Paleontological Resources Survey Report.

serpentinite, and *mélange*, a mixture of lithologies typically in a sheared, clay-rich matrix (Pampeyan, 1994; FWLA, 2011).

The Merced Formation (Q<sub>tm</sub>) unconformably overlies, or is in fault contact with, Franciscan Complex rocks within the study area. It principally consists of weakly lithified to well-cemented, thinly bedded to massive sandstone and siltstone, with minor claystone and conglomerate with shell hash, deposited in shallow marine to estuarine and nonmarine coastal environments (FWLA, 2011). The age of the Merced Formation is uncertain, but it is likely Pliocene—between about 1.8 million years old and about 400,000 years old (FWLA, 2011), with the uppermost beds along the coast being younger than approximately 400,000 years (Kennedy, 2002). Clean to silty, fine-grained, poorly consolidated micaceous sands are characteristic of the upper Merced deposits, whereas nonmicaceous shallow marine sands and silts are characteristic of the lower Merced.

The Colma Formation (Q<sub>c</sub>) overlies Merced Formation strata at and near the coast, and has a mapped outcrop extent similar to the Merced Formation (Pampeyan, 1994; Brabb et al., 1998; FWLA, 2011). The Colma Formation as described at and near the coast consists of poorly consolidated to unconsolidated sand and silt, and represents a variety of mostly nonmarine environments, including nearshore, foreshore, and backshore deposits. The age of the Colma Formation is late Pleistocene, between about 130,000 and 11,000 years old (FWLA, 2011; Kennedy, 2002). Inland from the coast, including within the pipeline fault crossing site area, the Colma Formation is less well characterized, and at its southern mapped extent appears to be laterally continuous with deposits characterized as “older alluvium” (Brabb et al., 1998).

Pleistocene slope debris and ravine fill deposits (Q<sub>sr</sub>) in the study area occur above the Colma Formation but below alluvium and artificial fill deposits. Slope debris and ravine fill deposits generally consist of stony silty to sandy clay; locally silty to clayey sand or gravel; yellowish-orange to medium gray, and unstratified to poorly stratified. Where it overlies the Colma Formation, it is commonly a silty to clayey sand or gravel (Bonilla, 1998).

Recent alluvium deposits in the study area consist of alluvial fan and fluvial (Q<sub>al</sub>/Q<sub>haf</sub>), landslide (Q<sub>l</sub>), and levee deposits (Q<sub>hl</sub>). These deposits are composed of unconsolidated mixtures of sands, silts, clays and gravels found along hill slopes and stream channels. The recent alluvial deposits are generally less than 20 feet in thickness and overlay slope debris and ravine fill deposits, Colma and Merced Formations, and the Franciscan Complex (Brabb et al., 1998; Bonilla, 1998).

Artificial fill (af) is common in the study area, and likely was used locally to infill ravines to flatten the topography and allow development activities. Artificial fill in the study area is variable in thickness, and consists of various combinations of poorly to well-compacted gravel, sand, silt, and rock fragments (Brabb et al., 1998; Bonilla, 1998; GTC, 2011a; GTC, 2011b; GTC, 2011c).

### *Prehistory*

Human settlement of the San Francisco Bay region probably began sometime during the early Holocene period, circa 10,000 years ago. During this period, the mean sea-level elevation was considerably lower than today, and the area now encompassed by San Francisco Bay was more than 30 miles inland from the coastline. Sea levels rose, and by 8,000 years ago, marine waters

began to inundate San Francisco Bay. Except for brief periods, the mean sea level has been at or above its present level for approximately 6,000 years (Moratto, 1984:221 223).

Archaeological investigations over the last century have resulted in the identification of the following cultural sequence. The Windmill Pattern (3000 to circa 500 Before Christ [B.C.]) is characterized by a commonality of mortar fragments, large numbers of baked clay balls, large quantities of projectile points, tridentate fish spears, *Haliotis* ornaments, *Olivella* beads, and ground and polished charmstones of alabaster, marble, and diorite. The Windmill culture existed in the San Francisco Bay Area, but was more common in the delta area to the east and northeast (Moratto, 1984:201 207).

The Berkeley Pattern (circa 500 B.C. to Anno Domini [A.D.] 500) is marked by a predominance of nonstemmed points, diagonally flaked, large, concave-based points, greater presence of ground stone than in Windmill Pattern sites, a highly developed bone industry, flexed burials, and some cremations. A major characteristic is the great reliance on acorns for subsistence (Moratto, 1984:209 211).

The Augustine Pattern (circa A.D. 500 to contact) is characterized by intensive hunting, fishing, and gathering. Acorns were a main dietary staple. Other characteristics include: large, high-density populations, shaped mortars and pestles, bone awls, and the bow and arrow. Burial practices varied with social status. High-status individuals may have been cremated. Other burial practices included flex interment and burning of artifacts in the grave prior to interment (Moratto, 1984:211 214).

Sometime between 2500 and 2000 B.C., Utian-speaking peoples occupied what is now eastern Contra Costa County and then expanded westward to San Francisco Bay. Between the years 2000 and 1000 B.C., bayshore- and marsh-adapted peoples began to settle in the Bay Area. By circa 1500 B.C., Utian people had settled the area around the south end of San Francisco Bay. From there, they expanded to the north, west, and south. Ohlone peoples occupied essentially the same territory in circa 500 B.C. that they did until Euro American contact (Moratto, 1984:279).

### ***Ethnography***

The region in which the PPSU C-APE is located is within lands occupied during the ethnographic period by groups of Native American peoples referred to as the Costanoan. The territory inhabited by the Costanoan extended from the Carquinez Strait southward to the Sur River, and from the Pacific coast eastward to the Diablo Range. The name Costanoan is derived from the Spanish term *Costanos*, which means “coast people”; however, it does not represent a cohesive ethnic group. Instead, Costanoan is a linguistic division, grouping languages together due to their phonological similarities. The Costanoan inhabiting the vicinity of the project area were speakers of Ramaytush, one of eight Costanoan Indian languages spoken in California. Today, the name Ohlone is more commonly used for these peoples. (Kroeber, 1976; Levy, 1978; Shipley, 1978; Moratto, 1984).

The Ohlone’s largest political organization was the tribelet. Common aboriginal Californians, tribelets were generally composed of one or more loosely affiliated villages and associated logistical camps situated within a recognized territory. Tribelet leadership was inherited patrilineally, generally passing from father to son, although women could also hold the office (Levy, 1978:487).



Richard Levy (Levy, 1978:487) estimated that in the early 1970s, the total number of persons of Ohlone descent was greater than 200 individuals. He stated that it was probable that the last-known native speakers of the Ohlone language had died by 1935. In 1971, descendants of the Costanoan incorporated as the Ohlone Indian Tribe and received title to the Ohlone Indian Cemetery. Ohlone language and culture are in revival. Several groups from Monterey to San Francisco self-identify as Ohlone.

### ***History***

As a result of the Cabrillo expedition of 1542 to 1543, the southbound passage of the Manila Galleon along the coast after 1565, and subsequent voyages of exploration by Cermento in 1597 and Vizcaino in 1602, the California coastline was familiar to navigators by the end of the sixteenth century (Donley et al., 1979). Conversely, the interior remained unknown until the eighteenth century. European exploration of what would become the project vicinity was initiated in 1769 and lasted until 1810. During this period, a number of Spanish expeditions penetrated the territory occupied by Ohlone peoples. Between 1769 and 1776, forays were led by Portola, Ortega, Fages, Fages and Crespi, Anza (two expeditions), Rivera, and Moraga. Favorable reports led to the founding of seven missions in the region between 1770 and 1797.

The Ohlone were significantly affected by the Spanish presence in California. At the time of these early contacts, there were approximately 10,000 Ohlone organized into roughly 50 politically autonomous tribelets. By 1832, the Ohlone population had declined to less than 2,000 individuals. This precipitous drop was primarily due to Spanish-introduced diseases to which the Ohlone had no natural immunity. Most of the surviving population relocated to the missions; however, some Ohlone sought and received refuge among neighboring aboriginal groups (Cook, 1943a, 1943b).

In the late 1700s, much of north San Mateo County, including the PPSU vicinity, was part of Rancho Buri Buri. The rancho extended from what is today Colma and South San Francisco to the middle of Burlingame, and from the San Andreas Valley to the bay shore, encompassing an area of approximately 15,000 acres (Beck and Haase, 1974).

Jurisdiction over Alta California was established by Mexico in April 1822. During the Mexican Period of 1822 to 1848, the central and local Mexican authorities never held strong control over this remote area. Rather, the Mexican Period was one of a slow disintegration of control by the Mexican government. During this period, Mission lands were secularized, expropriated, and given out as private ranches in the form of land grants (Donley et al., 1979).

In 1827, Rancho Buri Buri became a private land grant awarded to José Antonio Sanchez. According to Mildred Hoover and her colleagues (Hoover et al., 1990:378), this land was tentatively awarded to José Antonio Sanchez in 1827; however, he was officially granted the rancho by the provincial government in 1835.

Friction between Mexico and the United States ultimately led to the Mexican War of 1846 to 1847. On July 9, 1846, a crew from the sloop-of-war USS *Portsmouth* came ashore and raised the first American flag over San Francisco (Beck and Haase, 1974:47; Hoover et al., 1990:336). However, as Mexico had ceased stationing regular troops in San Francisco following secularization (Hoover et al., 1990:331), the raising of the flag was more a symbolic gesture than a result of heroic exuberance.

California became part of the United States as a consequence of the U.S. victory over Mexico in the war. The territory was formally ceded in the treaty of Guadalupe Hidalgo in 1848, and was admitted as a state in 1850 (Bethel, 1969; Beck and Haase, 1974).

When the United States took over California, land owners were required to prove their claims to land previously granted by the Mexican government to the newly established Public Land Commission. The U.S. Government confirmed the rights of the Sanchez family to the rancho; however, lengthy lawsuits and the need to pay taxes and loans ultimately resulted in the Sanchez heirs only being able to retain 5,000 of the original 15,000 acres granted to Sanchez (Chavez and Hupman, 1991:11). Among the new landowners of the former Rancho Buri Buri lands was cattle baron Charles Lux, who constructed a “stately home” on his 1,500-acre parcel (Hoover et al., 1990:378).

### **Colma Site**

The Colma site is located in the Town of Colma (formerly Lawndale), which is situated on former Rancho Buri Buri land. Colma was first developed in the 1870s as a “city of cemeteries.” Concerned that Colma’s cemeteries would be annexed to Daly City or San Francisco, Colma’s small population incorporated on August 5, 1924 (Chandler, 1973). By 1973, Colma had more than 20 cemeteries and a small industry of florists and stone cutters in an area that only covered 1.8 square miles (Chandler, 1973). Today, 73 percent of the town’s land is used for cemeteries (Town of Colma, 2011).

### **South San Francisco Site**

The South San Francisco site is located in the City of South San Francisco, which was initially established on former Rancho Buri Buri land in 1890 as a “company town” managed by W.J. Martin and E.E. Cuning, in charge of the South San Francisco Land & Improvement Company (Alexander and Hamm, 1916; South San Francisco Historical Society, 2004). South San Francisco, the “Industrial City,” was incorporated in September 19, 1908 (Alexander and Hamm, 1916; South San Francisco Historical Society, 2004; City of South San Francisco, 2011). At incorporation, the city had nearly 2,000 residents (South San Francisco Historical Society, 2004). Only 8 years later, in 1916, South San Francisco had a population of 3,500 (Alexander and Hamm, 1916).

Since World War II, South San Francisco has endeavored to become a well-balanced community of mixed industrial and residential areas. As with many communities in the area, following the end of World War II, residential growth often took the form of large suburban subdivisions. Within the vicinity of the South San Francisco site, the Rancho Buri Buri subdivision was constructed after approval by the South San Francisco Planning Commission on March 20, 1946 (City of South San Francisco, 1946). Like most post-World War II suburbs, the Rancho Buri Buri subdivision was laid out on curvilinear streets with cul-de-sacs, a form that was dictated in the Federal Housing Administration guidelines for neighborhood planning. Initially, the homes built after the war were simple structures, influenced by Federal Housing Administration 1940 guidelines for the Minimum House and Small House Program, which emphasized a flexible system of house design based on the “principles of expandability, standardization, and variability” (Ames and McClelland, 2002). The homes were constructed to provide “a maximum accommodation within a minimum of means” (Ames and McClelland, 2002).

Beginning in the 1950s, heavy industrial use diminished and was replaced with warehousing. More recently, the city has been redeveloped for biotech, hospitality, research and development industries (South San Francisco Historical Society, 2004). Residential construction increased substantially after World War II (South San Francisco Historical Society, 2004), in large part to accommodate the city's rapidly growing population which rose from 4,411 residents in 1920 to 60,552 residents in 2000 (City of South San Francisco, 2011).

### **San Bruno North and San Bruno South Sites**

The San Bruno North and San Bruno South sites are located in the City of San Bruno, which was initially established as rural farmland and horse-ranching properties in the 1870s on former Rancho Buri Buri land. Early settlers farmed and raised dairy cattle, until land speculators subdivided the land beginning in 1903 and set the lot patterns that continue to exist today (Cloud, 1928; City of San Bruno, 2011). Immediately following the 1906 San Francisco earthquake and fire, a wave of displaced persons moved to the suburbs seeking shelter. Approximately 1,400 displaced people moved to San Bruno (Fredricks, 2003). Merging with Lomita Park on December 23, 1914, the City of San Bruno was incorporated, with a population of 1,400 residents (Alexander and Hamm, 1916; City of San Bruno, 2011). By 1916, San Bruno had grown slightly to a population of 1,752 residents (Alexander and Hamm, 1916). San Bruno remained a quiet, suburban community until the outbreak of World War II. As war-related industries arose in the neighboring South San Francisco, the demand for nearby housing grew. The populations of both cities increased dramatically during this period (City of San Bruno, 2011). San Bruno's population grew from approximately 4,000 residents in 1940 to 15,000 residents by the mid-1940s. San Bruno annexed surrounding property, and grew from a city of 2 square miles to a city of 6 square miles in the 1940s (Fredricks, 2003). San Bruno's greatest population growth, a 130 percent increase, occurred during the 1950s. As the post-war population grew, the housing tracts expanded westward into the hills (City of San Bruno, 2011). In the 1960s, both housing development and population growth slowed to approximately 25 percent, and in the 1970s the development of large multi-family housing complexes began. Today, San Bruno is essentially a residential community, with mostly service businesses, such as grocery stores and drug stores, serving the city's residents (Sanborn Map Company, 1949; Fredricks, 2003; Appendix G).

### **Millbrae Site**

The Millbrae site is located in the City of Millbrae, originally established on former Rancho Buri Buri land as a private estate. Among the many speculators and builders who acquired portions of Rancho Buri Buri was Darius Ogden Mills. Mills built his estate on the Buri Buri land he acquired and called it Millbrae, which was a combination of his last name and "brae," the Scottish word for rolling hills (Milan, 2010). The land around the 150-acre Mills estate was also named Millbrae. Following Mills' death in 1910, the Mills family sold portions of its land for development, and the surrounding community began to grow. It was served by the Southern Pacific Railroad, the United Railroads, and the Peninsula Rapid Transit Company in 1916 (Alexander and Hamm, 1916). In 1928, several affluent San Francisco businessmen joined resources and bought a 143-acre site approximately 20 miles south of San Francisco for \$250,000. In 1929, the group hired Alister MacKenzie to create an 18-hole course. MacKenzie partnered with Robert Hunter and H. Chandler Egan to design the Union League Gold and Country Club, now the Green Hills Country Club (Cornish and Whitten, 1993).

Millbrae's small business district was located on El Camino Real in the early 1930s, and began to expand along Broadway in the 1940s. On January 14, 1948, Millbrae was incorporated, and the community became a city with nearly 8,000 residents. Following incorporation, like elsewhere in the post-World War II building boom, the community witnessed expansion through the construction of suburban subdivisions. The following suburban subdivisions are within the vicinity of the PPSU project: the Millbrae Meadows No. 1 subdivision by the Stoneson Development Corporation was approved by the Millbrae Planning Commission on November 29, 1954, and the adjacent Millbrae Meadows No. 5 subdivision was approved in 1962 (City of Millbrae, 1962).

Today, Millbrae is an important transportation hub due to its location at the southern terminus of the Bay Area Rapid Transit system, near the San Francisco International Airport, and adjacent to the main north-south highways of the San Francisco peninsula (U.S. Route 101 and Interstate 280). It is primarily a residential enclave (Millbrae Historical Society, 2007; Appendix G).

### **Peninsula Water System**

All of the sites included in the PPSU project are within the larger Peninsula water system, which was first established in 1861. The following information is extracted from the San Francisco Water System Improvement Program Final Environmental Impact Report (SF Planning, 2008b). The reader is referred to this Environmental Impact Report and the technical report prepared for this document for more detailed historical information on the Peninsula water system (URS, 2012b). Brief contextual information on the components of the Peninsula Water System occurring within the C-APE for the PPSU project is presented below.

The construction of the Baden-Merced Pipeline, San Andreas Pipeline No. 2 (SAPL2), San Andreas Pipeline No. 3 (SAPL3), and the Sunset Supply Branch Pipeline (SSBPL) was an important development related to all of the PPSU project sites. In 1868, the Spring Valley Water Company (SVWC), which was founded in 1860, purchased the valley and began constructing a dam and pipeline to meet increasing demands to provide water service to San Francisco. By 1870, the San Andreas Reservoir, the first lake south of San Francisco, and SVWC's second-highest storage reservoir, was placed into service. Water from the San Andreas Reservoir was carried to Millbrae through a tunnel, then delivered via a 30-inch-diameter pipeline to the College Hill Reservoir, San Francisco's second-highest distribution resource. After the 1906 earthquake, SVWC sent Pilarcitos water into San Andreas Reservoir, where it was conveyed into the city via the San Andreas Pipeline and eventually the Baden-Merced Pipeline, built in 1907, and then pumped to Laguna Honda, rather than reaching that terminal by gravity flow as in the past. Because the earthquake destroyed the Pilarcitos Aqueduct, the flow from the Pilarcitos watershed was stored in San Andreas Reservoir. The Baden-Merced Pipeline was among the multiple transmission lines that delivered water from the Peninsula storage reservoirs to San Francisco distributing reservoirs (JRP, 2008a). The pipeline was built from wrought-iron pipe reused from older pipelines. The pipeline was approximately 7 miles in length, running from the Baden Valve Lot, located at El Camino Real and West Orange Avenue in South San Francisco, to the Merced Manor Reservoir, located on 22nd Avenue north of Ocean Avenue in San Francisco. Based on information that SFPUC provided about the location of the pipeline, a review of other studies about the pipeline (JRP, 2008a), and current conditions of pipeline features visible at the surface, SVWC, and, later, the city, altered and moved the Baden-Merced Pipeline over time and reassigned the use of its water within the city distribution system. Based on field survey of the visible portions of the Baden-Merced Pipeline in the C-APE, the pipeline materials are original,

but there is some evidence of patching. No evidence was uncovered that the portion of Baden-Merced Pipeline in the C-APE has been moved as has been found in other portions of the pipelines in the SFWD system (JRP, 2008a).

Raising of the San Andreas Dam in 1928 was accompanied by the construction of a second pipeline from San Andreas, SAPL2 (JRP, 2008b). SAPL2 was a 54-inch-diameter steel-lockbar pipeline built to conduct water from the San Andreas Outlet Structure No. 2, which was constructed at the same time, to the Laguna Honda Reservoir in San Francisco. On March 3, 1930, San Francisco purchased SVWC, and created the San Francisco Water Department (SFWD). All SVWC assets were transferred to SFWD, including the San Andreas Dam and Reservoir, and associated pipelines (JRP, 2008b; ICF, 2009). SFWD made numerous improvements and modifications to SAPL2. In 1966-1967, portions of the pipeline were relocated to accommodate Interstate 280, San Bruno Avenue West, and Interstate 380 improvements. Approximately 360 feet of SAPL2 adjacent to Shelter Creek Condominiums were encased in 1967. In 1983, the entire pipeline was lined with cement mortar (SF Planning, 2010).

In 1955, SFWD built the 60-inch-diameter Sunset Supply Pipeline and SSBPL to supply water to the Sunset Reservoir in San Francisco. In the early 1970s, the Harry Tracy Water Treatment Plant (HTWTP), originally known as the San Andreas Water Treatment Plant, was constructed to filter water from the San Andreas Reservoir. Plant operations began on August 8, 1972. Plant capacity was expanded in 1992. In 1994, the plant was renamed in honor of Harry W. Tracy, a lifelong SFWD employee and Water Quality Manager. The plant serves SAPL2 and SAPL3, which feed the Sunset and Merced reservoirs in San Francisco. Since the construction of HTWTP, SSBPL delivers treated water from HTWTP to the Sunset Supply Pipeline. High-pressured water can also be carried through SSBPL (ICF, 2009).

SAPL3 was constructed circa 1979 as a new pipeline extension, replacing the existing Baden-Merced Pipeline in the South San Francisco site. The segment of SAPL3 between HTWTP and Baden was rehabilitated circa 1991, and retrofitted with an interior steel liner, ranging from 54 inches to 60 inches in diameter. The segment of SAPL3 north of Baden was retrofitted circa 1997, with an interior steel 60-inch-diameter liner (SF Planning, 2010). The Baden-Merced Pipeline was abandoned following the completion of SAPL3.

### 5.5.1.2 Existing Conditions

Brief synopses of the methods used to identify resources for each of the resource categories within their respective C-APEs and the results of these efforts are presented below.

#### *Paleontology*

As detailed in the paleontological technical report (URS, 2012c), the paleontological investigation completed for the PPSU project consisted of a literature review and museum archival search, followed by field surveys to assess the paleontological sensitivity of the study area.

The Society of Vertebrate Paleontology (SVP) developed the Conformable Impact Mitigation Guidelines (SVP Guidelines) (SVP, 1995), which outline criteria to assess paleontological sensitivity based on the potential of a geologic unit to contain significant paleontological resources.

Based on these guidelines, a vertebrate fossil is considered significant unless otherwise demonstrated, due to the relative rarity of vertebrate fossils. Vertebrate fossils are so uncommon that, in many cases, each recovered specimen will provide additional important information about the morphological variation or the geographic distribution of its species. Additionally, certain invertebrate or botanical fossils are considered significant paleontological resources if they provide new and substantial taxonomic, phylogenetic, ecologic, or stratigraphic data.

The SVP defines paleontological resources to be significant fossils or assemblages of fossils if they are unique, unusual, rare, uncommon, and diagnostically or stratigraphically<sup>2</sup> important, and/or add to an existing body of knowledge in specific areas—stratigraphically, taxonomically, and/or regionally.

A rock unit is considered “sensitive” to adverse impacts if there is a high probability that grading, excavation, or other earth-moving will jeopardize significant fossil remains. The paleontological importance or sensitivity of each rock unit exposed is the measure most amenable to assessing the significance of paleontological resources, because the areal distribution of each rock unit can be delineated on a topographic or geologic map. The paleontological sensitivity of a stratigraphic unit reflects its potential paleontological productivity and sensitivity, as well as the scientific significance of the fossils it has produced. This method of paleontological resource assessment is the most appropriate because discrete levels of paleontological importance can be delineated on a topographic or geologic map.

The SVP Guidelines establish three categories of sensitivity for paleontological resources under the standard guidelines for assessment and mitigation of adverse impacts to paleontological resources. The three categories are low, high, and undetermined, as described below.

Rock units that are not sedimentary in origin (e.g., most igneous and metamorphic rocks) are categorized as low-sensitivity paleontological resources. However, sedimentary rock units may also be categorized as low-sensitivity resources if they have been well examined and have not produced paleontological resources. Monitoring is not usually recommended or needed during excavation in a rock unit with low sensitivity.

High-sensitivity paleontological resources are categorized as rock units older than Holocene (recent)<sup>3</sup> for which vertebrate or significant invertebrate or suite of plant fossils have been recovered. In areas of high paleontological sensitivity, full-time monitoring is recommended during ground-disturbing activities.

Paleontological resources in sedimentary rock units for which little information is available are categorized as undetermined paleontological sensitivity. It is often possible for an experienced paleontologist to determine whether such a rock unit should be assigned a high or low sensitivity categorization after a pedestrian survey is performed, and detailed observations of both natural and artificial exposures of the rock unit are made.

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<sup>2</sup> Pertaining to the layers of the earth’s surface.

<sup>3</sup> Holocene or recent age sediments (less than 10,000 years old) are generally considered to be too young to preserve significant fossils.

As described in the paleontological technical report, six geological units occur in the vicinity of the PPSU C-APE. Using the SVP Guidelines, these units were ranked as having either high or low paleontological sensitivity.

### **High Paleontological Sensitivity Geologic Units**

Based on previously recorded vertebrate fossil localities, the Merced and Colma Formations in the study area are considered to have a high potential to contain significant fossils and therefore are ranked as having high paleontological sensitivity. Although recorded vertebrate fossil localities were not found within the slope debris and ravine fill, based on the age of this geological unit (Pleistocene), it is likely that undiscovered vertebrate fossils could be encountered. The slope debris and ravine fill is considered to have a high potential to contain significant fossils, and therefore is ranked as having high paleontological sensitivity.

### **Low Paleontological Sensitivity Geologic Units**

Artificial fill is composed of previously disturbed combinations of poorly to well-compacted gravel, sand, silt and rock fragments. Based on the recent age (i.e., not old enough to preserve fossils) and being previously disturbed, artificial fill is considered to have low potential to contain significant fossils, and therefore is ranked as having low paleontological sensitivity.

Alluvial fan and fluvial deposits are Holocene in age, and are considered too recent to preserve fossils. Alluvial fan and fluvial deposits are considered to have low potential to contain significant fossils, and therefore are ranked as having low paleontological sensitivity.

Based on the rarity of recorded vertebrate localities and the disturbed and sheared nature of the Franciscan Complex in the study area, it is considered to have low potential to contain significant fossils, and therefore is ranked as having low paleontological sensitivity.

### **Synthesis of Paleontological Sensitivity Ratings within the PPSU C-APE**

Using both the SVP Guidelines and field surveys, the following discussion on the paleontological sensitivity of each of the project components was developed. For a more detailed discussion of these efforts, the reader is referred to the paleontological technical report prepared for the PPSU project (URS, 2012c).

The Pleistocene Colma Formation comprises the majority of the South San Francisco, and San Bruno North sites, except for minor amounts of Pleistocene slope debris and ravine fill, Holocene alluvial fan and fluvial deposits, and historic artificial fill. Holocene alluvial fan and fluvial deposits comprise the majority of the Colma site, except for minor amounts of Pleistocene slope debris and ravine fill and Pleistocene Colma Formation. The Pliocene and Pleistocene Merced Formation comprises the majority of the San Bruno South site, except for a small outcrop of the Franciscan Complex located on the south side of and underneath Whitman Way, and a small area of artificial fill located in the vicinity of the Shelter Creek Condominiums. The Pliocene and Pleistocene Merced Formation comprises the majority of the Millbrae site, except for artificial fill in the staging and spoils area north of the SFPUC ROW, and the Pleistocene Colma Formation for the northern 500 feet of the to the trail that extends through the City of Millbrae open space area from Lomita Avenue to the SFPUC ROW. The last 100 feet of this trail are artificial fill.

Geologic units of high paleontological sensitivity (slope debris and ravine fill, Colma and Merced Formations) outcrop on the surface of a portion of all five sites (Brabb et al., 1998; Bonilla, 1998; GTC, 2011b). Ground disturbance in areas that have geologic units of high paleontological sensitivity could impact significant paleontological resources.

Geologic units of low paleontological sensitivity (artificial fill and alluvial deposits) outcrop on the surface in all but the South San Francisco site. These recent age geologic units that have low paleontological sensitivity are commonly underlain by geologic units of high paleontological sensitivity (slope debris and ravine fill and the Colma and Merced Formations). Ground-disturbing activities, which extend below these geologic units of low paleontological sensitivity, and into geologic units of high paleontological sensitivity, could potentially impact significant undisturbed paleontological resources.

The Franciscan Complex is considered to have low paleontological sensitivity and only outcrops in the San Bruno South site. It is unlikely that this unit is underlain by geologic units of high paleontological sensitivity in the study area.

The geologic units as they occur within each of the project components, and each unit's corresponding paleontological sensitivity rating are presented below in Table 5.5-1.

**Table 5.5-1  
 Paleontological Sensitivity Ratings for Geologic Rock Units within the PPSU C-APE**

Geologic Rock Unit	Age	Colma Site	South San Francisco Site	San Bruno North Site	San Bruno South Site	Millbrae Site	Paleontological Sensitivity Rating <sup>1</sup>
Artificial Fill	Recent (Historic)	No	No	Yes	Yes	Yes	Low
Alluvial Deposits	Recent (Holocene)	Yes	Yes	No	No	No	Low
Slope debris and ravine fill	Pleistocene	Yes	Yes	No	No	No	High
Colma Formation	Pleistocene	Yes	Yes	Yes	No	Yes	High
Merced Formation	Pliocene and Pleistocene	No	No	No	Yes	Yes	High
Franciscan Complex	Mesozoic	No	No	No	Yes	No	Low

Source: URS, 2012c.  
 Notes:  
<sup>1</sup> Paleontological sensitivity ratings are based on Society of Vertebrate Paleontology (1995) Conformable Impact Mitigation Guidelines.

### *Archaeology*

As described in the archaeological technical reports prepared for the PPSU project (URS, 2012a; URS, 2012d; Sonoma State University, 2012; Sonoma State University, 2013), the PPSU C-APE was inventoried for archaeological resources using a combination of background research, consultation with the California Native American Heritage Commission (NAHC) as well as



Native American groups identified by the NAHC, historical societies and other relevant parties, geoarchaeological assessment, and pedestrian surface surveys of the individual project components.

No archaeological resources were identified within the approved C-APE as a result of the records search and the field survey. Although no archaeological resources were observed, the potential for the inadvertent exposure of buried archaeological resources with project implementation must be addressed. San Francisco's Environmental Planning Division has developed a ratings system for the Water System Improvement Program (WSIP) to address the archaeological sensitivity of a project component's underlying soils. Below are the definitions developed for WSIP to assess archaeological sensitivity (Praetzellis, 2009):

- High sensitivity: Archaeological resources are very likely to be present. Resources are known to exist at this location or immediately adjacent to it. Project effects on locations of high sensitivity may meet California Code of Regulations 15300.2(f); where this is the case, a project will not qualify for Categorical Exemption.
- Moderate sensitivity: Archaeological resources may be present. Although no resources have been recorded at this location, historical and cultural factors indicate they may be present.
- Low sensitivity: Archaeological resources are unlikely to be present. Either resources were probably never present, or portions of the location that may have contained resources have been so heavily disturbed that archaeological remains are unlikely to have survived.

Given that much of the C-APE was previously disturbed by the installation of the pipelines on which the proposed project is focused, the archaeological sensitivity of the majority of the C-APE is considered low, according to the WSIP archaeological guidance presented above. Therefore, the likelihood of encountering intact, buried, archaeological deposits during project implementation within the previously disturbed portions of the C-APE is correspondingly low.

Although most of the C-APE has low archaeological sensitivity, the records search completed for the investigation revealed the reported presence of archaeological site CA-SMA-95 within the vicinity of the C-APE at the San Bruno South site. Recorded in 1955 by Albert Elsasser of the University of California Archaeological Survey, CA-SMA-95 was identified as a prehistoric occupation site shellmound near the bank of a small creek. Because the location map attached to the confidential archaeological form is of insufficient scale or detail to accurately pinpoint the site location, the site's exact location is unknown. It should also be noted, however, that it is unclear if Elsasser ever visited the site. The confidential archaeological site record states that the site was recorded by A. Elsasser from P. Lissol, perhaps suggesting that Elsasser recorded the site using data supplied to him as opposed to actually observing the site firsthand.

In addition to the records search data, the geoarchaeological assessment identified soils of increased archaeological sensitivity (i.e., undisturbed Holocene soils in the vicinity of natural water courses) at the Colma and South San Francisco sites. Therefore, there are a few areas of increased archaeological sensitivity in the PPSU project C-APE.

Using the rating system above, postulations for each project site are presented in the following paragraphs.

### **Colma Site**

The majority of the C-APE in the Colma site is of low archaeological sensitivity, given the extent of disturbance to the soils that occurred when SAPL2 and SAPL3 were originally constructed. There would be some overexcavation for the installation of the replacement pipelines and the shoring. These undisturbed soils are Holocene in age and occur in the C-APE along the course of a naturally occurring creek (now culverted) that would have been a draw to the prehistoric inhabitants of the area. These undisturbed soils could harbor buried archaeological deposits and therefore, using the rating system above, would be considered of moderate archaeological sensitivity.

### **South San Francisco Site**

The majority of the C-APE in the South San Francisco site is of low archaeological sensitivity, given the extent of disturbance to the soils that occurred when SAPL2 and SAPL3 were originally constructed. There would be some overexcavation for the installation of the replacement pipelines and the shoring. There would also be the use of jack-and-bore procedures through undisturbed soils to place pipe under Westborough Avenue. These undisturbed soils are Holocene in age and occur in the C-APE along the course of a naturally occurring creek (now culverted) that would have been an attractant to the prehistoric inhabitants of the area. These undisturbed soils could harbor buried archaeological deposits and so, using the rating system above, would be considered of moderate archaeological sensitivity.

### ***San Bruno North Site***

All of the C-APE in the San Bruno North site is of low archaeological sensitivity, given that no excavation within undisturbed soils would occur with project implementation.

### ***San Bruno South Site***

The majority of the C-APE in the San Bruno South site is of low archaeological sensitivity, given the extent of disturbance to the soils that occurred when SAPL2 and SAPL3 were originally constructed. There would be some overexcavation for the installation of the replacement pipelines and the shoring, but the installation will be occurring in Colma and Merced formation geologic soils, which are unlikely to contain buried archaeological deposits. The records search did reveal, however, that archaeological site CA-SMA-95 was reportedly located near the northern terminus of the C-APE for this project site. This specific area is within the general vicinity of the Shelter Creek Condominiums. The presence of the site raises the archaeological sensitivity of this portion of the C-APE to high, according to the criteria listed above.

### ***Millbrae Site***

The majority of the C-APE in the Millbrae site is of low archaeological sensitivity, given the extent of disturbance to the soils that occurred when SSBPL was originally constructed. There would be some overexcavation for the installation of the replacement pipeline and the shoring, but all of this would be occurring in Colma and Merced formation geologic contexts, soils unlikely to contain buried archaeological deposits.

### *Historic Architecture*

As described in the historic architecture technical report prepared for the PPSU project (URS, 2012b), the PPSU C-APE was inventoried for historic architectural resources using a combination of background research, consultation with historical societies and other relevant parties, and field investigations of each the individual project components.

In total, seven historic-period built environment properties within the C-APE were identified and evaluated for this report. Several of the properties, specifically the portion of Baden-Merced Pipeline, and the portions of SAPL2 and SAPL3, are located in multiple sites. Below are the seven historic-period built-environment properties listed by site.

Colma site:

- Portion of Baden-Merced Pipeline; and
- Portions of SAPL2 and SAPL3.

South San Francisco site:

- 105 Arroyo Drive;
- Portion of Baden-Merced Pipeline; and
- Portions of SAPL2 and SAPL3.

San Bruno North and San Bruno South sites:

- Portions of SAPL2 and SAPL3.

Millbrae site:

- 1094 Ridgewood Drive;
- 1100 Ridgewood Drive;
- Green Hills Country Club; and
- Portion of SSBPL.

The significance of the surveyed properties within the C-APE was determined by applying the procedure and criteria for National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligibility, and the definition of a historical resource for the purposes of CEQA (see Regulatory Setting below). For a full evaluation of each of the properties, refer to the DPR 523 series forms included as Appendix B to the technical report prepared for the project (URS, 2012b).

After applying the procedure and criteria for the NRHP and CRHR eligibility, as well as other means by which properties can be considered historical resources for the purposes of CEQA (as defined in CEQA), it was determined that only one of the seven properties appears to be eligible for listing in the NRHP and CRHR, and is considered a historical resource for the purposes of CEQA. The Green Hills Country Club appears to be eligible for listing in the NRHP and CRHR under NRHP Criterion C and CRHR Criterion 3, as a distinctive example of a Dr. Alister MacKenzie-designed golf course (designed landscape). Table 5.5-2 lists each of the historic-period, built-environment properties, organized by site.

**Table 5.5-2  
 Historic Architecture Eligibility Status**

Site	Name	Date of Construction	Significance
Colma and South San Francisco	Portions of Baden-Merced Pipeline	1907	Not Eligible
Colma, South San Francisco, San Bruno North and San Bruno South	Portions of SAPL2 Portions of SAPL3	circa 1928 circa 1979	Not Eligible
South San Francisco	105 Arroyo Drive	1948	Not Eligible
Millbrae	1094 Ridgewood Drive	1964	Not Eligible
Millbrae	1100 Ridgewood Drive	1956	Not Eligible
Millbrae	Green Hills Country Club	1929	NRHP and CRHR Eligible, Historical Resource for CEQA
Millbrae	Portion of SSBPL	circa 1955	Not Eligible
Source: URS, 2012b. Notes: CEQA = California Environmental Quality Act CRHR = California Register of Historical Resources NRHP = National Register of Historic Places SAPL2 = San Andreas Pipeline No. 2 SAPL3 = San Andreas Pipeline No. 3 SSBPL = Sunset Supply Branch Pipeline			

## 5.5.2 Regulatory Framework

Numerous laws, regulations, and statutes, on both the federal and State levels, seek to protect and target the management of cultural resources. The term “Cultural Resources” refers generally to resources as defined above. “Historical Resources” for the purposes of CEQA or “Historic Properties” for the purposes of NEPA or Section 106 level projects, refer to those cultural resources that have been evaluated as being eligible for listing in the CRHR and the NRHP, respectively.

Both NEPA and CEQA specifically or implicitly also require consideration of paleontological resources. Paleontological resources are included among nonrenewable scientific resources by governmental agencies. Protection of such resources provided by federal and State legislation, and even by some local ordinances. The SVP has developed guidelines and professional standards for assessing the impact of projects on paleontological resources and for mitigation of adverse impacts (SVP, 1995, 1996).

Pertinent federal, State, and local regulations targeting the management of cultural resources that pertain to the PPSU project are described below.

### 5.5.2.1 Federal Regulations

#### *National Historic Preservation Act*

Cultural resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (16 United States Code 470f), and its implementing regulations. Before a federal agency can engage in an “undertaking” that would, for example, require federal funding or a federal permit, Section 106 of the NHPA requires the agency to consider the effects of the undertaking on historic properties (i.e., properties listed in or eligible for listing in the NRHP), and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that would adversely affect historic properties. Under the NHPA, a property is considered significant if it meets the National Register listing criteria at 36 CFR 60.4, as stated below:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that:

- a) Are associated with events that have made a significant contribution to the broad patterns of our history, or
- b) Are associated with the lives of persons significant in our past, or
- c) Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or
- d) Have yielded, or may be likely to yield, information important in prehistory or history.

Federal review of undertakings is referred to as the Section 106 process. This process is the responsibility of the federal lead agency. The Section 106 review typically involves a four-step procedure, which is described in detail in the implementing regulations (36 CFR 800):

- Identify historic properties in consultation with the State Historic Preservation Officer (SHPO) and interested parties;
- Assess the effects of the undertaking on historic properties;
- Consult with the SHPO, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation; and
- Proceed with the project according to the conditions of the agreement.

### 5.5.2.2 State Regulations

#### *California Office of Historic Preservation*

The State of California implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs. The California Office of Historic Preservation is an office of the California Department of Parks and Recreation, and implements the policies of the NHPA on a statewide level. The Office of Historic Preservation also maintains the California Historical Resources Inventory. The SHPO is an appointed official who implements historic preservation programs within the State's jurisdiction, and is housed at the California Office of Historic Preservation.

#### *California Environmental Quality Act*

CEQA, as codified in California Public Resources Code (PRC) Section 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a proposed project would have a significant effect on historical resources and unique archaeological resources. The CEQA Guidelines define a historical resource as:

(1) a resource in the California Register; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k), or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archaeological resources. A unique archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized, important, prehistoric, or historic event or person (PRC Section 21083.2 [g]).

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

Under PRC 21000 et seq., CEQA also requires that public agencies and private interests identify the significance of the impacts of their proposed projects on any object or site of significance to the scientific annals of California (CEQA Section 15064.5 [a][3]); this requirement also applies to paleontological resources. Administrative regulations for the implementation of CEQA are set forth in California Code of Regulations Section 15000 et seq., commonly known as the “CEQA Guidelines.” The CEQA Guidelines define the procedures, types of activities, persons, and public agencies required to comply with CEQA. Appendix G of the CEQA Guidelines contains an Environmental Checklist of questions that a lead agency should normally address if relevant to a project’s environmental impacts. One of the questions to be answered in this Environmental Checklist (California Code of Regulations Section 15063; Appendix G, Section V, Part c) is the following: “Would the project directly or indirectly destroy a unique paleontological resource or site?”

### ***California Register of Historical Resources***

The California Register is “an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1[a]). The criteria for eligibility to the California Register are based on National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for or listed in the National Register (PRC Section 5024.1[d]).

To be eligible for the California Register as a historical resource, a prehistoric or historic-period resource must be significant at the local or state level under one or more of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history (CEQA Guidelines Section 15064.5 [a][3]).

For a resource to be eligible for the California Register, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not meet the National Register criteria may still be eligible for listing in the California Register.

### ***California Public Resources Code***

As part of the determination made pursuant to PRC Section 21080.1, the lead agency must determine whether the project would have a significant effect on archaeological and paleontological resources.

Several sections of the PRC protect cultural resources. Under Section 5097.5, no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site (including

fossilized footprints), inscriptions made by human agency, rock art, or any other archaeological, paleontological, or historical feature situated on public lands, except with the express permission of the public agency that has jurisdiction over the lands. Violation of this section is a misdemeanor. Section 5097.98 states that if Native American remains are identified within a project area, the landowner must “discuss and confer” with the appropriate Native American as identified by the NAHC and regarding the treatment or disposition of, with appropriate dignity, the human remains and any items associated with Native American burials. These procedures are also addressed in Section 15046.5 of the CEQA Guidelines. California Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a location other than a dedicated cemetery. Section 30244 of the PRC requires reasonable mitigation for impacts on paleontological and archaeological resources that occur as a result of development on public lands.

In addition, several sections of the PRC that are relevant for the project area protect paleontological resources. Section 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (i.e., lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

### **5.5.2.3 Local Regulations**

#### ***San Francisco Historic Preservation Commission and Planning Code, Articles 10 and 11***

The San Francisco Historic Preservation Commission (HPC) is a seven-member body that makes recommendations to the San Francisco Board of Supervisors on landmark designations, historic district designations, and individual resource designations within historic districts. The HPC may also review and comment on environmental documents under CEQA for projects affecting historical resources; and the HPC reviews and comments on any agreements proposed under the NHPA where the City would be a signatory. The HPC also approves Certificates of Appropriateness for landmarks and properties within Article 10 Historic Districts.

The SHPO has included the City and County of San Francisco (CCSF) on its list of Certified Local Governments, which means that San Francisco has an approved historic preservation ordinance, HPC, and other formal processes related to historic preservation and cultural resources management. The CCSF reviews the historical resources designated under Articles 10 and 11 of the San Francisco Planning Code when it evaluates project impacts on historical resources. Article 10 describes procedures regarding the preservation of sites and areas of special character or special historical, architectural, or aesthetic interest or value, such as officially designated city landmarks and buildings included within locally designated historic districts. Article 11 of the Planning Code designated six downtown conservation districts. There are no CCSF-designated landmarks or properties that contribute to designated historic districts in the PPSU project C-APE.



## 5.5.3 Impacts and Mitigation Measures

### 5.5.3.1 Significance Criteria

CCSF has not formally adopted significance standards for impacts related to cultural resources, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- 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;
- Cause a substantial adverse change in the significance of a historical or unique archaeological resource pursuant to Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature; or
- Disturb any human remains, including those interred outside of formal cemeteries pursuant to California Health and Safety Code Section 7050.5.

### 5.5.3.2 Approach to Analysis

For this analysis, both direct and indirect effects of project implementation were considered. Direct impacts are typically associated with construction and/or ground-disturbing activities, and have the potential to immediately alter, diminish, or destroy all or part of the character and quality of archaeological resources, historic architecture, and/or paleontological remains. Indirect impacts are typically associated with post project implementation conditions that have the potential to alter or diminish the historic setting of a cultural resource (generally historic architecture) by the introduction of undesirable auditory or visual intrusions.

The potential for the PPSU project to adversely affect cultural and paleontological resources would be limited to construction activities. As no permanent aboveground, project-related features are to be introduced, indirect affects to cultural resources are not anticipated. Ground disturbance and excavation during construction activities could disturb or destroy known and previously unrecorded, buried, archaeological and paleontological resources and human remains. Project construction activities could also generate vibrations through the use of vibratory equipment, such as large bulldozers and vibratory compactors, or through high-impact construction methods, such as pile driving and sheetpile driving as required for shoring, that could cause cosmetic, architectural, and structural damage to nearby historic buildings and structures. Operation of the proposed project would have no effect on cultural resources because project operations would not cause additional ground disturbance or generate strong vibrations. Therefore, the analysis below focuses on construction related impacts on cultural and paleontological resources.

PPSU project operations would have no impacts related to the following significance criteria:

- **Cause a substantial adverse change in the significance of a historical resource or unique archaeological resource pursuant to Section 15064.5, directly or indirectly destroy a unique paleontological resource or site or unique geological feature, or disturb human remains.** During project operations, project activities would be similar to existing operations and maintenance activities at the project sites, and would include yearly visual inspections, and may include water discharge from the manholes, as required by other SFPUC projects or inspections. Approximately every 10 to 15 years, inspections would entail physically entering the manholes for visual inspections inside the pipelines. Therefore, the significance criteria related to cultural resources are not applicable to the project operations, and are only analyzed below for project construction activities.

Additionally, as described in Section 5.5.1.1, the common staging area was determined not to be within the C-APE, and therefore is not presented in Table 5.5-3 nor discussed in this section.  
Summary of Impacts

Table 5.5-3 lists the proposed project's cultural and paleontological resource impacts and provides significance determinations.

### *Cultural Resources*

In considering impact significance under CEQA, the significance of the cultural resource itself must first be determined. At the State level, consideration of significance as an "historical resource" is measured by cultural resource provisions considered under CEQA Sections 15064.5 and 15126.4, and the criteria regarding resource eligibility to the CRHR. These criteria apply to both archaeological and historic architectural resources.

Impacts to "unique archaeological resources" are also considered under CEQA, as described under PRC 21083.2. A nonunique archaeological resource indicates an archaeological artifact, object, or site that does not meet the above criteria. Impacts to nonunique archaeological and resources that do not qualify for listing on the CRHR receive no further consideration under CEQA.

Therefore, potential impacts to identified cultural resources need only be considered if the resource is a "historical resource" or "unique archaeological resource" under the provisions of CEQA Sections 15064.5 and 15126.4 and the eligibility criteria.

Section 15064.5 of CEQA also assigns special importance to human remains, and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC Section 5097.98.

### *Paleontological Resources*

In considering impact significance under CEQA, impacts to fossils is considered under PRC 21000 et seq. CEQA requires that public agencies and private interests identify the significance of the impacts of their proposed projects on any object or site of significance to the scientific annals of California (CEQA Section 15064.5 [a][3]); this requirement applies to paleontological resources.

**Table 5.5-3  
Summary of Impacts – Cultural Resources**

Impact	Significance Determination <sup>1</sup>				
	Colma	South San Francisco	San Bruno North	San Bruno South	Millbrae
<b>Impact CP-1:</b> Project construction would not cause a substantial adverse change in the significance of a historical resource.	NI	NI	NI	NI	LS
<b>Impact CP-2:</b> Project construction could cause a substantial adverse change in the significance of a historical or unique archaeological resource.	LSM	LSM	NI	LSM	LSM
<b>Impact CP-3:</b> Project construction could result in a substantial adverse effect by directly or indirectly destroying a unique paleontological resource or site.	LSM	LSM	NI	LSM	LSM
<b>Impact CP-4:</b> Project construction could result in a substantial adverse effect related to the disturbance of human remains.	LSM	LSM	NI	LSM	LSM
<b>Impact C-CP:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts on cultural resources such as archaeological sites (historical and/or unique) including those with human remains, historic architectural, or paleontological resources.	LSM	LSM	NI	LSM	LSM
<p>Notes:  NI = No Impact  LS = Less-than-Significant impact, no mitigation required  LSM = Less-than-Significant Impact with Mitigation incorporated</p> <p><sup>1</sup> As noted in Section 5.5.1.1, CEQA Area of Potential Effects, the common staging area is not included in the C-APE for the PPSU project; project-related activities proposed at this location would not affect cultural or paleontological resources (SF Planning, 2008a).</p>					

### 5.5.3.3 Construction Impacts and Mitigation Measures

***Impact CP-1: Project construction would not cause a substantial adverse change in the significance of a historical resource. (Less than Significant)***

As detailed in the historic architectural technical report prepared for the PPSU project (URS, 2012b), a single historical resource (i.e., CRHR-listed or eligible resource) was identified within the C-APE, at the Millbrae site. The Green Hills Country Club, as a whole, appears to be eligible for listing in the NRHP and CRHR under NRHP Criterion C and CRHR Criterion 3, as a distinctive example of a Dr. Alister MacKenzie-designed golf course (designed landscape).

The Green Hills Country Club encompasses approximately 143 acres (which represents the limits of the historical resource). The golf course is a characteristic MacKenzie-designed course, with a challenging terrain, aesthetically integrated interlocking features of a core-type (continuous) course, distinctive bunkering, small hillocks around greens, and a design that follows natural ground contours (Shackelford, 2003). Character-defining landscape features include MacKenzie-designed holes, greens, fairways, bunkers, pathways, and associated landscaping that remain mostly intact. Noncontributing landscape features include two nonhistoric period ponds, nonhistoric period practice green and driving range, nonhistoric period parking lot, and several nonhistoric buildings and structures, including a clubhouse, pool, two maintenance buildings, and tennis courts. Project construction within the SFPUC ROW located on the Green Hills Country Club would entail open-trench construction methods, and therefore would represent a potential direct impact to this identified historical resource. As specified in Chapter 3, Project Description, the pipe replacement would generally include the following activities: (1) preparation of the site, including removal of vegetation and grading; (2) trench excavation and shoring, as necessary; (3) removal of existing pipe and installation of new pipe; (4) trench backfill and compacting; and (5) surface restoration. The surface of the site would be restored, and would match its pre-construction appearance following the seismic upgrades. The improvements would not impact original materials, and the surface restoration would match physically and visually with the existing landscape materials, vegetation, and topography, in accordance with the SFPUC's Right-of-Way Integrated Vegetation Management Policy (SFPUC, 2007). Construction of the project, including the removal of trees within the SFPUC ROW, would not obstruct or diminish the significance of the character-defining features of MacKenzie's course, which include the routing and location of the fairways, greens, holes, bunkers, and pathways. The improvements would maintain the historic use and character of the property, and be completed in-kind to existing materials, matching its pre-construction appearance when completed. Therefore, although the construction represents a direct impact, it is only temporary and would not cause a substantial adverse change in the significance of the Green Hills Country Club or its golf course, and therefore impacts would be *less than significant*.

***Impact CP-2: Project construction could cause a substantial adverse change in the significance of a historical or unique archaeological resource. (Less than Significant with Mitigation)***

This impact analysis addresses potential impacts to archaeological sites that qualify as either historical resources (i.e., CRHR-listed or eligible-to-be-listed resource) or unique archaeological resources (i.e., meets the threshold of PRC Section 21083). As detailed in the archaeological

technical report prepared for the PPSU project (URS, 2012a), no archaeological resources were identified within the C-APE defined for the proposed project. Prefield research did reveal, however, that one prehistoric archaeological site CA-SMA-95 is purportedly within the immediate vicinity of the C-APE as it relates to the San Bruno South site. In addition to this known site, two of the project components, Colma and South San Francisco, include some construction within undisturbed soils of moderate archaeological sensitivity. Although no archaeological resources are known within the C-APE, given the reported presence of CA-SMA-95 in the immediate vicinity of the C-APE and the soils of moderate archaeological sensitivity within specific portions of the C-APE, impacts to such resources cannot be discounted at the Colma, South San Francisco and San Bruno South sites. Additionally, although it is unlikely given the low archaeological sensitivity of the Millbrae site, the inadvertent exposure of an archaeological resource cannot be completely dismissed, given that construction would occur within undisturbed soils. Implementation of the project, including excavation, trenching, grading, and the movement of heavy construction vehicles and equipment, could expose and disturb or damage previously unrecorded archaeological resources at the Colma, South San Francisco, San Bruno South, and Millbrae sites, which could result in a substantial adverse change in the potential significance of a historical or unique archaeological resource. At the San Bruno North site, there would be no impact because all proposed excavation is confined to previously disturbed soils where intact archaeological materials would not occur.

Any impact resulting from the disturbance of historical and/or unique archaeological resources during construction would be a potentially significant impact, but would be reduced to a less-than-significant level with implementation of **Mitigation Measure M-CP-2a: Distribute "ALERT" Sheet; Mitigation Measure M-CP-2b: Conduct Archaeological Monitoring in Accordance with Approved Archaeological Monitoring Plan;** and, if necessary, **Mitigation Measure M-CP-2c: Prepare and Comply with an Archaeological Evaluation Plan and Evaluation Report.** These measures would reduce impacts to previously unidentified archaeological resources by ensuring that resources are identified and protected upon discovery, and if necessary by implementing an appropriate treatment strategy such as archaeological data recovery. Therefore, impacts would be *less than significant with mitigation* at the Colma, South San Francisco, San Bruno South, and Millbrae sites. There would be *no impact* at San Bruno North site.

#### **Mitigation Measure M-CP-2a: Distribute "ALERT" Sheet**

This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. At these sites, there is a potential for the inadvertent discovery of archaeological resources because all require excavation into previously undisturbed soils. To avoid any potential adverse effects on accidentally discovered buried cultural resources, as defined in CEQA Guidelines Section 15064.5(a)(c), the SFPUC shall distribute the San Francisco Planning Department's archaeological resource "ALERT" sheet to the project prime contractor; to any subcontractors (including firms subcontracted to perform demolition, excavation, grading, foundation, and pile driving); and/or to any utilities firms involved in any and all soil-disturbing activities within the PPSU C-APE. Prior to any soil-disturbing activities, each contractor shall be responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, and supervisory personnel. The SFPUC shall provide the Environmental Review Officer (ERO) with the sign-in sheet from the responsible parties

(i.e., prime contractor, subcontractor[s], and utilities firm) confirming that all field personnel have received copies of the ALERT sheet.

Should any indication of an archeological resource be encountered during any soil-disturbing activity, SFPUC and/or the contractor shall immediately suspend the soil-disturbing activities in the vicinity of the discovery, and shall notify the ERO immediately. Ground-disturbing activities within 50 feet of the discovery shall remain suspended until the ERO has determined what additional measures should be undertaken.

If an archaeological resource is present, the archaeological monitor retained for the project (see **Mitigation Measure M-CP-2b**) shall identify and evaluate the archaeological resource. The archaeological monitor shall make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by the SFPUC. These measures might include preservation in situ of the archaeological resource; or an archaeological evaluation program (see **Mitigation Measure M-CP-2c**).

**Mitigation Measure M-CP-2b: Conduct Archaeological Monitoring in Accordance with Approved Archaeological Monitoring Plan**

This mitigation measure applies to the Colma, South San Francisco, and San Bruno South sites only. At these sites, portions of the C-APE are of elevated archaeological sensitivity. The SFPUC will retain a qualified archaeologist meeting the Secretary of the Interior's professional standards for archaeology and, as necessary, a Native American monitor to be present during specific ground disturbing activities at specific locations within the Colma, South San Francisco, and San Bruno South sites as stipulated within the Archaeological Monitoring Plan (AMP) to be prepared for the project (URS, 2012a). The monitoring shall be conducted in accordance with the approved AMP. Archaeological monitoring is not required at the Millbrae site, given the low archaeological sensitivity of the soils occurring within that portion of the C-APE.

**Mitigation Measure M-CP-2c: Prepare and Comply with an Archaeological Evaluation Plan and Evaluation Report**

This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. In the event archaeological resources are inadvertently exposed during any project-related construction, all ground-disturbing work within 50 feet of the discovery shall immediately cease, and the SFPUC Project Manager and the ERO shall be notified immediately. In consultation with the SFPUC, the ERO, and the San Francisco Planning Department's Environmental Planning Division archaeologist or Designee, the monitoring archaeologist shall prepare an Archaeological Evaluation Plan (AEP) consistent with the requirements of the San Francisco Planning Department, Environmental Planning Division (EP) WSIP Archaeological Guidance No. 5. The AEP shall create a program to determine the potential of the expected resource to meet the California Register criteria—particularly Criterion 4, the resource's potential to address important research questions identified in the AEP—and the archaeologist shall submit this plan to the ERO for approval. The archaeologist shall then conduct an evaluation consistent with the ERO-

approved AEP. The methods and findings of the evaluation shall be presented in an Archaeological Evaluation and Effects Report consistent with EP WSIP Archaeological Guidance No. 6, which shall be submitted to the ERO upon completion.

Based on the conclusions of the Archaeological Evaluation and Effects Report, the Environmental Planning Division Archeologist or Designee shall determine if the project will adversely affect a CEQA-significant archaeological resource. If the project will have an adverse effect on such a resource, an Archaeological Research Design and Treatment Plan shall be prepared by the archaeologist and submitted to the ERO. The Archaeological Research Design and Treatment Plan shall be prepared consistent with the EP (formerly MEA) WSIP Archaeological Guidance No. 7. Once approved by the ERO, a data-recovery investigation and/or other treatment shall be conducted by the archaeologist.

***Impact CP-3: Project construction could result in a substantial adverse effect by directly destroying a unique paleontological resource or site. (Less than Significant with Mitigation)***

As described in the paleontological analysis presented in the technical report (URS, 2012c), the paleontological C-APE for the PPSU project is underlain by artificial fill, Holocene alluvium, slope debris and ravine fill, Colma Formation, Merced Formation, and Franciscan Complex Geologic units. No paleontological resources are known to exist within the project C-APE according to the University of California Museum of Paleontology database; however, paleontological resources have been found in the some of the same geologic contexts as that which occur within the PPSU project area. Fossils are typically a buried resource, and therefore impacts on them are determined based on the probability or potential that fossils may be present within a rock unit. Table 5.5-4 summarizes the rock units in the project area, their paleontological potential based on the application of the SVP Guidelines, and their potential to be disturbed by project construction activity. Project construction could result in a substantial adverse effect by directly destroying a unique paleontological resource or site at all projects sites, except for the San Bruno North site, where no excavation of undisturbed soils is proposed. However, these potential impacts to paleontological resources at the Colma, South San Francisco, San Bruno South, and Millbrae sites would be reduced to less-than-significant levels with implementation of **Mitigation Measure M-CP-3: Prepare and Implement a Paleontological Resources Monitoring Program**. Implementation of **Mitigation Measure M-CP-3** would address the PPSU project's potential construction-related impacts on paleontological resources by requiring development of a paleontological plan; paleontological resources training for all construction forepersons and field supervisors; construction monitoring in accordance with the monitoring plan; and adherence to appropriate protocols for assessing and salvaging any potential fossil finds. Therefore, impacts would be *less than significant with mitigation* at the Colma, South San Francisco, San Bruno South and Millbrae sites, and there would be *no impact* at the San Bruno North site.

**Mitigation Measure M-CP-3: Prepare and Implement a Paleontological Resources Monitoring Program.**

This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. Prior to the initiation of any site preparation or start of construction, SFPUC shall retain a qualified professional paleontologist or a California

**Table 5.5-4  
 Impact Potential to Paleontological Resources for Geologic Rock Units within the C-APE**

<b>Geologic Rock Unit and Units Paleontological Sensitivity Rating<sup>1</sup></b>	<b>Colma Site</b>	<b>South San Francisco Site</b>	<b>San Bruno North Site<sup>2</sup></b>	<b>San Bruno South Site</b>	<b>Millbrae Site</b>
Artificial Fill Low Sensitivity	No	No	Yes	Yes	Yes
Alluvial Deposits Low Sensitivity	Yes	Yes	No	No	No
Slope debris and ravine fill High Sensitivity	Yes	Yes	No	No	No
Colma Formation High Sensitivity	Yes	Yes	Yes	No	Yes
Merced Formation High Sensitivity	No	No	No	Yes	Yes
Franciscan Complex Low Sensitivity	No	No	No	Yes	No
<b>Potential Disturbance of Significant Paleontological Resource within Project Component?</b>	Yes	Yes	No <sup>2</sup>	Yes	Yes

Source: PPSU project analysis, URS.

Notes:

<sup>1</sup> Paleontological sensitivity ratings are based on Society of Vertebrate Paleontology (1995) Conformable Impact Mitigation Guidelines.

<sup>2</sup> Project construction at San Bruno North Site does not include excavation of undisturbed soils. Therefore, although soils of elevated paleontological sensitivity occur in the project vicinity, project implementation will not result in disturbance of paleontological resources.

Professional Geologist with appropriate paleontological expertise, as defined by the Society of Vertebrate Paleontology’s Conformable Impact Mitigation Guidelines Committee (SVP, 1995), to carry out a paleontological resources training program for construction workers and to develop a paleontological monitoring program, except at the San Bruno North site. The SFPUC shall require the paleontologist to be on call throughout the duration of ground-disturbing activities. At a minimum, the monitoring program shall include:

- **Preparation of a Paleontological Monitoring Plan.** Based on the results of the paleontological investigation completed for the PPSU project (URS, 2012c), the volume and depth of proposed soil excavations, and professional judgment, the paleontologist shall identify the specific locales and depths within the project components where geologic units of high paleontological sensitivity occur, and to determine the frequency in which monitoring will be undertaken to ensure the proper management of paleontological resources. The SFPUC shall review and approve the plan in consultation with the ERO.
- **Paleontological Resources Training.** All construction forepersons and field supervisors shall be trained in the recognition of potential fossil materials prior to the initiation of any site preparation or start of construction. Training on paleontological resources shall also be provided to all other construction workers, but may include



videotape of the initial training and/or the use of written materials rather than in-person training by the qualified paleontologist. In addition to fossil recognition, the training shall convey procedures to follow if construction crews encounter potential fossil materials in the course of earthwork, excavation, or grading, as described below.

- **Active Monitoring of Construction Sites for Paleontological Resources, if Recommended in the Paleontological Monitoring Plan.** Paleontological monitoring shall consist of inspecting disturbed, graded, and excavated surfaces, as well as soil stockpiles and disposal sites in accordance with the schedule and methods outlined in the Paleontological Monitoring Plan. The monitor (i.e., the professional paleontologist or a designee of the paleontologist) shall have authority to divert grading or excavation away from exposed surfaces temporarily in order to examine disturbed areas more closely and/or recover fossils. The monitor shall coordinate with the construction manager to ensure that monitoring is thorough but does not result in unnecessary delays. If the monitor encounters a paleontological resource, he or she shall assess the fossil, and record or salvage it, as described above.
- **Assessment and Salvage of Potential Fossil Finds.** If the paleontological monitor or construction crews discover potential fossils, all earthwork or other types of ground disturbance within 50 feet of the find shall stop immediately until the qualified professional paleontologist can assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the monitor may record the find and allow work to continue, or recommend salvage and recovery of the fossil. The monitor may also propose modifications to the stop-work radius based on the nature of the find, site geology, and the activities occurring on the site. Recommendations for any necessary treatment shall be consistent with the SVP 1995 and 1996 guidelines and currently accepted scientific practices. 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 and publication of a report describing the finds. The monitor's recommendations shall be subject to review and approval by the ERO or designee. The SFPUC shall be responsible for ensuring that treatment is implemented and reported to the San Francisco Planning Department. If no report is required, the SFPUC shall nonetheless ensure that information on the nature, location, and depth of all finds is readily available to the scientific community through university curation or other appropriate means.

***Impact CP-4: Project construction could result in a substantial adverse effect related to the disturbance of human remains. (Less than Significant with Mitigation)***

Although no known human burial locations have been identified within the project C-APE, the possibility that human remains could be inadvertently exposed during ground-disturbing activities cannot be entirely discounted, except at the San Bruno North site where no excavation of undisturbed soils is proposed. Therefore, implementation of the project could result in direct impacts on previously undiscovered human remains, including those interred outside of formal cemeteries during any ground-disturbing activities. Any impact resulting from the disturbance of human remains during construction would be potentially significant, but would be reduced to a less-than-significant level with implementation of **Mitigation Measure M-CP-4: Treatment of**

**Inadvertently Discovered Human Remains.** Implementation of **Mitigation Measure M-CP-4** would address impacts on any human remains and associated funerary objects that are inadvertently exposed during project construction activities by requiring the SFPUC to adhere to appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition protocols. Therefore, impacts related to disturbance of human remains would be *less than significant with mitigation* at the Colma, South San Francisco, San Bruno South, and Millbrae sites. There would be *no impact* at the San Bruno North site.

**Mitigation Measure M-CP-4: Treatment of Inadvertently Discovered Human Remains.**

This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. The treatment of any human remains and associated funerary objects discovered during soil-disturbing activities shall comply with applicable state laws. Such treatment would include immediate notification of the San Mateo County coroner and, in the event of the coroner's determination that the human remains are Native American, notification of the NAHC, which would appoint a Most Likely Descendant (MLD) (PRC Section 5097.98). The archaeological consultant, SFPUC, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated objects (CEQA Guidelines Section 15064.5[d]). The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects.

The PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties could not agree on the reburial method, the SFPUC shall follow Section 5097.98(b) of the PRC, which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance." All archaeological work performed under this mitigation measure shall be subject to review by the ERO or designee.

**5.5.3.4 Operational Impacts and Mitigation Measures**

There would be no change in the current operation of SAPL2, SAPL3, nor SSBPL following completion of the proposed seismic upgrades. Therefore, there would be *no impact* on historical cultural resources, unique archaeological resources, or paleontological resources as a result of project implementation.

**5.5.3.5 Cumulative Impacts and Mitigation Measures**

*Impact C-CP: Project construction could result in a cumulatively considerable contribution to cumulative impacts on cultural resources such as archaeological sites (historical and/or unique) including those with human remains, historic architectural or paleontological resources. (Less than Significant with Mitigation)*

The geographic scope for cumulative impacts on cultural resources includes the individual archaeological, historic architectural and paleontological C-APEs as defined for the PPSU project,

and for archaeological and paleontological resources, the San Francisco Peninsula region as a whole. Because historic architectural resource impacts are site specific, the geographic context for the analysis of cumulative impacts is the overlapping area of potential effects on a single architectural resource. The PPSU project would contribute to cumulative impacts on cultural resources, including historical, archaeological, and paleontological resources, if the PPSU project and other projects listed in Table 5.1-1 were to adversely affect cultural resources in the project vicinity.

At the San Bruno North site, the PPSU project would have no cultural resource impacts; therefore, there would be no cumulative impacts at the San Bruno North site, and it is not analyzed below.

### **Historic Architecture**

As described above, the Green Hills Country Club is the only historical resource within the PPSU project's C-APE. The PPSU project would not impact its original materials, and the surface restoration would match physically and visually the existing landscape materials, vegetation, and topography. Although the construction represents a direct impact, it is only temporary and would not cause a substantial adverse change in the significance of this historical resource. Construction of the project, including the removal of trees within the SFPUC ROW, would not obstruct or diminish the significance of the character-defining features of MacKenzie's course, which include the routing and location of the fairways, greens, holes, bunkers, and pathways. The improvements would maintain the historic use and character of the property, and be completed in-kind to existing materials, matching its pre-construction appearance when completed. None of the other present and probable future cumulative projects would affect this resource. Therefore, the cumulative impacts to historic architectural resources would be *less than significant*.

### **Archaeology**

During ground-disturbing activity, there is a potential for the cumulative projects to encounter previously unidentified cultural resources, including archaeological resources. Disturbance of these resources during construction of the PPSU project or other cumulative projects could result in significant cumulative impacts on archaeological resources. The PPSU project's contribution to this impact could be cumulatively considerable. However, implementation of **Mitigation Measures M-CP-2a: Distribute "ALERT" Sheet, Mitigation Measure M-CP-2b: Conduct Archaeological Monitoring in Accordance with Approved Archaeological Monitoring Plan, and M-CP-2c: Prepare and Comply with an Archaeological Evaluation Plan and Evaluation Report** require distribution of the "ALERT" sheet at areas with potential for accidental discovery of buried cultural resources, and the preparation and implementation of an approved Archaeological Monitoring Plan in areas of high archaeological sensitivity (Colma, South San Francisco, and San Bruno South sites). These mitigation measures include contractor education and immediate cessation of work within 50 feet of an archaeological discovery. The implementation of the plan provides for actions that, if necessary, include a data-recovery investigation and/or other treatment to be conducted by an archaeologist. These measures would reduce potential PPSU project impacts to de minimis levels. Therefore, with implementation of project mitigation measures, the PPSU project would not have a cumulatively considerable

contribution to archaeological impacts, and impacts would be *less than significant with mitigation*.

### **Paleontology**

Significant impacts to inadvertently exposed paleontological resources could occur with implementation of projects listed in Table 5.1-1 because the projects could entail excavation in soils with high paleontological sensitivity, potentially resulting in disturbance of paleontological resources. Similarly, the proposed project could impact paleontological resources, given that portions of the project sites are located in areas of high sensitivity. The PPSU project's contribution to this impact could be cumulatively considerable. However, implementation of **Mitigation Measure M-CP-3: Prepare and Implement a Paleontological Resources Monitoring Program** requires the contractor to carry out a paleontological resources training program for construction workers and to develop a paleontological monitoring program in areas of high paleontological sensitivity. The plan will include active monitoring, assessment, and salvage of potential fossil finds. With implementation of this project mitigation measure, the PPSU project's potential impacts to paleontological resources would be reduced to de minimis levels. Therefore, the project would not have a cumulatively considerable contribution to paleontological resources impacts, and impacts would be *less than significant with mitigation*.

### **Discovery of Human Remains**

The cumulative projects, together with the PPSU project, could disturb human remains during ground-disturbing activities. Inadvertent disturbance of human remains would result in significant cumulative adverse impacts if the remains are not properly handled, analyzed, and treated. With implementation of **Mitigation Measure M-CP-4: Treatment of Inadvertently Discovered Human Remains**, applicable state laws governing the treatment of human remains would be followed and appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition protocols would be executed, thus reducing potential PPSU project impacts to de minimis levels. Therefore, the proposed project's impact on human remains would not be cumulatively considerable, and impacts would be *less than significant with mitigation*.

## **5.5.4 References**

Alexander, Philip W. and Charles P. Hamm, 1916. History of San Mateo County. Burlingame, CA: Press of Burlingame Publishing Co.

Ames, David and Linda Flint McClelland, 2002. National Register Bulletin: Historic Residential Suburbs. Washington D.C.: U.S. Department of the Interior, National Park Service, National Register of Historic Places.

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

Bethel, John P., ed., 1969. Webster's Geographical Dictionary. G. & C. Merriam Co. The Collegiate Press, Menasha, Wisconsin.

Bonilla M.G., 1998. Preliminary Geologic Map of the San Francisco South 7.5' Quadrangle and Part of the Hunters Point 7.5' Quadrangle, San Francisco Bay Area, California: A Digital Database. Digital Database prepared by Carl Wentworth, Marjorie Lucks, Heather Schoonover, Scott Graham, and Thomas May. U.S. Geological Survey Open-File Report 98-354, 1:24,000.

Brabb, E.E., R.W. Graymer, and D.L. Jones, 1998. Geology of the Onshore Part of San Mateo County, California: A Digital Database: U.S. Geological Survey Open-File Report 98 137, 1:62,500.

Chandler, Samuel C., 1973. "Gateway to the Peninsula," A History of the City of Daly City. Daly City, CA: City of Daly City.

Chavez, David and Jan M. Hupman, 1991. Cultural Resources Evaluation for the San Francisco International Airport Master Plan EIR, San Mateo County, California. David Chavez & Associates. Report prepared for Environmental Science Associates, Inc. San Francisco.

City of Millbrae, 1962. Millbrae Meadows No. 5 Subdivision Map. <http://gis.co.sanmateo.ca.us>. February. Accessed May 23, 2011.

City of San Bruno, 2011. History of the City of San Bruno. Online: [www.sanbruno.ca.gov/commissions/History%20of%20San%20Bruno.pdf](http://www.sanbruno.ca.gov/commissions/History%20of%20San%20Bruno.pdf). Accessed November 2011.

City of South San Francisco, 1946. Rancho Buri Buri Subdivision Map. [gis.co.sanmateo.ca.us](http://gis.co.sanmateo.ca.us). March. Accessed on November 18, 2011.

City of South San Francisco, 2011. "History of South San Francisco." Online: [www.ssf.net/index.aspx?nid=154](http://www.ssf.net/index.aspx?nid=154). Accessed November 2011.

Cloud, Roy W., 1928. History of San Mateo County, California. Chicago: The S.J. Clarke Publishing Company.

Cook, Sherburne F., 1943a. The Conflict between the California Indian and White Civilization, I: The Indian Versus the Spanish Mission. Ibero-Americana 21. Berkeley.

Cook, Sherburne F., 1943b. The Conflict between the California Indian and White Civilization, II: The Physical and Demographic Reaction of the Non-mission Indians in Colonial and Provincial California. Ibero-Americana 22. Berkeley.

Cornish, Geoffrey S. and Ronald E. Whitten, 1993. The Architects of Golf. New York: Harper Collins Publishers.

Donley, Michael W., Stuart Allan, Patricia Caro and Clyde P. Patton, 1979. Atlas of California. Pacific Book Center, Culver City, California.

Fredricks, Darold, 2003. Images of America: San Bruno. Charleston, SC: Arcadia Publishing.

FWLA (Fugro William Lettis & Associates, Inc.), 2011. Final Report, Fault Rupture Hazard Assessment. San Andreas Numbers 2 and 3 and Sunset Supply Branch Pipelines Serra Fault Zone Crossings, San Bruno and Millbrae, California. January.

GTC (Geotechnical Consultants, Inc.), 2011a. Final Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade, CS 101. March.

GTC (Geotechnical Consultants, Inc.), 2011b. Final Addendum to the Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade, CS-101, SF10016C. November.

GTC (Geotechnical Consultants, Inc.), 2011c. Final Addendum to the Geotechnical Interpretive Report, Peninsula Pipelines Upgrade, CS 101, SF10016C, November.

Hoover, Mildred B., Hero E. Rensch, and Ethel G. Rensch, 1990. *Historic Spots in California*. Fourth Edition Revised by Douglas E. Kyle. Stanford University Press. Stanford, California.

ICF (ICF Jones & Stokes), 2009. Final Historic Context and Cultural Resources Survey Report for the Harry Tracy Water Treatment Plan Long-Term Improvements Project, San Mateo County.

JRP (JRP Historical Consulting, LLC), 2008a. Historical Resources Evaluation Report for the San Andreas Pipeline No. 3 Installation Project.

JRP (JRP Historical Consulting, LLC), 2008b. Analysis of Historic Districts Potentially Impacted by San Francisco Public Utilities Commission Water System Improvement Program Projects.

Kennedy, D.G., 2002. Neotectonic Character of the Serra fault, Northern San Francisco Peninsula, California: unpublished M.S. thesis, San Francisco State University, 117 p.

Kroeber, Alfred L., 1976. *Handbook of the Indians of California*. Reprinted. Dover Publications, Inc., New York. Originally published 1925, Bureau of American Ethnology Bulletin 78, Washington, D.C.

Levy, Richard, 1978. Costanoan. *Handbook of North American Indians, Volume 8, California*, edited by Robert F. Heizer, pp. 485-499. Smithsonian Institution, Washington, D.C.

McGimsey, Charles R. III and Hester A. Davis, 1977. *The Management of Archaeological Resources, The Airlee House Report*. Special Publication of the Society for American Archaeology.

Milan, Clark, 2010. Millbrae Patch, "How Millbrae Got Its Name." Online: [www.millbrae.patch.com/articles/how-millbrae-got-its-name](http://www.millbrae.patch.com/articles/how-millbrae-got-its-name). Accessed on June 23, 2011.

Millbrae Historical Society, 2007. *Images of America: Millbrae*. Charleston, NC: Arcadia Publishing.

Moratto, Michael J., 1984. *California Archaeology*. Academic Press, New York.

NPS (National Park Service), 1998. NPS-28: Cultural Resource Management Guideline. USDI NPS, Office of Policy, Washington, D.C.

Pampeyan, E.H., 1994. *Geologic Map of the Montara Mountain and San Mateo 7½ minute Quadrangles, San Mateo County, California*: U.S. Geological Survey Map I 2390, 1:24,000.

Praetzellis, Adrian, 2009. Memo to File, Archaeological Sensitivity for Categorical Exemptions. Provided to URS by SFEP for use on various WSIP projects.

Sanborn Map Company, 1949. Fire Insurance Maps of California: Millbrae. Accessed through the San Diego Public Library.

Shackelford, Geoff, 2003. *Grounds for Golf*. New York: Thomas Dunne Books, St. Martin's Press.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008a. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008b. San Francisco Planning Department. San Francisco Public Utilities Commission Water System Improvement Program. Final Environmental Impact Report (Case No. 2005.0159E, State Clearinghouse No. 200509206). San Francisco Planning Commission Motion No. 17734. October 30.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2010. Crystal Springs Pipeline No. 2 Replacement Project Draft Environmental Impact Report. San Francisco, California.

SFPUC (San Francisco Public Utilities Commission), 2007. Right-of-Way Integrated Vegetation Management Policy. February.

Shipley, William F., 1978. "Native Languages in California." In *Handbook of North American Indians*, Volume 8, California, edited by Robert F. Heizer, pp. 80-90. Smithsonian Institution, Washington, D.C.

Sonoma State University, 2012. Memorandum Regarding Revision of Peninsula Pipelines Seismic Upgrade, San Bruno South C-APE. From Adrian Praetzellis to Steve Smith, San Francisco Environmental Planning. October.

Sonoma State University, 2013. Memorandum Regarding C-APE Revision, Peninsula Pipeline Seismic Upgrade, Millbrae. From Adrian Praetzellis to Steve Smith, San Francisco Environmental Planning. January 18.

South San Francisco Historical Society, 2004. *Images of America: South San Francisco*. Charleston, SC: Arcadia Publishing.

SVP (Society of Vertebrate Paleontology), 1995. Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines. *Society of Vertebrate Paleontology News Bulletin* 163:22-27.

SVP (Society of Vertebrate Paleontology), 1996. Conditions of Receivership for Paleontologic Salvage Collections. *Society of Vertebrate Paleontology News Bulletin* 166:31-32.

Town of Colma, 2011. "History of Colma." Online: [www.colma.ca.gov/index.php?option=com\\_content&view=article&id=48&Itemid=56](http://www.colma.ca.gov/index.php?option=com_content&view=article&id=48&Itemid=56). Accessed November 2011.

URS, 2012a. Peninsula Pipelines Seismic Upgrade Project. Historic Context and Archaeological Survey Report, Final. April. Confidential Report.

URS, 2012b. Peninsula Pipelines Seismic Upgrade Project. Historic Resources Evaluation Report, Final. August.

URS, 2012c. Peninsula Pipelines Seismic Upgrade Project. Paleontological Resources Survey Report, Final. April.

URS, 2012d. Peninsula Pipelines Seismic Upgrade Project. CEQA Area of Potential Effects Report for Archaeological Resources, Revised Final. January.



## 5.6 Transportation and Circulation

This section provides an overview of existing transportation conditions within the Peninsula Pipelines Seismic Upgrade (PPSU) project area, evaluates the potential impacts to traffic, transportation, and circulation that could result from implementation of the project, and identifies mitigation measures, as appropriate.

### 5.6.1 Setting

The transportation setting for the study area, including the regional access routes in the project vicinity, local and site access and parking, traffic conditions at key intersections, public transit routes, bicycle networks, and pedestrian facilities, is described below.

#### 5.6.1.1 Regional Access

##### *Interstate 280*

Interstate 280 (I-280) is a north-south freeway that runs between the U.S. Highway 101 (U.S. 101) and Interstate 680 interchange in San Jose, and the King Street ramps in San Francisco. I-280 would provide the primary regional access to the study area. In the vicinity of the project sites, it is an eight-lane freeway with four travel lanes in each direction. Access to the Colma site from I-280 is provided via the northbound on-ramp and southbound off-ramp at Serramonte Boulevard, and the northbound and southbound on-ramps and off-ramps at Hickey Boulevard. Access from I-280 to the South San Francisco site is provided via on-ramps and off-ramps at Westborough Boulevard. Access to the San Bruno North and South sites from I-280 is provided via on-ramps and off-ramps at San Bruno Avenue West. Access to the San Bruno South sites is also provided via the northbound on-ramp and southbound off-ramp connecting with Cunningham Way (to the east of the intersection of Whitman Way/Shelter Creek Lane). Access from I-280 to the Millbrae site is provided via on-ramp and off-ramps at Larkspur Drive, and the southbound on-ramp at Hillcrest Boulevard.

##### *U.S. Highway 101*

U.S. 101 is a north-south freeway spanning much of the length of California. It extends north across the Golden Gate Bridge to Marin County and the Pacific Northwest, and south to San Jose and Los Angeles. It is primarily an eight-lane freeway along the San Francisco Peninsula, south of Interstate 80 in San Francisco. U.S. 101 would also provide regional access to the Millbrae site.

##### *El Camino Real*

El Camino Real (State Route 82) generally runs parallel to U.S. 101 and serves as a regional access route. El Camino Real has six travel lanes between Colma and Millbrae, with the exception of the segment between Hickey Road and Mission Road, which has four travel lanes.

#### 5.6.1.2 Local and Site Access and Parking

Local access in the vicinity of the study area and access to the project sites are described below.

### ***Colma Site***

Roadways providing access to the Colma site include Serramonte Boulevard and Collins Avenue. Serramonte Boulevard is an east-west arterial that extends between St. Francis Boulevard and Hillside Boulevard. In the vicinity of the project site, Serramonte Boulevard has two travel lanes in each direction, and on-street parking is not permitted on either side of the street. Collins Avenue is an east-west roadway that extends between Serramonte Boulevard and El Camino Real. Collins Avenue has one travel lane in each direction, and on-street parking is generally permitted on both sides of the street.

### ***South San Francisco Site***

Roadways providing access to the South San Francisco site include Westborough Boulevard, West Orange Avenue, Camaritas Avenue, and Arroyo Drive. Westborough Boulevard is an east-west arterial that extends between Skyline Boulevard and El Camino Real (the roadway continues east/northeast as Chestnut Avenue to Hillside Boulevard). In the vicinity of the project site, Westborough Boulevard has two travel lanes in each direction, and on-street parking is not permitted on either side of the street. Camaritas Avenue is a generally north-south roadway that extends between San Felipe Avenue and Westborough Boulevard (the roadway continues south as West Orange Avenue). Camaritas Avenue generally has one travel lane in each direction, with on-street parking on both sides of the street. However, the section of Camaritas Avenue between Arroyo Drive and Westborough Boulevard that is adjacent to the project site has two travel lanes in each direction, with on-street parking on the west side of the street. Arroyo Drive extends between El Camino Real and Junipero Serra Boulevard. The section of Arroyo Drive east of Camaritas Avenue (adjacent to the South San Francisco site) has one travel lane in each direction and on-street parking on both sides of the street. West Orange Avenue extends southeast of Camaritas Avenue to North Canal Street (and continues northeast as Orange Avenue). In the vicinity of the South San Francisco site, West Orange Avenue is two-way with one travel lane in each direction between Westborough Boulevard and the South San Francisco Public Library (about 650 feet south of Westborough Boulevard). West Orange Drive continues one-way southbound to Fairway Drive, and two-way to North Canal Street. On-street parking is generally permitted on both sides of West Orange Avenue. Arroyo Drive, Camaritas Avenue, and West Orange Avenue are designated bicycle routes.

### ***San Bruno North Site***

Access to the San Bruno North site is provided via San Bruno Avenue West. San Bruno Avenue West is an east-west arterial that extends between Skyline Boulevard and Huntington Avenue (the roadway continues east of San Bruno Avenue East). In the vicinity of the San Bruno North site, San Bruno Avenue West has two travel lanes in each direction, and on-street parking is not permitted on either side of the street.

### ***San Bruno South Site***

Roadways providing access to the San Bruno South site include San Bruno Avenue West, Shelter Creek Lane, Whitman Way, and Courtland Drive. San Bruno Avenue West is described above. Shelter Creek Lane is a north-south connector roadway that extends between San Bruno Avenue West and Whitman Way. Shelter Creek Lane has one travel lane in each direction, and on-street

parking is permitted on both sides of the street. Whitman Way is an east-west roadway that extends between Princeton Drive and Shelter Creek Lane (the roadway continues east of Shelter Creek Lane as Jenevein Avenue, which is also a designated bicycle route). In the vicinity of the project site, Whitman Way has one travel lane in each direction, and on-street parking is generally permitted on both sides of the street. Courtland Drive is a local north-south roadway that extends between the intersection of Madison Avenue and Piedmont Avenue to the south, and Whitman Way to the north. Courtland Drive is between 30 and 35 feet in width, has one travel lane in each direction, and has posted speed limits of 25 miles per hour (mph) between Whitman Way and the driveway to the San Bruno Chinese Church; and 10 mph between the driveway to the San Bruno Chinese Church and the intersection of Madison Avenue and Piedmont Avenue. On-street parking is generally permitted on both sides of Courtland Drive between Whitman Way and the driveway to the San Bruno Chinese Church, and permitted on only one side of the street between the driveway to the San Bruno Chinese Church and the intersection of Madison Avenue and Piedmont Avenue.

### ***Millbrae Site***

Roadways providing access to the Millbrae site include Larkspur Drive, Ridgewood Drive, Lomita Avenue, Bertocchi Lane, Capuchino Drive, and Millwood Drive. Larkspur Drive is an east-west roadway that extends between I-280 and the Green Hills Country Club. Between I-280 and Helen Drive, Larkspur Drive is an arterial, serving as a connector to and from I-280. Between Helen Drive and the Green Hills Country Club, Larkspur Drive is a local residential street. Throughout its length, Larkspur Drive has one travel lane in each direction, with on-street parking on both sides of the street. Lomita Avenue, Ridgewood Drive, Bertocchi Lane, and Capuchino Drive are local residential streets, with one travel lane in each direction, and on-street parking on both sides of the street. Millwood Drive connects Capuchino Drive with El Camino Real; it is a local street with one travel lane in each direction, and on-street parking on both sides of the street.

### ***Common Staging Area***

Local access to the common staging area would be via Westborough Boulevard and West Orange Avenue, described above for the South San Francisco site, and via and El Camino Real. El Camino Real is a two-way roadway with three travel lanes in each direction, and on-street parking is not permitted on either side of the street.

## **5.6.1.3 Traffic Conditions**

This section describes the traffic volumes in the study area and the operating conditions at the 11 study intersections.

### ***Traffic Volumes***

Table 5.6-1 presents the average daily traffic volumes on the regional facilities in the vicinity of the study area. The most recent data published by the California Department of Transportation (Caltrans) indicate that, in the vicinity of the project sites, the average daily traffic volumes are approximately 214,000 to 238,000 vehicles on U.S. 101, and 102,000 to 170,000 vehicles on I-280

**Table 5.6-1  
 Daily Traffic Volumes on Regional Facilities**

<b>Facility and Location</b>	<b>Average Daily Traffic Volumes</b>	<b>Trucks as a Percentage of Daily Traffic</b>
I-280 – South San Francisco, Westborough Interchange	170,000	0.8%
I-280 – San Bruno, San Bruno Avenue West Interchange	114,000	2.4%
I-280 – San Bruno, Whitman Way Interchange	102,000	NA
I-280 – Millbrae, Larkspur Drive Interchange	106,000	NA
U.S. 101 – South San Francisco, Grand Avenue Interchange	214,000	NA
U.S. 101 – Produce/S. Airport/Junction I-380 Interchange	232,000	NA
U.S. 101 – Millbrae, Millbrae Avenue Interchange	238,000	4.4%
SR 82 – Colma, Mission Road	19,000	NA
SR 82 – South San Francisco, Chestnut	42,000	NA
SR 82 – San Bruno, San Bruno Avenue West	37,000	2.0%
SR 82 – Millbrae, Millbrae Avenue	24,700	NA
Sources: Caltrans, 2009; Caltrans, 2010. Notes: NA =Not Available SR = State Route U.S. 101 = U.S. Highway 101		

(Caltrans, 2010). As a percentage of total daily traffic volumes, trucks range between 1 and 2 percent of the daily traffic volumes on I-280, to approximately 4 percent of the daily traffic volumes on U.S. 101 (Caltrans, 2009). El Camino Real has average daily traffic volumes of between 19,000 and 42,000 vehicles. Trucks represent about 2 percent of the total daily traffic volumes on El Camino Real (Caltrans, 2009).

Table 5.6-2 presents the average daily traffic volumes on local streets in the vicinity of the study area. Serramonte Boulevard, Westborough Boulevard, and San Bruno Avenue West are major arterials and serve approximately 10,000 to 36,800 vehicles per day. The average daily traffic volumes on local streets in the vicinity of the San Bruno South and Millbrae sites are substantially lower, and range between 1,200 and 6,100 vehicles per day.

**Table 5.6-2  
 Daily Traffic Volumes on Local Roadways**

Roadway	Project Site	Average Daily Traffic Volumes
Serramonte Boulevard	Colma	15,300
Westborough Boulevard	South San Francisco	36,800
San Bruno Avenue West	San Bruno North and South	9,400
Courtland Drive	San Bruno South	1,050
Shelter Creek Lane	San Bruno South	4,050
Larkspur Drive	Millbrae	6,100
Lomita Avenue	Millbrae	1,200
Sources: City of South San Francisco, 1999; LCW Consulting, 2011a; San Mateo County, 2012; LCW Consulting, 2012a.		

**Intersection Operations**

Intersection Level of Service (LOS) conditions were analyzed for the peak hour of the weekday a.m. (7:00 to 9:00 a.m.) and p.m. (4:00 to 6:00 p.m.) peak periods.<sup>1</sup> Counts of peak-period traffic turning movements for the study intersections were conducted on April 19, 2011, April 20, 2011, and October 12, 2011. The study intersections were evaluated using the 2000 Highway Capacity Manual methodology. For signalized intersections, this methodology uses various intersection characteristics (e.g., traffic volumes, lane geometry, and signal phasing and timing) to estimate the capacity for each lane group approaching the intersection. The LOS is based on average control delay experienced by motorists traveling through the intersection. A combined weighted average delay and LOS is presented for the intersection. For unsignalized intersections, average delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left turn), for those movements that are subject to delay. For the purposes of this analysis, the operating conditions (i.e., LOS and delay) for unsignalized intersections are presented for the worst approach (i.e., the approach with the highest average delay per vehicle). Table 5.6-3 presents the LOS descriptions and associated delays for signalized and unsignalized intersections.

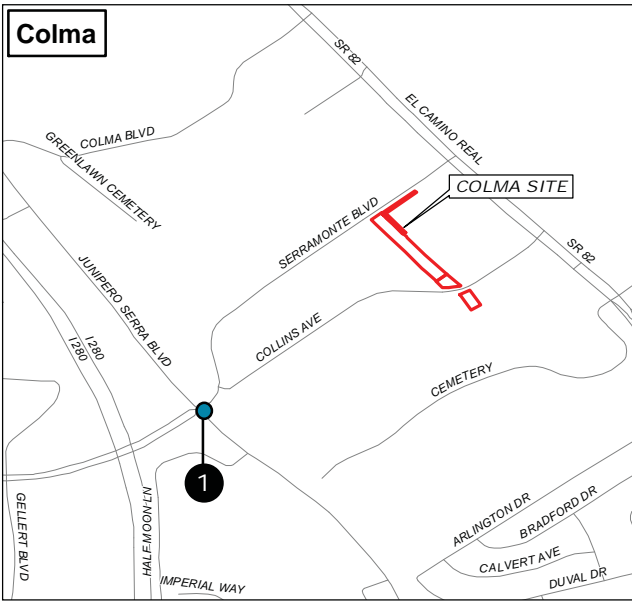
Existing intersection operating conditions were evaluated within the study area at selected intersections that would be affected by construction-related activities (e.g., either the use of the travel lanes for construction activities, or the addition of construction-generated vehicle trips) of the proposed project. A total of 11 intersections were analyzed, including one in Colma, one in South San Francisco, six in San Bruno, and three in Millbrae (see Figure 5.6-1). Four of the 11 study intersections are signalized: Intersection #1 (Serramonte Boulevard/Junipero Serra

<sup>1</sup> LOS is a qualitative description of a facility’s performance based on average delay per vehicle, vehicle density, or volume-to-capacity ratios. LOS ranges from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested and overloaded conditions with extremely long delays.

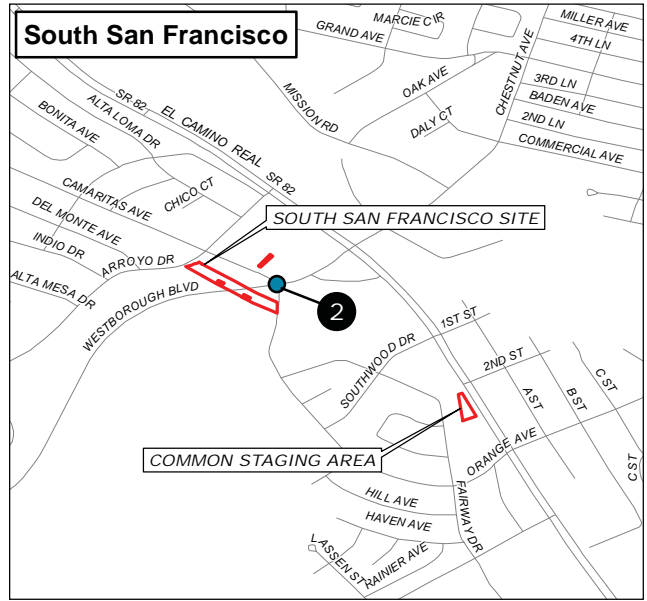
**Table 5.6-3  
 Level of Service Definitions for Signalized and Unsignalized Intersections**

Control/ LOS	Description of Operations	Average Control Delay (seconds per vehicle)
<b>Signalized</b>		
A	Insignificant Delays: No approach phase is fully used, and no vehicle waits longer than one red indication.	≤ 10
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10.0 and ≤ 20
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20.0 and ≤ 35
D	Tolerable Delays. Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly, without excessive delays.	> 35.0 and ≤ 55
E	Significant Delays: Volumes approach capacity. Vehicles may wait through several signal cycles, and long queues form upstream.	> 55.0 and ≤ 80
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80
<b>Unsignalized</b>		
A	No delay for stop-controlled approach.	≤ 10
B	Operations with minor delays.	> 10.0 and ≤ 15
C	Operations with moderate delays.	> 15.0 and ≤ 25
D	Operations with some delays.	> 25.0 and ≤ 35
E	Operations with high delays and long queues.	> 35.0 and ≤ 50
F	Operations with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50
Source: Transportation Research Board, 2000. Notes: > = greater than ≤ = less than or equal to LOS = Level of Service		

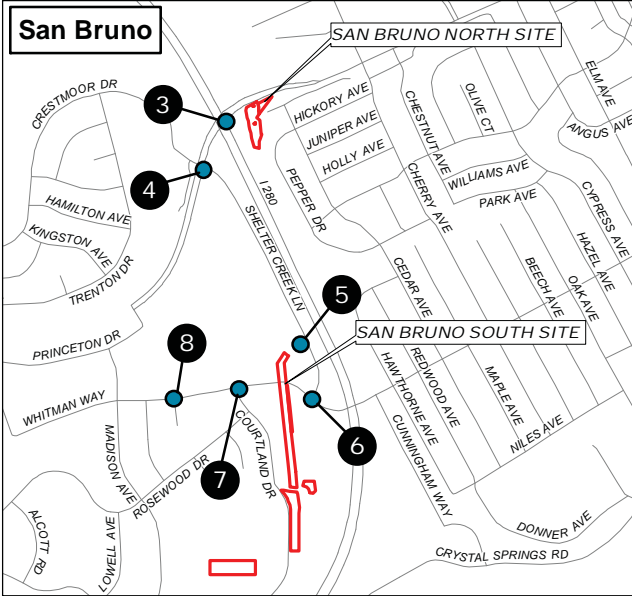
**Colma**



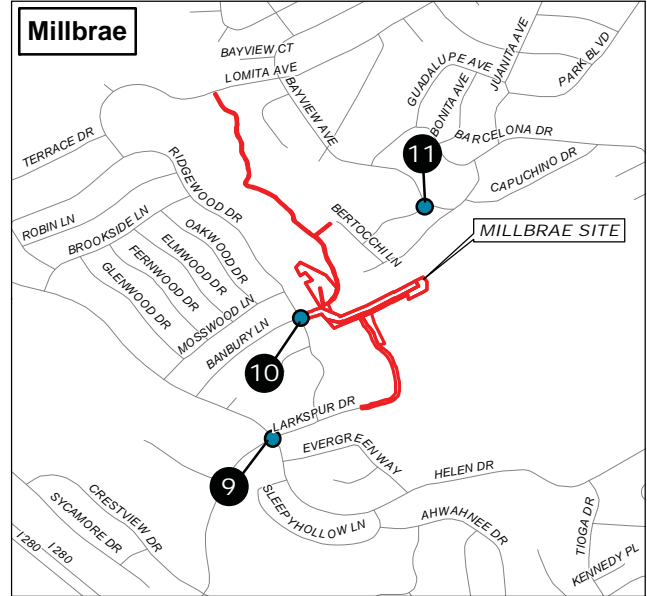
**South San Francisco**



**San Bruno**



**Millbrae**



**STUDY INTERSECTIONS**

- 1 Serramonte Boulevard/Junipero Serra Boulevard
- 2 West Orange Avenue/Westborough Boulevard
- 3 I-280 northbound ramps/San Bruno Avenue West
- 4 Crestmoor Drive/San Bruno Avenue West/ Shelter Creek Lane
- 5 Shelter Creek Lane/Shelter Creek Condominiums Driveway
- 6 Shelter Creek Lane/Whitman Way
- 7 Courtland Drive/Whitman Way
- 8 Whitman Way/Shelter Creek Condominiums Driveway/Eastburn Court
- 9 Helen Drive/Larkspur Drive
- 10 Ridgewood Drive/Banbury Lane
- 11 Santa Margarita Avenue/Capuchino Drive

Project Site  
 Study Intersection



**STUDY INTERSECTIONS**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.6-1**

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Boulevard); Intersection #2 (West Orange Avenue/Westborough Boulevard); Intersection #3 (I-280 Northbound ramps/San Bruno Avenue West); and Intersection #4 (Crestmoor Drive/San Bruno Avenue West/Shelter Creek Lane), and seven are unsignalized: Intersection #5 (Shelter Creek Lane/Shelter Creek Condominiums Driveway); Intersection #6 (Shelter Creek Lane/Whitman Way); Intersection #7 (Courtland Drive/Whitman Way); Intersection #8 (Whitman Way/Shelter Creek Condominiums Driveway/Eastburn Court); Intersection #9 (Helen Drive/Larkspur Drive); Intersection #10 (Ridgewood Drive/Banbury Lane); and Intersection #11 (Santa Margarita Avenue/Capuchino Drive). Table 5.6-4 presents the existing LOS and average vehicle delay for the study intersections. All intersections operate at LOS D or better.

#### 5.6.1.4 Public Transit

San Mateo County Transit (SamTrans), operated by the San Mateo County Transit District, provides bus service within San Mateo County, as well as between San Mateo County and parts of San Francisco and Palo Alto. In addition, the Bay Area Rapid Transit (BART) system provides rail service between the East Bay and San Francisco International Airport, with stations in Colma, South San Francisco, San Bruno, and Millbrae. Caltrain provides commuter rail service between San Francisco and Gilroy, with stations in South San Francisco, San Bruno, and Millbrae.

In the vicinity of the Colma site, SamTrans Route 130 and Route 391 run along El Camino Real. In the vicinity of the South San Francisco site, SamTrans Route 132 and Route 133 run southbound along West Orange Avenue. In the vicinity of the San Bruno North and South sites, SamTrans Route 141 runs southbound on Shelter Creek Lane and westbound on San Bruno Avenue West. Limited service is also provided via this route to the Peninsula High School via Whitman Way and Courtland Drive. In the vicinity of the Millbrae site, SamTrans Route 43 runs in both directions along Helen Drive, Mosswood Lane, Ridgewood Drive, and Lomita Avenue. There are no SamTrans bus stops adjacent to the five project sites.

The SamTrans routes serving the study area also connect with one or more BART and Caltrain stations. For example, SamTrans Route 130, which serves the Colma site, connects with the Colma and South San Francisco BART stations, as well as the South San Francisco Caltrain station. Table 5.6-5 summarizes the SamTrans routes serving the project sites, and indicates the BART and/or Caltrain stations that are served.

#### 5.6.1.5 Bicycle Network

Bikeways are typically classified as Class I, II, or III facilities.<sup>2</sup> Class I bikeways are designated bicycle paths with exclusive right-of-way (ROW) for use by bicyclists or pedestrians. Class II bikeways are bicycle lanes striped within the paved areas of roadways and established for the preferential use of bicycles. Class III bikeways are signed bicycle routes that allow bicycles to share streets or sidewalks with vehicles or pedestrians.

There are no designated bicycle routes or bicycle lanes in the immediate vicinity of the project sites in Colma, San Bruno, or Millbrae. In South San Francisco, West Orange Avenue, Del Monte

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<sup>2</sup> Bicycle facilities are defined by the State of California in the California Streets and Highway Code, Section 890.4.



**Table 5.6-4  
Intersection Level of Service: Existing Conditions**

	Intersection	Location	a.m. Peak Hour		p.m. Peak Hour	
			Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
1.	Serramonte Boulevard/Junipero Serra Boulevard <sup>2</sup>	Colma	35.2	D	36.6	D
2.	West Orange Avenue/Westborough Boulevard <sup>2</sup>	South San Francisco	31.2	C	32.7	C
3.	I-280 Northbound ramps/San Bruno Avenue West <sup>2</sup>	San Bruno North/South	31.9	C	28.9	C
4.	Crestmoor Drive/San Bruno Avenue West/Shelter Creek Lane <sup>2</sup>	San Bruno North/South	39.4	D	33.6	C
5.	Shelter Creek Lane/Shelter Creek Condominiums Driveway <sup>3</sup>	San Bruno South	10.5 (eb)	B	10.0 (eb)	A
6.	Shelter Creek Lane/Whitman Way <sup>3</sup>	San Bruno South	13.4 (sb)	B	10.6 (sb)	B
7.	Courtland Drive/Whitman Way <sup>3</sup>	San Bruno South	9.8 (nb)	B	9.0 (nb)	A
8.	Whitman Way/Shelter Creek Condominiums Driveway/Eastburn Court <sup>3</sup>	San Bruno South	10.7 (sb)	B	10.3 (sb)	B
9.	Helen Drive/Larkspur Drive <sup>4</sup>	Millbrae	21.1 (nb)	C	11.0 (nb)	B
10.	Ridgewood Drive/Banbury Lane <sup>3</sup>	Millbrae	9.3 (eb)	A	8.7 (eb)	A
11.	Santa Margarita Avenue/Capuchino Drive <sup>3</sup>	Millbrae	8.7 (sb)	A	8.6 (sb)	A

Source: LCW Consulting (Appendix C).

Notes:

<sup>1</sup> Delay presented in seconds per vehicle. For unsignalized intersections, delay and LOS presented for worst approach. Worst approach indicated by ( ).

<sup>2</sup> Signalized Intersection

<sup>3</sup> Two-way stop-sign-controlled intersection

<sup>4</sup> All-way stop-sign-controlled intersection

eb = eastbound

nb = northbound

sb = southbound

**Table 5.6-5  
 Existing Transit Service in the Vicinity of the Project Sites**

BART and Caltrain Station Location	Project Site/SamTrans Route					
	Colma		South San Francisco		San Bruno North and South	Millbrae
	Route 130	Route 391	Route 132	Route 133	Route 141	Route 43
<b>BART Stations</b>						
Colma	✓	✓				
South San Francisco/ Common Staging Area	✓		✓	✓		
San Bruno North and South		✓		✓	✓	✓
Millbrae		✓				
<b>Caltrain Stations</b>						
South San Francisco/ Common Staging Area	✓			✓		
San Bruno North and South		✓		✓		✓
Millbrae		✓				
Source: SamTrans, 2010. Notes: BART = Bay Area Rapid Transit SamTrans = San Mateo Country Transit						

Avenue/Arroyo Drive, and Chestnut Avenue east of West Orange Drive are designated bicycle routes (Class III facilities). A bicycle lane (Class II facility) is provided on Westborough Boulevard between West Orange Avenue and Junipero Serra Boulevard. In San Bruno, Jenevein Avenue east of Shelter Creek Lane is a designated bicycle route (Class III facility). During the weekday a.m. and p.m. peak period, bicycle volumes in the vicinity of the project sites are low. Weekday peak-period bicycle volumes at the study intersections generally ranged between 0 and 3 bicyclists per hour. The greatest number of bicyclists was observed at the intersections of Helen Drive/Larkspur Drive and Crestmoor Drive/San Bruno Avenue West/Shelter Creek Lane during the a.m. peak period (LCW Consulting, 2011b).

### 5.6.1.6 Pedestrian Facilities

Roadways in the vicinity of the project sites generally include 4-foot-wide sidewalks on both sides of the street. However, sidewalks are not provided on Westborough Boulevard at the South San Francisco site, west of the San Francisco Public Utilities Commission (SFPUC) ROW; and on Shelter Creek Lane at the San Bruno South site, sidewalks are only provided on the west side of the street (adjacent to the residential land uses). Pedestrian volumes in the vicinity of the project sites are generally low throughout the day, because the predominant mode of travel in these areas is the automobile.

## 5.6.2 Regulatory Framework

The section below describes applicable regulations pertaining to transportation within the project area. For a list of specific permits required for implementation of the proposed project, see Section 3.10, Required Permits.

### 5.6.2.1 Federal

There are no applicable federal regulations that address transportation facilities or infrastructure.

### 5.6.2.2 State

Transportation analysis in California is guided by policies and standards set at the State level by Caltrans. Caltrans plans and policies related to transportation and circulation are generally designed to foster appropriate planning and to accommodate future growth—and the vehicular, transit, pedestrian, and bicycle travel demand associated with that growth.

### 5.6.2.3 Local

The local policies of the Town of Colma and the cities of South San Francisco, San Bruno, and Millbrae specify that roadways maintain a LOS D on major streets during the peak periods of traffic flow, and require the implementation of mitigation measures when project-specific impacts would result in a LOS that exceeds the threshold (City of Millbrae, 1998; City of San Bruno, 2009; City of South San Francisco, 1999; Town of Colma, 2000). The LOS standards for roadways in the San Mateo County and San Francisco County Congestion Management Program (CMP) networks vary by roadway segment (C/CAG, 2011); however, these standards do not apply to impacts resulting from construction activities associated with the project. The San Mateo CMP Traffic Impact Analysis Policy applies to projects involving roadway changes, General Plan Updates/Amendments and Specific Area Plans, and land use development projects (C/CAG, 2011).<sup>3</sup>

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<sup>3</sup> The Traffic Impact Analysis Policy, which provides uniform procedures to analyze traffic impacts on the CMP network, was added to the 2009 San Mateo CMP.

## 5.6.3 Impacts and Mitigation Measures

### 5.6.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to transportation and circulation, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- 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 nonmotorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, freeways, pedestrian paths, bicycle paths, and mass transit;
- Conflict with an applicable CMP, including but not limited to LOS standards, travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels, obstructions to flight, or a change in location, that causes substantial safety risks;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses;
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

### 5.6.3.2 Approach to Analysis

As explained below, the proposed PPSU project would not result in impacts related to the following significance criteria; therefore, an impact discussion is not provided for these topics.

PPSU project construction would have no impacts related to the following significance criterion:

- **Conflict with an applicable congestion management program.** The LOS standards established by San Mateo County are intended to regulate long-term traffic impacts resulting from a project, and do not apply to temporary construction projects. Therefore, this significance criterion is not applicable to project construction activities, and is only discussed below under Impact TR-4 as it relates to operational impacts.

PPSU project operations would have no impacts related to the following significance criteria:

- **Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system.** Operations and

maintenance activities associated with the PPSU project are expected to be similar to those occurring under existing conditions, and would result in no change to traffic generation or transit demand. Thus, project operations would not result in long-term increases in traffic volumes or transit demand that would affect alternative transportation modes, nor would it affect bicycle or pedestrian travel. Therefore, this significance criterion is discussed below under Impact TR-1 only as it applies to project construction activities.

- **Substantially increase hazards due to a design feature or incompatible uses.** Operations and maintenance activities associated with the PPSU project are expected to be similar to those occurring under existing conditions, and would not result in changes to the design of transportation facilities or changes in uses. Thus, project operations would not result in long-term increases in hazards. Therefore, this significance criterion is discussed below under Impact TR-3 only as it applies to project construction activities.
- **Result in inadequate emergency access.** Implementation of the PPSU project would not permanently change the existing or planned transportation network and would not affect emergency vehicle access in the vicinity of the project sites. Therefore, this significance criterion is not applicable to the proposed project operations, and is discussed further under Impact TR-2 only as it applies to project construction activities.
- **Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.** Implementation of the PPSU project would not permanently change the existing or planned alternative mode transportation network in San Mateo County; therefore, it would not conflict with policies, plans, or programs related to transit, bicycle, or pedestrian travel. Upon completion of the proposed project, operations and maintenance activities are expected to be similar to those occurring under existing conditions; they would not result in long-term increases in traffic safety hazards or transit demand that would affect alternative transportation modes. Therefore, this significance criterion is not applicable to proposed project operations, and is discussed further under Impact TR-3 only as it applies to project construction activities.

PPSU project construction and operations would have no impacts related to the following significance criterion:

- **Result in a change in air traffic patterns.** Due to the nature and scope of the proposed project, implementation of the project does not have the potential to change air traffic patterns. In addition, the project would not involve the installation of structures that could interfere with air space or result in changes to air traffic patterns. Therefore, this significance criterion is not applicable to the proposed project operations, and is not discussed further. Impact HZ-4 presents a discussion of potential construction-related hazards related to navigable airspace, and compliance with Federal Aviation Administration regulations.

While parking deficits are considered to be a social effect rather than an impact on the physical environment, a deficiency in parking has the potential to trigger secondary effects that could

constitute significant environmental impacts under the California Environmental Quality Act. The San Francisco Planning Department recognizes, however, that parking conditions are often of interest to the public and decision makers. Therefore, for each project site, a parking analysis is presented both for informational purposes regarding supply and demand, and also to evaluate whether any project-related changes in parking supply and demand could trigger secondary effects.

This impact analysis evaluates the potential for short-term impacts on roadways due to construction-related changes in traffic, as well as long-term impacts associated with operation of the proposed project. Project impacts are determined by adding the anticipated project-related traffic volumes to the existing intersection volumes presented above in Section 5.6.1.3, Traffic Conditions. The San Francisco Planning Department generally considers impacts to be significant when project-related traffic at an intersection causes the LOS to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. In addition, a project would have a significant effect if it would contribute substantially to traffic volumes at intersections already operating at LOS E or LOS F. As noted in Section 5.6.2.3, Local, the local policies of the Town of Colma and the cities of South San Francisco, San Bruno, and Millbrae specify that roadways maintain LOS D on major streets during the peak periods of traffic flow.

Construction of the proposed project is estimated to require a total of 12 months to complete, and project construction would generally occur on weekdays between 7 a.m. and 5 p.m. Construction-related vehicle trips would include construction workers traveling to and from the PPSU sites, haul truck trips associated with materials and equipment deliveries, and haul truck trips associated with the transport of excavated materials. The number of construction-related vehicles traveling to and from the project area would vary on a daily basis depending on the construction phase, planned activity, and materials needs. Table 5.6-6 presents the average and maximum number of construction truck and construction worker vehicle trips (inbound and outbound) by site on a daily basis, and presents the anticipated duration of construction activities. Overall, during the peak of construction activities at each site, the number of vehicle trips generated by short-term project construction would range from 56 to 276 vehicle trips per day (see Appendix C). Table 5.6-7 presents the average and maximum number of construction truck and construction worker vehicle trips (inbound and outbound) by site during the a.m. and p.m. peak hours.

Construction-related trips to and from the project work area would be distributed throughout the day. Construction workers would travel to and from the project site based on a work shift that would generally occur on weekdays between 7 a.m. and 5 p.m. Weekend work may be required on a limited basis, although the nature of such work is not currently known. Nighttime construction may be required at the San Bruno North site. Nighttime activities would also include limited 24-hour pumping for dewatering of the pipelines at a few locations, as described in Chapter 3, Project Description. Trucks delivering equipment and materials to the project area from offsite locations, and hauling excavated materials from the project area to offsite locations, would generally travel on weekdays between 7 a.m. and 5 p.m. Truck deliveries and hauling to and from the site would not occur on weekends or during nighttime hours, except as required for nighttime construction at the San Bruno North site.

**Table 5.6-6  
Daily Construction Vehicles by Site**

Project Site/Estimated Construction Duration		Daily Construction Truck Trips <sup>1</sup>		Daily Construction Worker Vehicle Trips <sup>4</sup>	Total Daily Vehicle Trips	
		Average <sup>2</sup>	Maximum <sup>3</sup>		Average	Maximum
Colma	2 months	22	88	40	62	128
South San Francisco	3 months	54	160	40	94	200
San Bruno North	1 month	4	16	40	44	56
San Bruno South	9 months	42	236	40	82	276
Millbrae	4.5 months	24	130	40	64	170
Common Staging Area	12 months	0	0	40	40	40

Sources: G&E Engineering Systems, Inc., 2012; Roche, 2011.

Notes:

- Construction truck trips are based on the estimate of project materials transport in Table 3-2, and include inbound and outbound vehicle trips during the construction phase of the project, when the greatest number of vehicle trips would occur.
- Estimated average trips per day are based on the total estimated trips divided by the anticipated duration of construction activities at the site.
- Estimated maximum trips per day are the maximum trips anticipated for any day during construction activities, based on phasing of activities at the site.
- Construction worker trips are based on one construction crew with up to 20 workers per crew, arriving in single-occupant vehicles, and include inbound and outbound vehicle trips.

**Table 5.6-7  
AM and PM Peak Hour Construction Vehicles by Site<sup>1</sup>**

Project Site/Estimated Construction Duration		AM Peak Hour	PM Peak Hour	Average Hour (Trucks)	
				Average	Maximum
Colma	2 months	32	32	3	11
South San Francisco	3 months	40	40	7	20
San Bruno North	1 month	22	22	1	2
San Bruno South	9 months	50	50	5	30
Millbrae	4.5 months	36	36	3	16
Common Staging Area	12 months	20	20	0	0

Sources: G&E Engineering Systems, Inc., 2012; PPSU project analysis, LCW Consulting.

Notes:

- Construction activities would occur between 7 a.m. and 5 p.m. Based on construction trucks arriving and departing over an 8-hour period. As a conservative estimate, truck trips are assumed to occur during the a.m. and p.m. peak hours. Construction worker trips based on one crew with 20 personnel arriving and departing during the a.m. and p.m. peak hours.

### 5.6.3.3 Summary of Impacts

The proposed project's impacts on transportation and circulation and the resulting significance determinations are summarized in Table 5.6-8.

**Table 5.6-8  
 Summary of Impacts – Transportation and Circulation**

Impacts	Significance Determination					
	Colma	South San Francisco	San Bruno North	San Bruno South	Millbrae	Common Staging Area
<b>Impact TR-1:</b> Project construction could substantially 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 travel.	LS	LS	LSM	LS	LS	LS
<b>Impact TR-2:</b> Project construction would not result in inadequate emergency access.	LS	LS	LS	LS	LS	LS
<b>Impact TR-3:</b> Project construction activities could decrease the safety of public roadways for vehicles, bicyclists, and pedestrians.	LSM	LSM	LSM	LSM	LSM	LSM
<b>Impact TR-4:</b> Vehicle trips generated during project operation and maintenance activities would not substantially conflict with an applicable congestion management program.	LS	LS	LS	LS	LS	LS
<b>Impact C-TR:</b> Project construction could result in a cumulatively considerable contribution to cumulative traffic increases and safety hazards on local and regional roads.	LSM	LSM	LSM	LSM	LSM	LSM
Notes: LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant impact with mitigation						

### 5.6.3.4 Construction Impacts and Mitigation Measures

*Impact TR-1: Project construction could substantially 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 travel. (Less than Significant with Mitigation)*

The plans, ordinances, and policies of local jurisdictions and county agencies that establish measures of effectiveness for the performance of the circulation system are intended to address potential long-term and permanent project effects on the circulation system (e.g., roadways, sidewalks, and bicycle and transit facilities). Due to the nature of the PPSU project (improvements to an existing water supply system), the project would not permanently affect the transportation and circulation system; therefore, this analysis assesses potential temporary impacts on the overall transportation and circulation system during construction activities, including roadways, public transit, bicycle facilities, and pedestrian facilities.

The PPSU project would not conflict with established plans, ordinances, or policies pertaining to the performance of the circulation system because, as described below, most construction activities would occur within SFPUC ROW; the project would not permanently change the circulation system; the project would be limited in duration; and construction activities would not result in a substantial increase in vehicles traveling along local roadways.

The PPSU project would result in short-term increases in construction-related vehicle trips on area roadways. These vehicle trips would include construction workers traveling to and from the five project sites and the common staging area; haul truck trips associated with the disposal of excavated materials; and material and equipment deliveries. The number of construction workers and construction vehicles at each site would vary on a daily basis depending on the type of activity (e.g., tree removal, shoring and excavation, pipeline removal, backfilling, or restoration), construction phase, and material needs. In addition to the common staging area, each project site would include one or more construction staging areas that would be located within the SFPUC ROW or on nearby private property, and would be used for parking and for equipment and materials storage.

The addition of construction vehicle traffic to the current roadway volumes could result in increased congestion and delay for vehicles. The presence of construction truck traffic would temporarily reduce roadway capacities due to the slower travel speeds and larger turning radii of trucks. The reduction in roadway capacity through temporary lane closures could further increase congestion and delays for vehicles using the roadway. The actual impact of construction vehicle traffic on the access routes would depend on the number and type of construction-related vehicles, the number of travel lanes on the roadways used as haul routes, existing traffic volumes on these roadways, the terrain, and other factors. Drivers would experience intermittent delays, particularly if they were traveling behind a construction truck. The impacts of construction traffic would be most noticeable in the immediate vicinity of the project sites and less noticeable farther away and on regional roadways.

The haul routes for offsite disposal of excavated materials and delivery of concrete and other materials would entail a combination of regional highways (U.S. 101, I-280), major arterials (e.g., Westborough Boulevard and Serramonte Boulevard), local arterials, and residential streets, depending on the geographic location of the construction activity. Construction debris would be removed and trucked to the Ox Mountain Sanitary Landfill in Half Moon Bay for recycling or disposal.

Traffic impacts for a.m. and p.m. peak hour conditions were analyzed for the worst-case scenario with the highest project-generated trips. As a conservative assumption, construction

workers were assumed to arrive and depart during the a.m. and p.m. peak hours. Therefore, half of the daily construction worker trips were assumed to be inbound trips during the a.m. peak hour, and the remaining half were assumed to be outbound trips during the p.m. peak hour. Construction workers were assumed to originate equally from north and south of the project sites. The a.m. and p.m. peak hour construction truck trips in Table 5.6-7 were estimated by distributing the daily construction truck trips in Table 5.6-6 evenly throughout an 8-hour work day that would occur sometime between 7 a.m. and 5 p.m. It was assumed that 80 percent of truck trips would originate and depart to areas south of the project sites (i.e., destined to and from the Ox Mountain Sanitary Landfill), and 20 percent would originate and depart to areas north of the project sites.

Table 5.6-9 presents the results of the “existing plus project” analysis at the 11 study intersections for the a.m. and p.m. peak hour conditions. As shown in Table 5.6-9, the results of the quantitative LOS analysis indicates that the addition of the construction-generated vehicle trips would not substantially affect existing traffic conditions, and all intersections would continue to operate at acceptable levels (i.e., at LOS D or better). Therefore, the impact from short-term increases in traffic volumes during construction at all PPSU project sites would be less than significant.

### *Colma Site*

#### **Impacts on Roadways**

Construction access routes for the Colma site are presented on Figure 3-2. Construction traffic would result in short-term increases in traffic volumes on Serramonte Boulevard and Collins Avenue for an estimated construction period of 2 months. Project construction activities at this site would generate an average of 62 and a maximum of 128 vehicle trips (inbound and outbound) on a daily basis. During the a.m. and p.m. peak hours, there would be a maximum of 12 construction truck trips accessing the project site, and 20 construction worker vehicle trips. The vehicle trips would be distributed between Serramonte Boulevard and Collins Avenue. As indicated in Table 5.6-9, the addition of the construction-generated vehicle trips would not substantially affect a.m. or p.m. peak hour LOS at the study intersection of Serramonte Boulevard/Junipero Serra Boulevard (Intersection #1), and the intersection would continue to operate at LOS D conditions. Therefore, the impact from short-term increases in traffic volumes during construction at the Colma site would be *less than significant*.

#### **Impacts on Public Transit**

Because there are no public transit routes on Serramonte Boulevard or Collins Avenue, project construction activities and vehicles would not affect public transit operations. Construction vehicle access to and from I-280 would be via Serramonte Boulevard and Collins Avenue west of El Camino Real, and thus would not affect SamTrans Routes 130 and 391 service along El Camino Real. Therefore, construction-related impacts on public transit would be *less than significant*.

#### **Impacts on Bicycle Facilities**

There are no designated bicycle routes or bicycle lanes in the immediate vicinity of the project site in Colma; bicyclists currently share the travel lanes with vehicles. As noted above, construction

**Table 5.6-9  
Intersection Level of Service: Existing and Existing plus Project Conditions**

Intersection		Existing		Existing plus Project	
		a.m. Peak	p.m. Peak	a.m. Peak	p.m. Peak
		Delay <sup>1</sup> /LOS	Delay <sup>1</sup> /LOS	Delay <sup>1</sup> /LOS	Delay <sup>1</sup> /LOS
<b>Colma Site</b>					
1.	Serramonte Boulevard/Junipero Serra Boulevard <sup>2</sup>	35.2/D	36.6/D	35.3/D	36.7/D
<b>South San Francisco Site</b>					
2.	West Orange Avenue/Westborough Boulevard <sup>2</sup>	31.2/C	32.7/C	31.2/C	33.7/C
<b>San Bruno North Site</b>					
3.	I-280 Northbound ramps/San Bruno Avenue West <sup>2</sup>	31.9/C	28.9/C	32.4/C	29.4/C
3.	I-280 Northbound ramps/San Bruno Avenue West - during 10-day ramp lane closure	31.9/C	28.9/C	40.1/D	38.9/D
3.	I-280 Northbound ramps/San Bruno Avenue West – during 2-week eastbound San Bruno Avenue West lane closure	31.9/C	28.9/C	33.8/C	30.7/C
3.	I-280 Northbound ramps/San Bruno Avenue West - during 10-day ramp lane closure, plus 2-week eastbound San Bruno Avenue West lane closure	31.9/C	28.9/C	55.7/E	41.0/D
<b>San Bruno South Site</b>					
4.	Crestmoor Drive/San Bruno Ave West/Shelter Creek Lane <sup>2,5</sup>	39.4/D	33.6/C	40.5/D	34.6/C
5.	Shelter Creek Lane/Shelter Creek Condominiums Driveway <sup>3</sup>	10.5 (eb)/B	10.0 (eb)/A	10.8 (eb)/B	10.3 (eb)/B
6.	Shelter Creek Lane/Whitman Way <sup>3</sup>	13.4 (sb)/B	10.6 (sb)/B	13.8 (sb)/B	11.1 (sb)/B
7.	Courtland Drive/Whitman Way <sup>3</sup>	9.8 (nb)/B	9.0 (nb)/A	10.0 (nb)/B	9.2 (nb)/A
8.	Whitman Way/Shelter Creek Condominiums Driveway/Eastburn Court <sup>3</sup>	10.7 (sb)/B	10.3 (sb)/B	11.4 (sb)/B	10.9 (sb)/B
<b>Millbrae Site</b>					
9.	Helen Drive/Larkspur Drive <sup>4</sup>	21.1 (nb)/C	11.0 (nb)/B	22.6 (nb)/C	11.3 (nb)/B
10.	Ridgewood Drive/Banbury Lane <sup>3</sup>	9.3 (eb)/A	8.7 (eb)/A	9.4 (eb)/A	8.7 (eb)/A
11.	Santa Margarita Avenue/Capuchino Drive <sup>3</sup>	8.7 (sb)/A	8.6 (sb)/A	8.8 (sb)/A	8.7 (sb)/A
Source: LCW Consulting (Appendix C).					
Notes:					
shading indicates where the LOS would change.					
<sup>1</sup> Delay presented in seconds per vehicle. For unsignalized intersections, delay and LOS presented for worst approach. Worst approach indicated by ( ).					
<sup>2</sup> Signalized Intersection					
<sup>3</sup> Two-way stop-sign-controlled intersection					
<sup>4</sup> All-way stop-sign-controlled intersection					
<sup>5</sup> Construction vehicle trips from both San Bruno North and San Bruno South sites travel through these intersection.					
<sup>6</sup> For up to 10 days of the 1-month construction period at the San Bruno North site, the right-turn lane on the I-280 Northbound off-ramp would need to be closed.					
eb = eastbound					
nb = northbound					
sb = southbound					

activities would not result in any travel lane closures on Serramonte Boulevard or Collins Avenue, and bicycle travel would be maintained throughout the construction period. Because bicycle travel would be maintained, and because the number of construction vehicles generated on an hourly basis would not be substantial (about 32 vehicles during the a.m. and p.m. peak hours when construction workers would be commuting to and from the project area, and between 3 and 11 vehicles during the nonpeak hours), project-related impacts on bicycle travel in the vicinity of the Colma site would be *less than significant*. Potential impacts related to bicycle safety are addressed below under Impact TR-3.

### **Impacts on Pedestrian Travel**

Pedestrian volumes on Serramonte Boulevard and Collins Avenue are low throughout the day. Construction activities would not affect sidewalks adjacent to the project site; vehicular access to the project site would be via existing driveways. Therefore, construction traffic would not substantially affect pedestrian travel in the vicinity of the project site, and construction-related impacts on pedestrian travel would be *less than significant*. Potential impacts related to pedestrian safety are addressed below under Impact TR-3.

### **Parking Information**

The construction worker parking demand per site is estimated to be 20 vehicles per day. The proposed staging areas serving the Colma site would provide sufficient capacity to accommodate the anticipated parking demand for construction worker vehicles.

Construction activities or staging at the Colma site would not occupy on-street parking lanes, and therefore would not result in displacement of on-street parking in the immediate vicinity of the project site in Colma.

Construction staging at the Colma site would occur within a portion of the Kohl's Department Store site, and would displace about 40 parking spaces during the estimated 2-month construction period; however, these parking spaces are not used for customer parking (Fletcher, 2012). The staging area would be designed so as not to impede access to or circulation around the rear of the store, which is used primarily for merchandise deliveries and trash collection. Because the area that would be designated for construction staging is not used for customer parking, the temporary removal of the 40 parking spaces would not substantially affect the overall use of the Kohl's parking lot. See Section 5.2, Land Use and Land Use Planning, for a further discussion of parking access for existing land uses.

### ***South San Francisco Site***

#### **Impacts on Roadways**

Construction access routes for the South San Francisco site are presented on Figure 3-3. Construction traffic would result in short-term increases in traffic volumes on Westborough Boulevard, Camaritas Avenue, and West Orange Avenue for an estimated construction period of 3 months. Project construction activities at this site would generate an average of 94 and a maximum of 200 vehicle trips (inbound and outbound) on a daily basis. During the a.m. and p.m. peak hours, there would be a maximum of 20 construction truck trips accessing the project site, and 20 construction worker vehicle trips. As indicated in Table 5.6-9, the addition of the

construction-generated vehicle trips would not substantially affect a.m. or p.m. peak hour LOS at the study intersection of West Orange Avenue/Westborough Boulevard (Intersection #2), and the intersection would continue to operate at LOS C conditions. Therefore, the impact from short-term increases in traffic volumes during construction at the South San Francisco site would be *less than significant*.

At the South San Francisco site, pipeline replacement would occur within the SFPUC ROW, and would include a segment that extends under Westborough Boulevard. Because jack-and-bore techniques would be used to jack a steel casing under Westborough Boulevard, into which a new pipe would be installed, construction activities would not impact any travel lanes on Westborough Boulevard. Jacking pits would be excavated on either end of the segment, as shown on Figure 3-3, and would also not impact travel lanes on Westborough Boulevard. Therefore, the impact on traffic from construction activities under Westborough Boulevard at the South San Francisco site would be *less than significant*.

### **Impacts on Public Transit**

In the vicinity of the South San Francisco site, SamTrans Routes 132 and 133 run southbound along West Orange Avenue, and the closest bus stop is located adjacent to the West Orange Library, about 600 feet south of Westborough Boulevard. It is not anticipated that construction vehicle access to the site from West Orange Avenue would affect SamTrans bus service. Therefore, construction-related impacts on public transit would be *less than significant*.

### **Impacts on Bicycle Facilities**

In South San Francisco, West Orange Avenue, Del Monte Avenue/Arroyo Drive, and Chestnut Avenue east of West Orange Drive are designated bicycle routes (Class III facilities). A bicycle lane (Class II facility) is provided on Westborough Boulevard between West Orange Avenue and Junipero Serra Boulevard. As noted above, construction activities would not result in any travel lane closures on access routes to the South San Francisco site, and bicycle travel would be maintained throughout the construction period. Because bicycle travel would be maintained, and because the number of construction vehicles generated on an hourly basis would not be substantial (about 40 vehicles during the a.m. and p.m. peak hours when construction workers would be commuting to and from the project area, and between 7 and 20 vehicles during the nonpeak hours), project-related impacts on bicycle travel in the vicinity of the South San Francisco site would be *less than significant*. Potential impacts related to bicycle safety are addressed below under Impact TR-3.

### **Impacts on Pedestrian Travel**

Pedestrian volumes on streets adjacent to the South San Francisco site are generally low throughout the day, with higher volumes on Camaritas Avenue and West Orange Avenue than on Westborough Boulevard. Sidewalks are not provided on Westborough Boulevard, west of the SFPUC ROW. Construction activities would not affect sidewalks adjacent to the project site because vehicular access to the project site (including nearby staging area off of Camaritas Avenue) would generally be via existing driveways. However, a new curb cut would be provided to the SFPUC ROW on the south side of Arroyo Drive and on the north side of West Orange Avenue. While pedestrian volumes on streets adjacent to the site are low, pedestrians

were observed walking between the South San Francisco Public Library, about 450 feet east of the project site on West Orange Avenue, and the commercial area along Camaritas Avenue. At the new driveways to the SFPUC ROW (project site) at Arroyo Drive and West Orange Avenue, the sidewalk would remain open throughout the construction period; therefore, pedestrian access would be maintained. Overall, construction traffic would not substantially affect pedestrian travel in the vicinity of the project site, and construction-related impacts on pedestrian travel would be *less than significant*. Potential impacts related to pedestrian safety are addressed below under Impact TR-3.

### **Parking Information**

The construction worker parking demand at the South San Francisco site is estimated to be 20 vehicles per day. The onsite staging area and the common staging area in South San Francisco (which would involve carpooling between the common staging area and the South San Francisco site) would provide sufficient capacity to accommodate the anticipated parking demand for construction worker vehicles. It is not anticipated that construction workers would park on streets in the vicinity of the South San Francisco site.

Construction activities or staging at the South San Francisco site would not occupy on-street parking lanes, and therefore would not result in displacement of on-street parking in the immediate vicinity of the project site in South San Francisco.

### ***San Bruno North Site***

#### **Impacts on Roadways**

Construction access routes for the San Bruno North site are presented on Figure 3-4. Construction traffic would result in short-term increases in traffic volumes on San Bruno Avenue West for an estimated construction period of 1 month, and construction activities may occur during nighttime hours. Project construction activities at this site would generate an average of 44 and a maximum of 56 vehicle trips (inbound and outbound) on a daily basis. During the a.m. and p.m. peak hours, there would be a maximum of two construction truck trips accessing the project site, and 20 construction worker vehicle trips (the intersection impact analysis assumed that construction workers would drive to the site, but because a staging area would not be provided on site, and on-street parking is not permitted on San Bruno Avenue West, it is anticipated that construction workers would park at the common staging area, and carpool to the site in construction vehicles). As indicated in Table 5.6-9, the addition of the construction-generated vehicle trips would not substantially affect a.m. or p.m. peak hour LOS at the study intersection of I-280 Northbound ramps/San Bruno Avenue West (Intersection #3), and the intersection would continue to operate at LOS C conditions.<sup>4</sup> Therefore, the impact from short-term increases in traffic volumes during construction at the San Bruno North site would be *less than significant*.

At the San Bruno North site, the right-turn lane on the I-280 northbound off-ramp would need to be closed for a period of up to 10 days. Right turns would be made from the adjacent shared

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<sup>4</sup> The peak hour traffic analysis at the intersection of I-280 Northbound ramps/San Bruno Avenue West includes construction vehicle trips from both San Bruno North and San Bruno South sites.

right-through-left lane (the left-turn only lane would not be affected). Throughout the 1-month construction period at this site, a flagger would be positioned at the entrance into the site. The construction contractor would obtain an encroachment permit from Caltrans for work within the State right-of-way, and would comply with Caltrans' traffic control requirements, as described in Section 3.10, Required Permits. The temporary closure of the right-turn lane would not substantially affect intersection operations. The intersection currently operates at LOS C during the a.m. and p.m. peak hours, and as noted above, would continue to operate at LOS C with the addition of construction vehicle trips generated by the San Bruno North and San Bruno South sites. As indicated in Table 5.6-9, with the temporary closure of the right-turn-only lane, this intersection (Intersection #3) would operate at LOS D during the a.m. and p.m. peak hour for the 10-day period when the right-turn lane would be closed, which is considered an acceptable LOS per San Francisco Planning Department and City of San Bruno traffic policy.

In addition, at the San Bruno North site, the project would extend into a portion of the right-hand eastbound lane of San Bruno Avenue west, requiring closure of the lane for up to 2 weeks during construction. The temporary closure of the eastbound lane adjacent to the project site would not substantially affect intersection operations, and with the temporary closure of one of the two eastbound lanes on San Bruno Avenue West adjacent to the project site, the intersection (Intersection #3) would continue to operate at LOS C during the a.m. and p.m. peak hours with the addition of the construction vehicle trips generated by the San Bruno North and San Bruno South sites.

The temporary closures of the right-turn lane of the I-280 off-ramp and the eastbound San Bruno Avenue West lane adjacent to the project site may occur simultaneously. As indicated in Table 5.6.9, with the closure of both lanes, the intersection of I-280 Northbound ramps/San Bruno Avenue West (Intersection #3) would operate at LOS E during the a.m. peak hour, which would not be an acceptable LOS per San Francisco Planning Department or City of San Bruno traffic policy; during the p.m. peak hour it would operate at LOS C, which would be considered an acceptable LOS. Therefore, the LOS E condition at the intersection of I-280 Northbound ramps/San Bruno Avenue West (Intersection #3) during the a.m. peak period is considered to be a significant impact. However, impacts related to the lane closures would be reduced to a less-than-significant level with implementation of **Mitigation Measure M-TR-1: Maintain Traffic Flow on San Bruno Avenue West During the A.M. Peak Hour**, which would allow the LOS at the intersection to be maintained at LOS D. This measure would require that the SFPUC contractor maintain the eastbound traffic flow through the intersection of I-280 Northbound ramps/San Bruno Avenue West by plating over the access pit that extends into the eastbound lane of San Bruno Avenue West during the a.m. peak period. Therefore, this impact would be *less than significant with mitigation*.

#### **Mitigation Measure M-TR-1: Maintain Traffic Flow on San Bruno Avenue West During the A.M. Peak Hour**

The SFPUC or its contractor(s) shall maintain eastbound traffic flow on San Bruno Avenue West during the a.m. peak period (generally, between 7 and 9 a.m.) if the temporary closure of the right-turn lane of the I-280 off-ramp and the eastbound San Bruno Avenue West lane adjacent to the project site occur simultaneously. Eastbound traffic flow would be maintained on San Bruno Avenue West during the 2-week period when a portion of the right-hand eastbound lane of San Bruno Avenue would be

required for construction activities by plating over the access pit. The SFPUC or its contractor(s) shall coordinate with the City of San Bruno and Caltrans, and the plan for maintaining access shall conform to the State's Manual of Traffic Controls for Construction and Maintenance Work Areas (Caltrans, 2006).

### **Impacts on Public Transit**

In the vicinity of the San Bruno North site, SamTrans Route 141 runs westbound on San Bruno Avenue West (i.e., within the travel lanes across the street from the project site). It is not anticipated that construction vehicle access to the site from eastbound San Bruno Avenue West would affect SamTrans bus service. Therefore, construction-related impacts on public transit would be *less than significant*.

### **Impacts on Bicycle Facilities**

There are no designated bicycle routes or bicycle lanes in the immediate vicinity of the San Bruno North site; bicyclists currently share the travel lanes with vehicles. As noted above, construction activities would not result in any travel lane closures on San Bruno Avenue West, and bicycle travel would be maintained throughout the construction period. Because bicycle travel would be maintained, and because the number of construction vehicles generated on an hourly basis would not be substantial (about 22 vehicles during the a.m. and p.m. peak hours when construction workers would be commuting to and from the project area, and between one and two vehicles during the nonpeak hours), project-related impacts on bicycle travel in the vicinity of the San Bruno North site would be *less than significant*. Potential impacts related to bicycle safety are addressed below under Impact TR-3.

### **Impacts on Pedestrian Travel**

Pedestrian volumes on San Bruno Avenue West are generally low throughout the day. Sidewalks are not provided on San Bruno Avenue West to the west of project site (i.e., under the I-280 freeway overpass). Construction activities would not affect sidewalks adjacent to the project site. Vehicular access to the project site would be from a new access driveway on the I-280 northbound off-ramp, on which pedestrians are not permitted; and on San Bruno Avenue West, pedestrian volumes are low due to the break in sidewalks under the I-280 freeway overpass. Therefore, construction traffic would not substantially affect pedestrian travel in the vicinity of the project site, and construction-related impacts on pedestrian travel would be *less than significant*. Potential impacts related to pedestrian safety are addressed below under Impact TR-3.

### **Parking Information**

The construction worker parking demand associated with the San Bruno North site is estimated to be 20 vehicles per day. Construction workers could park at the common staging area in South San Francisco and carpool between the common staging area and San Bruno North site; park within the staging area at the San Bruno North site; or park on-street (up to 10 vehicles) in the vicinity of the San Bruno North site. As indicated in Section 5.6.1.2, in the vicinity of the San Bruno North site, on-street parking is not permitted on either side of San Bruno Avenue West; up to 10 construction worker vehicles could park on residential streets south of San Bruno Avenue



West, where on-street parking is permitted (e.g., Cherry Avenue, Hickory Avenue, and Cedarwood Court).

Pipeline rehabilitation at the San Bruno North site would not occupy on-street parking lanes, and therefore would not result in displacement of on-street parking in the immediate vicinity of the San Bruno North project site.

### ***San Bruno South Site***

#### **Impacts on Roadways from Construction Traffic**

Construction access routes for the San Bruno South site are presented on Figure 3-5. Construction traffic would result in short-term increases in traffic volumes on a number of roadways in the vicinity of the San Bruno South site for an estimated construction period of 9 months. Primary access roadways that would experience short-term traffic increases would include Shelter Creek Lane, Whitman Way, and Courtland Drive. Project construction activities at the San Bruno South site would generate an average of 82 and a maximum of 276 vehicle trips (inbound and outbound) on a daily basis, as shown in Table 5.6-6. During the a.m. and p.m. peak hours, there would be a maximum of 30 construction truck trips accessing the project site, and 20 construction worker vehicle trips.

The impact of the increase in peak hour traffic volumes was analyzed for five study intersections: Crestmoor Drive/San Bruno Avenue West/Shelter Creek Lane (Intersection #4), Shelter Creek Lane/Shelter Creek Condominiums Driveway (Intersection #5), Shelter Creek Lane/Whitman Way (Intersection #6), Courtland Drive/Whitman Way (Intersection #7) and Whitman Way/Shelter Creek Condominiums Driveway/Eastburn Court (Intersection #8). As indicated in Table 5.6-9, the addition of the construction-generated vehicle trips would not substantially affect a.m. or p.m. peak hour LOS at the study intersections. Intersection LOS would remain the same as under existing conditions, with the exception of the intersection of Shelter Creek Lane/Shelter Creek Condominiums Driveway (Intersection #5) during the a.m. peak hour.<sup>5</sup> During the a.m. peak hour, with the addition of the construction-generated vehicle trips, the eastbound stop-sign—controlled approach at the intersection of Shelter Creek Lane/Shelter Creek Condominiums Driveway (Intersection #5) would change from LOS A to LOS B, which is considered acceptable.

As noted in Table 5.6-9, the intersection of Courtland Drive/Whitman Way (Intersection #7) would continue to operate at LOS B conditions during both the a.m. and p.m. peak hour with the addition of the San Bruno South construction vehicles. Traffic volumes on Courtland Drive are about 1,050 vehicles per day, with about 25 percent of daily traffic occurring during the a.m. and p.m. peak hours. Traffic volumes on the segment of Courtland Drive between Rosewood Drive and Whitman Way are somewhat higher, because traffic destined to and from the residences on Rosewood Drive use Courtland Drive to access Whitman Way.

The addition of San Bruno South construction vehicles to Courtland Drive would be accommodated within the travel lane capacity without substantial delays. However, in general,

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<sup>5</sup> The peak hour traffic analysis at the intersection of I-280 Northbound ramps/San Bruno Avenue West includes construction vehicle trips from both San Bruno North and San Bruno South sites.

the presence of construction truck traffic within the traffic flow would temporarily reduce roadway capacities due to the slower travel speeds (e.g., particularly in the southbound uphill direction on Courtland Drive). Drivers on Courtland Drive would experience intermittent delays, particularly if they were traveling behind a construction truck. The posted speed limit on Courtland Drive is 25 mph between Whitman Way and the driveway to the San Bruno Chinese Church, and 10 mph between the driveway to the San Bruno Chinese Church and the intersection of Madison Avenue and Piedmont Avenue (these roadways are shown on Figure 3-1 in Chapter 3, Project Description).

Vehicular access to the site via the driveway to the Shelter Creek Condominiums at Shelter Creek Lane would be maintained throughout the construction period involving replacement of the northern segment of the pipelines at the Shelter Creek Condominiums (estimated to be about 2 months per pipeline, or 4 months total).

Traffic volume counts conducted in April 2011 indicate that there are about 91 vehicles (18 inbound and 73 outbound) using the driveway during the a.m. peak hour, and 87 vehicles (53 inbound and 34 outbound) during the p.m. peak hour. During peak pipeline replacement construction activities, it is estimated that there would be about six trucks (three inbound and three outbound) per hour accessing the work area within the Shelter Creek Condominiums site via Shelter Creek Lane. As indicated in Table 5.6-9, the addition of the construction vehicles to the intersection volumes would not substantially affect the intersection LOS conditions, the eastbound approach would operate at LOS B conditions during both the a.m. and p.m. peak hours; therefore, traffic impacts at this intersection would be less than significant.

Throughout the construction period for replacement of the northern segment of the pipelines at the Shelter Creek Condominiums, vehicular access to the Garage 4, Lot B and Lot C via the driveway on Shelter Creek Lane would be prohibited during construction hours. Access to and from these parking areas would be maintained via a driveway on Whitman Way east of Courtland Drive (Intersection #8), although residents arriving or departing during construction hours would experience slightly increased travel times. The addition of the construction vehicles and rerouted vehicles accessing Garage 4, Lot B, and Lot C trips to the existing intersection volumes at Whitman Way/Shelter Creek Condominiums Driveway/Eastburn Drive (Intersection #8) would not substantially affect the intersection LOS conditions. As indicated in Table 5.6-9, the southbound approach of the intersection of Whitman Way/Shelter Creek Condominiums Driveway/Eastburn Drive would continue to operate at LOS B conditions during both the a.m. and p.m. peak hours; therefore, traffic impacts at this intersection would be less than significant.

Overall, because the addition of construction vehicles would not substantially affect the peak-hour intersection operations, and because all study intersections would continue to operate at LOS C or better, the traffic impact from short-term increases in traffic volumes during construction at the San Bruno South site at the study intersections would be *less than significant*.

### **Impacts on Roadways from Construction Activities**

At the San Bruno South site, open trench construction would be used to replace the existing pipeline, including the segment of pipe across Whitman Way (between the Shelter Creek Condominiums and the Park Plaza Apartments). Whitman Way is a two-lane roadway with on-street parking on both sides of the street. Pipeline replacement across Whitman Way would

require temporary closure of one travel lane at a time as construction is conducted across the roadway, necessitating alternate one-way traffic operations for about 180 feet. In addition, larger trucks and equipment maneuvering may constrain traffic operations on Whitman Way, and it may be necessary to periodically stop traffic in both directions on Whitman Way for a few minutes at a time. Construction would also occur across the parking lanes and sidewalks. Pipeline replacement across Whitman Way is projected to occur over a period of up to 21 calendar days per pipeline. Lane closures would result in additional vehicle delay when alternate one-way traffic operations are required, and some drivers might shift to other, potentially less convenient routes to access their destination. Vehicles would be delayed in the vicinity of the construction zone. These impacts would typically occur only during the day; the contractor would use steel plates to restore vehicle access at the end of each workday.

Traffic volumes on Whitman Way are highest during the morning and evening commute periods, and lower throughout the day. On Whitman Way, east of Courtland Drive, there are approximately 240 vehicles per hour traveling eastbound, and about 100 vehicles per hour traveling westbound during the a.m. peak hour. During the p.m. peak hour there are about 120 vehicles per hour traveling eastbound, and 190 vehicles per hour traveling westbound on the section of Whitman Way east of Courtland Drive. These volumes would be accommodated with alternate one-way operations, although some drivers may choose to use other routes to access their destination. As described above, during replacement of the pipelines at the Shelter Creek Condominiums, residents accessing Garage 4, Lot B and Lot C via the driveway on Shelter Creek Lane during construction hours would be routed to these parking areas via a driveway on Whitman Way. These drivers would also be delayed during alternate one-way traffic operations on Whitman Way, and some drivers might shift to other routes to access their destination.

Both local residential streets and collector streets have available capacity to accommodate the low volume of potential diversion. As noted above, the total volume in both directions on Whitman Way is about 340 vehicles per hour during the a.m. peak hour, and 310 vehicles per hour during the p.m. peak hour, and only a small portion would be expected to divert if Whitman Way is closed during the peak hours. Traffic volumes on Whitman Way during off-peak hours are lower, and therefore off-peak diversions, if any, would also be less. Eastbound drivers on Whitman Way may divert to Madison Avenue and Princeton Drive to San Bruno Avenue West. Westbound drivers on Whitman Way/Jenevein Avenue may shift to Shelter Creek Lane to San Bruno Avenue West. As noted above, the length of detour would vary, depending on the actual origin and destination of the driver. There is ample capacity on surrounding streets to accommodate drivers who may choose to detour. Due to the limited length and duration of the alternate one-way operations, impacts of alternate one-way operations would be *less than significant*.

Although traffic impacts at intersections and along roadway segments at the San Bruno South site would be less than significant, **Mitigation Measure M-TR-3: Traffic Control Plan** includes measures that would manage traffic flow during construction activities, and alert drivers to upcoming construction activities.

### **Impacts on Public Transit**

In the vicinity of the San Bruno South site, SamTrans Route 141 runs southbound on Shelter Creek Lane, and eastbound on Whitman Way and Jenevein Avenue (east of Shelter Creek Lane). Limited service is also provided by this route to the Peninsula High School via Whitman Way

and Courtland Drive. On school days there is one bus trip in the morning and one bus trip in the afternoon. As noted above, pipeline replacement across Whitman Way would require temporary lane closures with alternate one-way traffic operations on the section of Whitman Way west of Shelter Creek Lane. Therefore, only the limited service to the Peninsula High School would be affected by construction across Whitman Way. SamTrans buses destined to the Peninsula High School may be slightly delayed as they travel through the construction zone for up to 21 calendar days per pipeline. It is not anticipated that construction vehicle access to the site would affect SamTrans bus service on Shelter Creek Lane or Whitman Way/Jenevein Avenue. Therefore, construction-related impacts on public transit would be *less than significant*.

### **Impacts on Bicycle Facilities**

In the vicinity of the San Bruno South site, Jenevein Avenue east of Shelter Creek Lane is a designated bicycle route (Class III facility—bicyclists currently share the travel lanes with vehicles). As noted above, construction activities would not result in any travel lane closures, with the exception of Whitman Way when the pipeline that crosses Whitman Way is replaced. During the temporary travel lane closures (up to 21 days per pipeline) bicycle travel would be accommodated within the alternate one-way traffic operations, and would continue to share the travel lane with vehicles. Because bicycle travel would be maintained throughout the construction period, and because the number of construction vehicles generated on an hourly basis would not be substantial (about 50 vehicles during the a.m. and p.m. peak hours when construction workers would be commuting to and from the project area, and between 5 and 30 vehicles during the nonpeak hours), project-related impacts on bicycle travel in the vicinity of the San Bruno South site would be *less than significant*. Potential impacts related to bicycle safety are addressed below under Impact TR-3.

### **Impacts on Pedestrian Travel**

On weekdays, pedestrian volumes are generally low in the vicinity of the San Bruno South site, with the exception of Courtland Drive, which provides access to the Peninsula High School. Because the San Bruno Site staging and parking areas would be located off of Courtland Drive, traffic volume increases associated with project construction activities would be greatest on this street. Construction activities would not affect sidewalks adjacent to the project site, with the exception of Whitman Way during pipeline replacement in the street (up to 21 calendar days per pipeline). During this time, pedestrians would be instructed to use the sidewalk on the other side of the street. Therefore, temporary sidewalk closures on Whitman Way and construction traffic would not substantially affect pedestrian travel in the vicinity of the project site, and construction-related impacts on pedestrian travel would be *less than significant*. Potential impacts related to pedestrian safety are addressed below under Impact TR-3.

### **Parking Information**

The construction worker parking demand at the San Bruno South site is estimated to be 20 vehicles per day. The proposed staging areas serving the San Bruno South site would provide sufficient capacity to accommodate the anticipated parking demand for construction worker vehicles.

As indicated on Figure 3-5, the San Bruno South site includes three staging areas along Courtland Drive that could affect off-street parking: a 15-space parking lot at the San Bruno Chinese Church; a portion of the Peninsula High School parking lot that is currently fenced off and used for school storage; and an unpaved area on the east side of Courtland Drive adjacent to the San Bruno Chinese Church (within the SFPUC ROW). In addition, the construction zone at the Shelter Creek Condominiums and along Whitman Way would temporarily affect off-street and on-street parking, respectively. The effects of using these parking areas for staging and construction is analyzed below to determine whether the use of these areas would affect neighborhood parking conditions.

- **Shelter Creek Condominiums.** North of Whitman Way, the project site extends through the Shelter Creek Condominiums. Construction activities associated with the pipeline replacement would temporarily displace about 24 of the 33 parking spaces in Lot B (see Figure 3-5). In addition, pipeline construction would restrict access to parking, including the remaining nine spaces in Lot B; the 157 spaces in the lower level of Garage 4; and the 38 spaces in Lot C typically accessed from Shelter Creek Lane (further described below). Outside of daily construction hours (generally 7 a.m. to 5 p.m.), excavated areas would be covered with steel plates, and access to these parking areas from Shelter Creek Lane would be available.

During construction hours, access into and out of the lower level of Garage 4, Lot B, and Lot C could be maintained via a 12-foot-wide fire lane that connects Lot C with the Shelter Creek Condominiums driveway at Whitman Way (Intersection #8). Because the fire lane does not allow for two-way travel, alternate one-way traffic operations would be required, and flaggers with radio communication would control alternating outbound and inbound vehicles. Traffic volumes conducted in September 2012 indicate that between 7 a.m. and 7 p.m., there are about 145 inbound and 177 outbound vehicle trips associated with Garage 4 and Lot C, with roughly 200 vehicles trips (inbound/outbound) between 8 a.m. and 5 p.m. See discussion in Impact TR-2 regarding maintaining emergency vehicle access within the Shelter Creek Condominiums site during project construction.

- **Whitman Way.** Construction activities across Whitman Way would result in temporary displacement of on-street parking between Shelter Creek Lane and Courtland Drive during construction hours. Approximately 30 vehicles can park on the north side of the street and 10 vehicles on the south side of the street on this segment of Whitman Way. During field surveys conducted for the proposed project, on-street parking spaces on Whitman Way were close to fully occupied during the evening and overnight hours (LCW Consulting, 2012c). The segment of Whitman Way between Shelter Creek Lane and Courtland Drive was about 30 percent occupied during the midday period. During the 42 days of construction activities on Whitman Way, on-street parking would be restricted to allow for alternate one-way roadway operations. The daytime parking demand would be accommodated further west on Whitman Way, on Courtland Drive, and on Shelter Creek Lane, which have available capacity during the daytime hours. Drivers parking on other streets may need to walk further between their parked vehicle and destinations in the project vicinity. In addition, approximately three on-street parking spaces may be displaced in the project construction zone on Whitman Way

overnight, but the other parking spaces on Whitman Way would be available outside of construction hours.

- **San Bruno Chinese Church.** The San Bruno Chinese Church has a total of about 80 parking spaces on site (including the 15 spaces in the proposed staging area). On weekends, all parking spaces are occupied; however, no spillover onto adjacent streets is required to accommodate the church's parking demand (Wu, 2012). Construction staging at the San Bruno South site includes the north parking lot on the San Bruno Chinese Church property. The project construction activities would occupy the parking area during the week, and would return the area during the weekend for church parking, as described in Chapter 3, Project Description. Therefore, the project would not change the available parking supply at the San Bruno Chinese Church during peak demand periods, and the parking demand associated with church services would continue to be accommodated on site.
- **SFPUC ROW along San Bruno Chinese Church.** A separate proposed staging area at the San Bruno South site is the vacant SFPUC ROW along the unpaved area directly east of Courtland Drive. This area extends about 200 feet between the north and south driveways to the San Bruno Chinese Church, and can accommodate 15 to 20 vehicles for unofficial parking during soccer practices and/or games. Although parking is not legally permitted at this location, vehicles jump the curb to park perpendicular to the roadway in this area. This unofficial parking area would be part of the San Bruno South staging area throughout the 9-month construction duration at this site. Vehicles that currently park there would have to park at official parking lots, such as the parking lots at the southern end of the high school.

Overall, the PPSU construction staging would result in minimal changes to existing parking conditions in the vicinity of the San Bruno Chinese Church and along Courtland Drive.

- **Peninsula High School.** The Peninsula High School campus contains 220 parking spaces in three parking lots supporting various uses, including a continuing education school, the Crayon College daycare, Central Peninsula Church, and sports activities at the adjacent athletic fields. The portion of the north parking lot that is fenced off and not currently used for parking is proposed as an additional staging area during construction activities.

On weekdays, the existing parking supply meets the demand associated with the various uses. Construction trips to and from the staging area would not interfere with the passenger drop-off or pick-up activities associated with the Crayon College, which occur at the drop-off circle and at the rear of the high school near the playground. Construction activities at the San Bruno South site, including construction worker parking, would not occupy any on-street parking lanes on Courtland Drive.

On Sundays, when soccer games and other sports activities at the athletic fields overlap with church services at the San Bruno Chinese Church and the Central Peninsula Church, parking spaces in the north high school parking lot are fully used. To manage the parking conditions during these overlapping periods, the Conditional Use Permit for the

Central Peninsula Church issued by the City of San Bruno (City of San Bruno, 2011) requires a parking management strategy that restricts parking for church-related activities to the basketball courts; it also prohibits church parking in areas adjacent to the athletic fields, as well as on-street parking on Courtland Drive. In addition, the Conditional Use Permit identifies overflow parking for the church and sports activities at the southern parking lots in front of the school (approximately 60 spaces) and behind the school (approximately 50 parking spaces). Because the proposed staging area would not affect the on-street parking supply on Courtland Drive or the off-street parking supply within the Peninsula High School, it would not affect parking use.

### ***Millbrae Site***

#### **Impacts on Roadways**

Construction access routes for the Millbrae site are presented on Figure 3-6. Construction traffic would result in short-term increases in traffic volumes on a number of roadways in the vicinity of the Millbrae site for an estimated construction period of 4.5 months. Primary access roadways that would experience short-term traffic increases would include Larkspur Drive, Ridgewood Drive, and Lomita Avenue on the west side of the site, and Bertocchi Lane and Capuchino Drive on the east side of the site. Pipeline replacement construction activities at the Millbrae site would generate an average of 64 and a maximum of 170 vehicle trips (inbound and outbound) on a daily basis. During the a.m. and p.m. peak hours, there would be a maximum of 16 construction truck trips accessing the project site, and 20 construction worker vehicle trips.

The impact of the increase in peak hour traffic volumes was analyzed for three study intersections: Helen Drive/Larkspur (Intersection #9), Ridgewood Drive/Banbury Lane (Intersection #10), and Santa Margarita Avenue/Capuchino Drive (Intersection #11). All three study intersections are unsignalized. As indicated in Table 5.6-9, with the addition of the construction-generated vehicle trips during the a.m. and p.m. peak hours, average vehicle delays would increase slightly; however, intersection LOS would remain the same as under existing conditions. Therefore, the impact from short-term increases in traffic volumes during construction at the Millbrae site would be *less than significant*.

As indicated in Table 5.6-9, the worst approach (northbound) at the study intersection of Helen Drive/Larkspur Drive (Intersection #9) would continue to operate at LOS C during the a.m. peak hour, and LOS B during the p.m. peak hour. PPSU construction-related vehicles would access the Millbrae Site via Larkspur Drive and Ridgewood Drive (see Figure 3-6). Therefore, PPSU construction traffic would not conflict with a.m. peak period drop-off or p.m. peak period pick-up activities at the Meadows Elementary School, which occur on Helen Drive about 700 feet north of Larkspur Drive. Similarly, the worst approach (southbound) at the study intersection of Santa Margarita Avenue/Capuchino Drive (Intersection #11) would continue to operate at LOS A during the a.m. and p.m. peak hours. PPSU construction-related vehicles would access the Millbrae Site via Capuchino Drive. Therefore, PPSU construction traffic would not conflict with a.m. peak period drop-off or p.m. peak period pick-up activities at the Glen Oaks/Millbrae Montessori School. Therefore, the traffic impact from construction activities at the Millbrae site on the intersections described above would be *less than significant*.

### **Impacts on Public Transit**

In the vicinity of the Millbrae site, SamTrans Route 43 runs in both directions along Helen Drive, Mosswood Lane, Ridgewood Drive, and Lomita Avenue. The Millbrae construction vehicle access route would overlap with the SamTrans Route 43 for about 0.50 mile, for the section of Lomita Avenue between the access driveway and Ridgewood Drive, and Ridgewood Drive between Lomita Avenue and Mosswood Lane. Because construction vehicles may be able to access the Millbrae site from four access routes, and because traffic volumes are relatively low on Lomita Avenue and Ridgewood Drive (about 1,200 vehicles per day), the increase in construction vehicles on these streets would not substantially affect SamTrans Route 43 service. Therefore, construction-related impacts on public transit would be *less than significant*.

### **Impacts on Bicycle Facilities**

There are no designated bicycle routes or bicycle lanes in the immediate vicinity of the Millbrae site; bicyclists currently share the travel lanes with vehicles. Construction activities would not result in any travel lane closures in the vicinity of the project site or along access routes, and bicycle travel would be maintained throughout the construction period. Because bicycle travel would be maintained, and because the number of construction vehicles generated on an hourly basis would not be substantial (about 36 vehicles during the a.m. and p.m. peak hours when construction workers would be commuting to and from the project area, and between 3 and 16 vehicles during the nonpeak hours), project-related impacts on bicycle travel in the vicinity of the Millbrae site would be *less than significant*. Potential impacts related to bicycle safety are addressed below under Impact TR-3.

### **Impacts on Pedestrian Travel**

Pedestrian volumes in the vicinity of the Millbrae site are generally low throughout the day. Construction activities would not affect sidewalks adjacent to the project site, with the exception of a new curb cut that would be provided to the project site on the east side of Ridgewood Drive at Banbury Lane. At this location, pedestrian access would be maintained across the driveway. Therefore, construction activities would not substantially affect pedestrian travel in the vicinity of the project site, and construction-related impacts on pedestrian travel would be *less than significant*. Potential impacts related to pedestrian safety, including increase in vehicle traffic in the vicinity of nearby schools, are addressed below under Impact TR-3.

### **Parking Information**

The construction worker parking demand at the Millbrae site is estimated to be 20 vehicles per day. Construction workers would park on local streets in the vicinity of the construction zone, such as on Ridgewood Drive, Mosswood Lane, and Banbury Lane. During the weekday work period, on-street parking is generally available on these streets, and would provide sufficient capacity to accommodate the anticipated parking demand for construction worker vehicles (LCW Consulting, 2012c).

Construction activities or staging at the Millbrae site would not use on-street parking lanes, and therefore would not result in displacement of on-street parking in the immediate vicinity of the Millbrae site.



### ***Common Staging Area***

In addition to the staging areas at or near each PPSU project site, a common staging area at SFPUC's Baden Valve Lot in South San Francisco would be used for the 12-month duration of project construction. This staging area would be used for temporary field offices, staging of equipment and materials, and construction worker parking. Approximately 20 construction worker vehicles could be accommodated within this 0.32-acre site. Vehicle trips to and from the site would include construction workers traveling to and from home (about 40 vehicle trips per day), and trips between the staging area and project sites (estimated at 20 vehicle trips per day), for a total of 60 vehicle trips (inbound and outbound per day).

### **Impacts on Roadways**

Driveway access into the common staging area is via West Orange Avenue. Access routes between I-280 and the staging area include Westborough Boulevard and El Camino Real, both of which are high traffic volume arterials carrying more than 10,000 vehicles per day. PPSU construction activities would result in vehicle trips traveling between the various construction sites and the common staging area. The percent increase in traffic volumes associated with construction worker parking and temporary field offices would not be substantial relative to the background traffic volumes (less than 0.2 percent of existing traffic volumes), nor would the project-generated construction trips substantially disrupt traffic flows on Westborough Boulevard or El Camino Real. Therefore, the effect of short-term traffic increases would be *less than significant*.

### **Impacts on Public Transit**

Access to the common staging area would be via an existing driveway on West Orange Avenue, and increased vehicle trips into and out of the staging area would not affect SamTrans transit service or bus stops on El Camino Real. Therefore, the impact of the use of the common staging area to support PPSU project construction activities on public transit would be *less than significant*.

### **Impacts on Bicycle Facilities**

West Orange Avenue and El Camino Real are Class III bicycle facilities. Vehicle access to the site would be via an existing driveway on West Orange Avenue, and the increase in vehicle trips into and out of the staging area would not substantially affect bicycle travel on West Orange Avenue. Therefore, PPSU project-related impacts on bicycle travel in the vicinity of the common staging area would be *less than significant*. Potential impacts related to bicycle safety are addressed below under Impact TR-3.

### **Impacts on Pedestrian Travel**

Pedestrian volumes on the sidewalks in the vicinity of the common staging area on West Orange Avenue and El Camino Real are generally low throughout the day. The increase in vehicle trips into and out of the staging area would not substantially affect pedestrian travel in the area. Therefore, construction traffic would not substantially affect pedestrian travel on West Orange Avenue, and PPSU project-related impacts on pedestrian travel would be *less than significant*. Potential impacts related to pedestrian safety are addressed below under Impact TR-3.

### **Parking Information**

The common staging area in South San Francisco would accommodate field offices as well as construction worker parking for up to 20 vehicles for the 12-month duration of the PPSU project. It is not anticipated that any construction workers would park on-street on West Orange Avenue or other local streets in the vicinity of the common staging area. On-street parking is not permitted on either side of El Camino Real.

### **Conclusion**

As described in the analysis above, impacts to transportation and circulation would be *less than significant*.

### ***Impact TR-2: Project construction would not result in inadequate emergency access. (Less than Significant)***

At the South San Francisco and Millbrae sites, project construction activities would occur within or near the SFPUC ROW, and not within the travel lanes of adjacent roadways. At the Colma, San Bruno North, and San Bruno South sites, a portion of the staging areas or construction activities would occur within the adjacent travel lanes or parking/access routes. Construction-related traffic associated with project activities would not be substantial (an average of 44 and a maximum of 176 vehicle trips per day, depending on the project site), and would not pose an obstacle to emergency response vehicles. Project construction activities would not require full closures of any streets, except for intermittent temporary closures associated with large truck and equipment maneuvering, and emergency vehicles would have continuous access to all public roadways.

- At the Colma site, a portion of the adjacent Kohl's department store site would be used as a staging area. However, emergency vehicle access to and along the rear of the building would be maintained.
- At the San Bruno North site, the right-turn only lane on the I-280 northbound off-ramp would be temporarily closed for a period of up to 10 days, however, the two adjacent travel lanes would remain open and available for emergency response vehicles.
- At the San Bruno South site, pipeline replacement would require temporary closure of one travel lane at a time on Whitman Way, necessitating alternate one-way traffic operations for a period of up to 21 calendar days per pipeline. During alternate one-way traffic operations, emergency vehicle access to the frontage of the Park Plaza Apartments on Whitman Way would be maintained.
- At the San Bruno South site, pipeline replacement would require closure of a portion of fire lane #3 within the Shelter Creek Condominiums during daytime construction hours. This closure would also restrict access to the lower level of Garage 4, Lot B, and Lot C during construction. An alternate fire access route and ingress/egress for the lower level of Garage 4, Lot B, and Lot C would be provided from the Whitman Way driveway via the fire lane that connects the parking lots with that driveway. The San Bruno Fire Marshall has requested that Plans and Specifications at 65 percent design completion, along with the traffic control plans, be submitted to the San Bruno Fire Marshall when

available for review and comment (Allan, 2012). For additional details regarding this access, see **Mitigation Measure M-TR-3: Traffic Control Plan**, below.

In addition, in some instances, traffic flow could be temporarily interrupted for short periods of time to accommodate large construction vehicles accessing the five PPSU project sites; however, travel lanes would be reopened and construction vehicles would move to the side of the road to accommodate any passing emergency vehicles. Therefore, impacts on emergency vehicle access would be *less than significant*.

***Impact TR-3: Project construction activities could decrease the safety of public roadways for vehicles, bicyclists, and pedestrians. (Less than Significant with Mitigation)***

Construction vehicles traveling to and from the project sites and the common staging area would share the roadway with other vehicles, as well as with bicyclists. The increase in vehicles traveling to and from the project sites during construction could increase traffic safety hazards due to potential conflicts between construction vehicles (with slower speeds and wider turning radii than autos) and automobiles, bicyclists, and pedestrians. See Section 5.2, Land Use and Land Use Planning, for community safety concerns. Increased traffic safety hazards by site, based on the impact assessment by mode provided in Impact TR-1, include:

- At the **Colma site**, a portion of the Kohl's Department Store parking lot would be used for construction staging, which would result in an increase in conflicts between construction vehicles, and pedestrians and motorists. If construction activities overlap with the December holiday shopping season, traffic volumes at the Kohl's parking lot would increase, thereby increasing the potential for conflicts.
- At the **South San Francisco site**, construction vehicles traveling into and out of the project site via new driveways on Arroyo Drive and West Orange Avenue would result in an increase in conflicts between construction vehicles and pedestrians. In particular, the sidewalk adjacent to the SFPUC ROW on West Orange Avenue is used by pedestrians traveling between the South San Francisco Public Library and the commercial areas along Camaritas Avenue.
- At the **San Bruno North site**, the project site would be accessed from the I-280 freeway off-ramp, resulting in an unexpected traffic pattern on the off-ramp, and increased potential for conflicts between construction vehicles and vehicles exiting I-280 northbound. If the SFPUC determines that temporary closures of the right-turn lane of the I-280 off-ramp and the eastbound San Bruno Avenue West lane adjacent to the project site would need to occur simultaneously, Mitigation Measure TR-1, as described in Impact TR-1 above, is required to be implemented; the construction contractor shall coordinate with the City of San Bruno and Caltrans, and incorporate the measure into the traffic control plan.
- At the **San Bruno South site**, pipeline replacement across Whitman Way would include temporary closures of Whitman Way, as well as sidewalk closures requiring pedestrian detours. Construction activities at the Shelter Creek Condominiums would require a temporary reroute of access/egress to the lower level of Garage 4, Lot B, and Lot C via the

fire lane from the driveway on Whitman Way (Intersection #8). These construction activities would result in an increase in conflicts between construction vehicles, and pedestrians and vehicles (including transit) along Whitman Way and within the Shelter Creek Condominiums.

- At the **Millbrae site**, construction activities would result in increased traffic volumes in the project vicinity and in the proximity of the Meadows Elementary School and the Glen Oaks/Millbrae Montessori School, thereby increasing the potential for conflicts between construction vehicles, and vehicles and pedestrians traveling to and from these schools. In addition, construction vehicle access to the SFPUC ROW would require a new driveway, and therefore a new conflict point, on Ridgewood Drive.
- At the **Common Staging Area** in South San Francisco, PPSU would result in a temporary minor increase in vehicular activity at the site.

The potential increase in traffic safety hazards during construction is considered to be a potentially significant impact. However, impacts related to increased safety hazards during construction activities would be reduced to a less-than-significant level with implementation of **Mitigation Measure M-TR-3: Traffic Control Plan**. This measure would require that SFPUC take actions to minimize traffic safety hazards during construction (i.e., through the installation of signs to warn motorists, bicyclists, and pedestrians of the construction zone; and use of flaggers, illuminated signs, and flashing yellow lights). Therefore, this impact would be *less than significant with mitigation*.

#### **Mitigation Measure M-TR-3: Traffic Control Plan**

This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractor(s) shall prepare and implement a traffic control plan. The plan shall conform to the State's Manual of Traffic Controls for Construction and Maintenance Work Areas (Caltrans, 2006), where applicable. Elements of the traffic control plan shall include, but not be limited to, the following:

##### *General Measures for All Project Sites*

- Advance warning signs shall be placed upstream of work areas advising motorists, bicyclists, and pedestrians of the construction zone ahead in order to minimize hazards associated with construction activities, including the vehicular entry and egress of project-related construction activities.
- A public information system shall be developed and implemented to advise motorists, bicyclists, and nearby property owners of the impending construction activities (e.g., direct distribution of flyers to affected properties, email notices, portable message signs, and informational signs).
- All equipment and materials shall be stored within the designated work areas so as to avoid obstructing traffic.
- At all project sites, roadside safety protocols shall be implemented such as advance "Road Work Ahead," "One Lane Road Ahead," "Flagger Ahead," "Prepare to Stop,"

and “Trucks Entering Road” signs. Warning signs and speed control shall be provided to achieve speed reductions for safe traffic flow through the work zone.

- At all sites, pedestrian and bicycle access and circulation shall be maintained during project construction where it is safe to do so. Where appropriate, detours shall be included for bicycles and pedestrians in areas affected by project construction.
- To the maximum extent feasible, truck trips (i.e., haul trucks and heavy construction equipment) shall be scheduled outside of the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak commute periods.
- At all project sites, construction shall be coordinated with facility owners or administrators of sensitive land uses such as schools, police and fire stations, churches, hospitals, and residences. Facility owners or operators shall be notified in advance by the SFPUC regarding the timing, location, and duration of construction activities, and the locations of detours and lane closures.
- Roadway rights-of-ways shall be repaired or restored to their original conditions or better upon completion of construction.

#### *Specific Measures for Project Sites*

- At the **Colma site**, construction worker parking shall be accommodated within the project area boundary.
- At the **South San Francisco site**, flaggers shall be provided at new project driveway on West Orange Avenue to facilitate pedestrian travel adjacent to the project site. Construction worker parking shall be accommodated within the project staging area, or within the common staging area; carpooling between the South San Francisco site and the common staging area shall be established.
- At the **San Bruno North site**, the construction contractor shall obtain an encroachment permit from Caltrans, and comply with Caltrans requirements for traffic control activities within the State right-of-way, as described in Section 3.10, Required Permits. Construction worker parking on local residential streets shall be limited to 10 vehicles. The remaining workers shall park at the common staging area, and carpooling between the San Bruno North site and the common staging area shall be established.
- At the **San Bruno South site**, travel lane closures on Whitman Way shall be limited during the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak periods to the maximum extent feasible. Outside of allowed working hours or when work is not in progress, Whitman Way shall be restored to normal operations by covering all trenches with steel plates. When sidewalk closures are required on Whitman Way, pedestrian detour routes shall be maintained.

At the intersection of Shelter Creek Lane and the driveway to the Shelter Creek Condominiums (Intersection #5), the construction contractor shall provide flaggers to facilitate truck access into and out of the project work area at the Shelter Creek

Condominiums. Access to lower Garage 4, Lot B, and Lot C shall be maintained to the maximum extent feasible, and alternative fire access to building #3B shall be maintained. The construction contractor shall be required to have ready at all times the means necessary to accommodate emergency vehicles, such as plating over excavations through the use of steel plate to provide for a fire lane with a minimum width of 12 feet. The traffic control plan shall include flaggers with radio communication to allow ingress/egress to the parking areas.

Flaggers shall be provided on Courtland Drive at the construction vehicle access to the staging area within the Peninsula High School site, to reduce the potential for conflicts between construction vehicles and vehicles destined to other parking or passenger loading/unloading areas within the site. If construction activities occur on weekends, flaggers shall be provided. Plans and Specifications at 65 percent design completion, along with the traffic control plan, shall be submitted to the San Bruno Fire Marshall when available for review and comment.

Construction worker parking shall be accommodated within the project area boundary.

- At the **Millbrae site**, the SFPUC or the construction contractor shall coordinate with the schedule of schools to minimize impacts on school operations to the maximum extent feasible. At the Millbrae site, to the maximum extent feasible, construction haul trips shall not be conducted prior to 9 a.m. or after 3 p.m. when children are traveling to and from the Meadows Elementary School and the Glen Oaks/Millbrae Montessori School. Similarly, if determined appropriate by the school administrators, the SFPUC or the construction contractor shall provide traffic control officers at the intersections of Helen Drive/Larkspur Drive (Intersection #9) near the Meadows Elementary School, and Santa Margarita Avenue/Capuchino Drive (Intersection #11) near the Glen Oaks/Millbrae Montessori School.

If sidewalk closures are required on Ridgewood Drive, pedestrian detour routes shall be provided. Construction worker parking shall be accommodated on-street.

- At the **Common Staging Area**, construction worker parking for the PPSU project shall be accommodated within the site, as feasible.

### 5.6.3.5 Operational Impacts and Mitigation Measures

*Impact TR-4: Vehicle trips generated during project operation and maintenance activities would not substantially conflict with an applicable congestion management program. (Less than Significant)*

After completion of project construction activities, the replacement pipelines would require periodic operations review and maintenance, similar to existing conditions, and would not generate new vehicle trips. With the proposed project, the number of vehicle trips related to supply deliveries would not be expected to change compared to existing conditions (and would be considerably less than the construction vehicle trips analyzed in Impact TR-1). Overall, operation and maintenance of the replacement pipelines would not result in an increase in traffic

volumes on nearby streets and intersections. Therefore, intersection operations on roadways used to access the project sites would be similar to existing conditions, the proposed project would not result in long-term impacts on roadways used to access the project sites, and potential impacts on the local CMP would be *less than significant*.

### 5.6.3.6 Cumulative Impacts and Mitigation Measures

***Impact C-TR: Project construction could result in cumulative traffic increases and traffic safety hazards on local and regional roads. (Less than Significant with Mitigation)***

The geographic scope of cumulative impacts related to transportation and circulation includes the roadways adjacent to the project site and common staging area, and truck access routes to and from the regional roadway network.

As indicated in Table 5.1-1, five existing and probable future projects could contribute to cumulative impacts related to transportation and circulation, including SFPUC's Regional Groundwater Storage and Recovery (GSR) project in Colma and South San Francisco, and Harry Tracy Water Treatment Plant (HTWTP) Long Term Improvement project in Millbrae; the 599 Cedar Avenue residential project in San Bruno; the Parkside Intermediate School Classroom Building replacement project in San Bruno; and the Safeway Store Replacement project in Millbrae. As indicated in Table 5.1-1, the timelines for construction of the new residential project and the classroom replacement project in San Bruno, and the Safeway store replacement project in Millbrae are unknown at this time, and therefore the contribution of these projects to cumulative impacts during the PPSU project's 12-month construction period (i.e., between 2014 and 2015) is not known. The construction schedule for the GSR project components proposed at the PPSU Colma site and near the PPSU common staging area would overlap with the PPSU project. In addition, the tree removal at the PPSU Millbrae site would overlap with the completion of construction activities at the HTWTP.

#### **Traffic Impacts**

Cumulative traffic impacts include temporary short-term traffic increases related to construction vehicles traveling to and from the sites, as well as long-term vehicle trips generated by the new land uses (i.e., operational traffic increases). Most of the cumulative operational traffic increases would be generated by the residential development in San Bruno. The Parkside Intermediate School replacement project in San Bruno and the Safeway store replacement project in Millbrae would replace existing facilities and would not be expected to result in a substantial increase in vehicle trips. Periodic operations and maintenance of SFPUC facilities (Regional GSR wells and facilities, HTWTP Long-Term Improvements Project, and the PPSU project) would be similar to existing operations and would not result in a noticeable increase in vehicle trips to the area. Thus, long-term traffic increases would not be substantial, and cumulative impacts would be *less than significant*.

#### **Traffic Safety Hazards Impacts**

Construction of the cumulative projects would result in short-term cumulative traffic increases and increased traffic safety hazards. These cumulative impacts, and the PPSU project contribution to cumulative traffic increases and safety hazards, would only occur during the

PPSU project's approximately 12-month construction period (i.e., 2014 to 2015). GSR construction activities at the Colma site would overlap in schedule with the PPSU construction activities at the site for up to the 2-month PPSU project construction duration; the location of the GSR project would also overlap the PPSU staging area at Kohl's Department Store parking lot, but would not extend into any public roadways. Construction of the GSR project would temporarily limit access to the back of Kohl's, but customers would continue to have access via the entrance at El Camino Real. The GSR project alternative site adjacent to Collins Avenue in Colma would extend into Collins Avenue, and may require partial lane closure during construction. In addition, construction activities at the common staging area and adjacent to Southwood Drive (a minor residential street south of West Orange Avenue) may require partial or complete roadway closure.

Construction of the HTWTP project was initiated in 2011, and soil excavation and off-haul is nearing completion. The HTWTP project would have similar access routes to I-280 ramps at San Bruno Avenue West and Cunningham Way. The HTWTP project Environmental Impact Report identified a potential significant project and cumulative impact at the intersection of the I-280 on-ramp and Cunningham Way during the a.m. peak hour, and identified a mitigation measure that would reduce the impact to less-than-significant levels (the mitigation measure included installing and operating a temporary traffic signal or use of flaggers at the intersection of the I-280 on-ramp and Cunningham Way during the a.m. peak hour). Significant cumulative impacts could potentially occur between July and December 2013 when construction vehicle traffic would be greatest, and after which the construction vehicle trips would decrease by half. Because the PPSU project would begin in 2014 and end in 2015, the potential for overlap during the peak phase of the HTWTP project is anticipated to be minimal. Construction activities at the San Bruno South site would add four truck trips (two inbound and two outbound) to this intersection during the a.m. peak hour, and up to 10 inbound construction worker trips. These volumes would not contribute considerably to the movements that would operate poorly at this intersection during construction of the HTWTP project.

Overall, localized cumulative construction-related transportation and circulation impacts could occur as a result of cumulative projects that generate increased traffic at the same time and on the same roads as the proposed project, causing increased traffic safety hazards; although, as described above, the potential for overlap and the amount of overlapping traffic volumes is anticipated to be minimal. The cumulative impact on traffic safety hazards would be potentially significant depending on the amount of overlapping traffic. With implementation of **Mitigation Measure M-TR-1: Maintain Traffic Flow on San Bruno Avenue West During the A.M. Peak Hour**, which would require that the SFPUC contractor maintain the eastbound traffic flow through the intersection of I-280 Northbound ramps/San Bruno Avenue West by plating over the access pit that extends into the eastbound lane of San Bruno Avenue West during the a.m. peak period, and **Mitigation Measure M-TR-3: Traffic Control Plan**, which provides methods to reduce the effects of overlapping traffic and **Mitigation Measure C-TR: Assign a SFPUC Water System Improvement Program Projects Construction Coordinator**, the project's traffic increases on local and regional roads and resulting increased traffic safety hazards would be minimized. Therefore, with mitigation, the proposed project's contribution to cumulative traffic safety hazard impacts would not be cumulatively considerable and impacts would be *less than significant with mitigation*.



### **Mitigation Measure C-TR: Assign SFPUC Water System Improvement Program Projects Construction Coordinator**

This mitigation measure applies to all project sites, as well as the common staging area. Due to the potential for overlapping project activities and the operation of construction vehicles to affect travel along local roadways, the SFPUC shall assign a qualified construction coordinator responsible for coordinating the project-specific traffic control plan developed as part of **Mitigation Measure TR-3: Traffic Control Plan** with other SFPUC projects, including, but not limited to the Regional GSR project and the HTWTP Long-Term Improvements project. Throughout the construction schedule for the SFPUC projects in the Water System Improvement Program Peninsula Region, the SFPUC construction coordinator shall work with local and regional agencies to minimize local and regional traffic impacts, and shall incorporate these measures into the SFPUC's project-specific traffic control plans. Such measures could include, but would not be limited to, monitoring during construction to identify intersections or areas of problematic cumulative congestion or hazard; and rerouting or coordinating the timing of vehicular or truck trips to avoid or minimize such congestion or hazard.

## **5.6.4 References**

- Allan, Jim, 2012. Personal communication between San Bruno Battalion Chief/Fire Marshall Jim Allan and Calvin Huey, SFPUC Peninsula Pipelines Seismic Upgrade Project Manager. September.
- Caltrans (California Department of Transportation), 2006. Manual of Traffic Controls for Construction and Maintenance Work Areas.
- Caltrans (California Department of Transportation), 2009. 2009 Annual Average Daily Truck Traffic on the California State Highway System.
- Caltrans (California Department of Transportation), 2010. 2010 Annual Average Daily Traffic.
- C/CAG (City and County Association of Governments of San Mateo County), 2011. Final Congestion Management Program for 2011.
- City of Millbrae, 1998. City of Millbrae General Plan, Chapter 4, Circulation Element. Adopted November 24, 1998.
- City of San Bruno, 2009. City of San Bruno General Plan. Adopted March 24, 2009.
- City of San Bruno, 2011. City of San Bruno Planning Commission Staff Report, September 20, 2011.
- City of South San Francisco, 1999. City of South San Francisco General Plan, Chapter 4, Transportation.
- Fletcher, Angelic, 2012. Personal communication between Angelic Fletcher, Kohl's Department Store Manager and Mara Feeney, Mara Feeney & Associates. September 20.

G&E Engineering Systems, Inc., 2012. CUW 36702 Peninsula Pipeline Seismic Upgrade Project, Final Conceptual Engineering Report. April.

LCW Consulting, 2011a. 24-Hour Counts on Courtland Drive, Shelter Creek Lane, Larkspur Drive, and Lomita Avenue, April 2011. (Located in Appendix C of this Environmental Impact Report [EIR].)

LCW Consulting, 2011b. AM and PM peak period Traffic and Bicycle Volume Counts conducted in April and October 2011. (Located in Appendix C of this EIR.)

LCW Consulting, 2012a. 24-hour Counts on Serramonte Boulevard. March. (Located in Appendix C of this EIR.)

LCW Consulting, 2012b. AM and PM peak period Traffic Volume Counts conducted in September and October 2012. (Located in Appendix C of this EIR.)

LCW Consulting, 2012c. On-Street Parking Supply and Occupancy Surveys. October. (Located in Appendix C of this EIR.)

Roche, Anna, 2011. Personal e-mail communication between Anna Roche, PPSU Environmental Project Manager, SFPUC, and Hannah Young, URS. November 8.

SamTrans (San Mateo County Transit), 2010. Bus System Map effective February 2, 2010. Available online at: <http://www.samtrans.com/schedulesandmaps/maps.html>, accessed on January 4, 2012.

San Mateo County, 2012. Traffic Volumes 2000-2006. Available online at: <http://www.co.sanmateo.ca.us/portal/site/publicworks/menuitem.fd2e8ceae48fdafc82439054d17332a0/?vgnnextoid=dd2711fd2f01f110VgnVCM1000001d37230aRCRD&cpsextcurrchannel=1>.

Town of Colma, 2000. Town of Colma General Plan, Chapter 5.04, Circulation Element. Adopted April 2000.

Transportation Research Board, 2000. National Research Council, Highway Capacity Manual Washington D.C., 2000.

Wu, Andrew, 2012. Personal communication between Daniel Jaimes, SFPUC Communications Coordinator, and Pastor Wu, San Bruno Chinese Church; and Meeting Notes from conference call with San Bruno Chinese Church. September 14 and September 20.

## 5.7 Noise

This section describes the existing noise environment in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project, presents relevant noise and vibration regulations, identifies sensitive noise and vibration receptors that could be affected by the project, and evaluates the potential noise and vibration impacts of the proposed project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.7.1 Setting

#### 5.7.1.1 Noise Descriptors

Noise is commonly defined as unwanted sound that annoys or disturbs people and that can potentially cause an adverse physiological effect on human health. Because excessive noise is an environmental pollutant that can interfere with human activities, evaluation of noise is necessary when considering the environmental impacts of a proposed project.

Sound is energy transmitted by pressure waves through a medium such as air or water. Sound can be characterized by various parameters including the rate of oscillation (frequency) and the pressure level (amplitude). The sound pressure level has become the most common descriptor used to characterize the loudness of a sound. Because human hearing can detect a very wide range of intensity, a logarithmic scale or decibel scale is used to keep sound pressure levels within a manageable range. Since the human ear does not hear sound equally well at all frequencies, sound measurements are weighted to emphasize the frequencies to which humans are most sensitive, a process called "A-weighting." The resulting sound level is expressed in terms of A-weighted decibels (dBAs). Table 5.7-1 presents the sound pressure level of common everyday sources.

Human perception is such that a change in sound level of 1 decibel (dB) is the smallest change perceived by an attentive listener, a change of 3 dB is just noticeable to the casual listener, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as a halving or doubling of the sound level.

Different descriptors are used to characterize the time-varying nature of sound (see Appendix D-1 for more details). The equivalent continuous noise level ( $L_{eq}$ ) is the level of constant noise energy that is equivalent to the time-varying sound energy over a specified time period; an hourly  $L_{eq}$  refers to the energy equivalent level of sound for each 1-hour period. The day-night average sound level ( $L_{dn}$ ) is the A-weighted  $L_{eq}$  noise level over a 24-hour period with a 10 dB penalty applied to sound levels between 10 p.m. to 7 a.m. to account for the higher potential for disturbance to human activities in the nighttime. Because of the 10-dB penalty during nighttime hours, the  $L_{dn}$  is very sensitive to late night noise events. The community noise equivalent level (CNEL) is similar to the  $L_{dn}$  with an additional 5 dB penalty applied to sound levels between 7 p.m. and 10 p.m. Typically, in environments where transportation sources are the primary noise source, the difference between the CNEL and the  $L_{dn}$  is trivial (1 dB or less). Based on this assumption, all data presented in this report are  $L_{dn}$  rather than CNEL.

**Table 5.7-1  
Typical A-weighted Sound Levels**

OUTDOOR SOURCES	<u>dBA</u>	INDOOR SOURCES
Threshold of pain	120	
Thunder	110	Rock band
Jackhammer, 10 ft	100	Nightclub
Motorcycle, 25 ft	90	Food blender, 3 ft
Noisy urban daytime, Heavy traffic	80	Garbage disposal, 3 ft
	70	Car interior, 70 mph Vacuum cleaner, 10 ft
	60	Normal conversation, 3 ft
Quiet urban daytime	50	Large office Dishwasher in next room
Quiet urban nighttime	40	Small theater, large conference room
Quiet suburban nighttime	30	Soft whisper, bedroom at night
Quiet rural nighttime	30	Concert hall background
	20	Broadcast/recording studio
	10	
Threshold of hearing	0	

Sources: Foreman, 1990; Caltrans, 1998; Harris, 1998; Long, 2006.

Airborne noise sources attenuate as a function of the distance due to geometric spreading. Sound from point sources, such as an excavator, decreases at a rate of 6 dB per doubling of distance (this phenomenon is known as the “inverse square law”). Sound from line sources, such as highways, decreases at a rate of 3 dB per doubling of distance.

Topography (hills), buildings, and other barriers can further decrease noise levels by interrupting the line-of-sight. The decrease varies but could be as high as 20 dB for large hills or buildings.

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one car produces a noise level of 60 dBA when it passes an observer, two cars passing simultaneously would not produce 120 dBA. Rather, they would combine to produce 63 dBA. When combining sound levels, Table 5.7-2 may be used to approximate the combined result. When a new source is introduced that is 10 dB quieter than the existing environment, the overall noise level is unchanged.

**Table 5.7-2  
Decibel Addition**

<b>When Decibel Values Differ By:</b>	<b>Add this Amount to the Higher Value</b>
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0 dB

Source: Caltrans, 1998.

### 5.7.1.2 Vibration Descriptors

Operation of heavy construction equipment, such as pile drivers, vibratory rollers, and hoe rams, create waves that radiate along the surface and downward into the earth. These surface waves can be felt as ground vibration. The waves dissipate energy with distance from the source; the amount of attenuation depends on the source, site geology, and other factors but generally attenuates at a rate slightly greater than 50 percent for each doubling of distance.

Perceptible groundborne vibration is generally limited to areas within a couple hundred feet of construction activities. As the waves travel outward from the source, they excite the particles of rock and soil through which they pass, causing them to oscillate. The actual distance these particles move is very small, typically only a few ten-thousandths or thousandths of an inch. The rate or velocity (in inches per second [in/sec]) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (PPV).

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 events. Vibration transmitted through the ground 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 cosmetic or structural damage.

### 5.7.1.3 Existing Noise Environment

The project sites are located in primarily heavily developed suburban areas. The primary sources of noise at the project sites are local traffic on Interstate 280 (I-280), U. S. Highway 101 (U.S. 101), and surface arterial streets.

To estimate the existing typical daytime ( $L_{eq}$ ) and 24-hour ( $L_{dn}$ ) noise levels, a combination of short- and long-term noise measurements<sup>1</sup> were conducted in the study area at sensitive receptors adjacent to the five project sites (see Figures 5.7-1 through 5.7-5). The results of these measurements are presented in Tables 5.7-3 and 5.7-4 (short- and long-term measurements are denoted as ST and LT, respectively). See Appendix D-2 for additional information and the long-term measurement data time history plots. Measurements were previously conducted at the common staging area as part of the approved Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration (SF Planning, 2008), which was completed for improvements previously proposed by the San Francisco Public Utilities Commission (SFPUC) for the Baden Valve Lot. Because the noise conditions at the Baden Valve Lot remain substantially as described in the 2008 mitigated negative declaration, and because no new information is available that would change the findings of the mitigated negative declaration, the findings and the studies referenced therein are applicable to the common staging area for the PPSU project.

#### *Colma Site*

The Colma site is located in a primarily commercial area situated between Serramonte Boulevard and Collins Avenue, near El Camino Real. The ambient noise environment is dominated by local traffic on El Camino Real and Serramonte Boulevard with additional contributions from traffic on I-280 and aircraft flyovers. The average daytime<sup>2</sup>  $L_{eq}$  varies from 54 to 55 dBA.

#### *South San Francisco Site*

The South San Francisco site is located in a mixed residential/commercial area and is bisected by Westborough Boulevard. Traffic on Westborough Boulevard is the dominant noise source, with local traffic and aircraft flyovers also contributing to the noise field. The average daytime  $L_{eq}$  varies from 59 to 66 dBA.

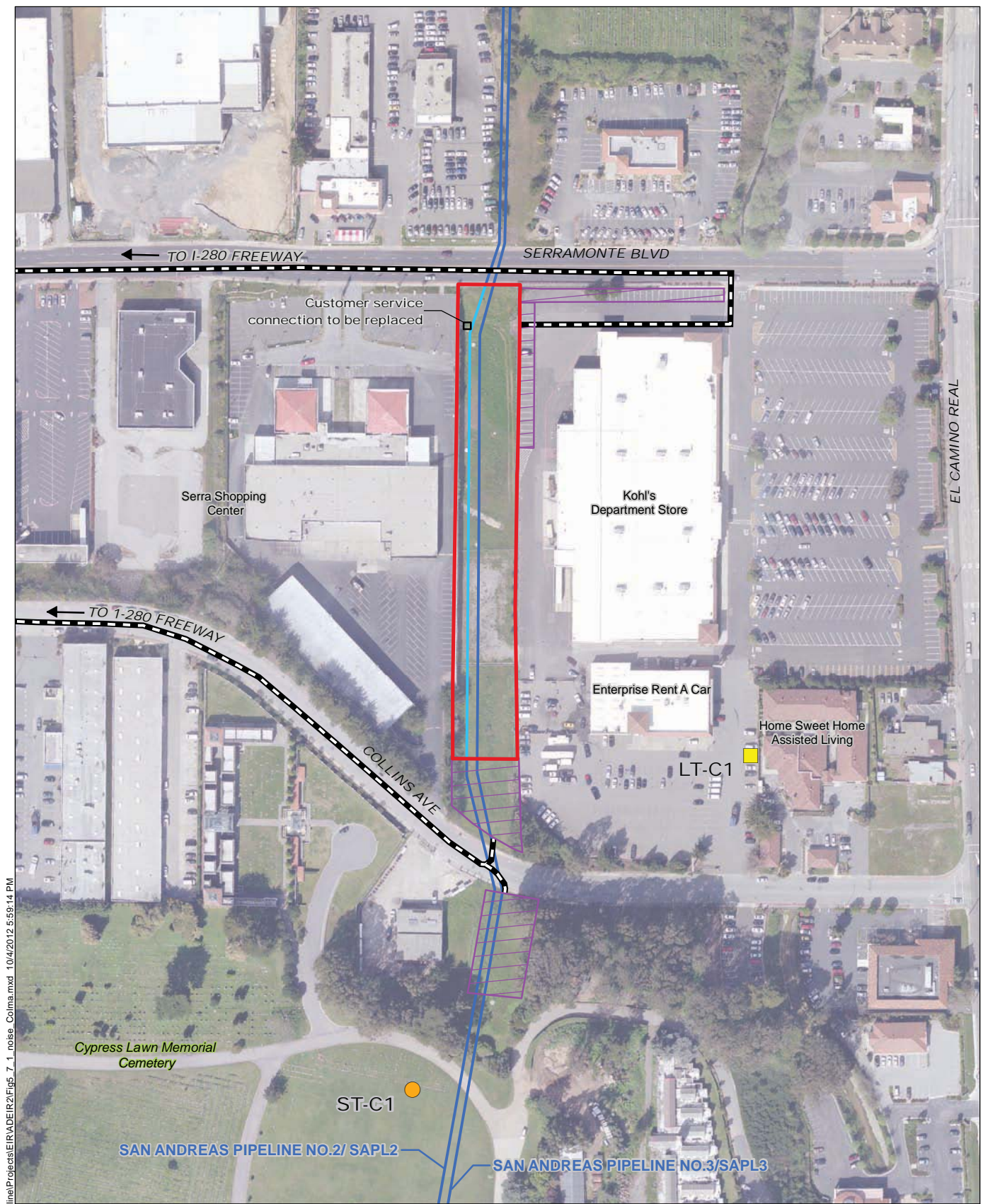
#### *San Bruno North Site*

The San Bruno North site is located between an adjacent single-family residential neighborhood and I-280, south of San Bruno Avenue West and the Bayhill Shopping Center. Traffic on I-280 is the dominant noise source, with local traffic on San Bruno Avenue West and aircraft flyovers also contributing to the noise field. The average daytime  $L_{eq}$  varies from 57 to 65 dBA.

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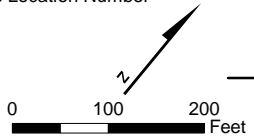
<sup>1</sup> The long-term measurements were 24 hours each. These measurements were supplemented with short-term spot-checks of 1 hour each.

<sup>2</sup> Throughout this analysis, daytime refers to the hours between 7 a.m. and 10 p.m., and nighttime refers to the hours between 10 p.m. and 7 a.m.



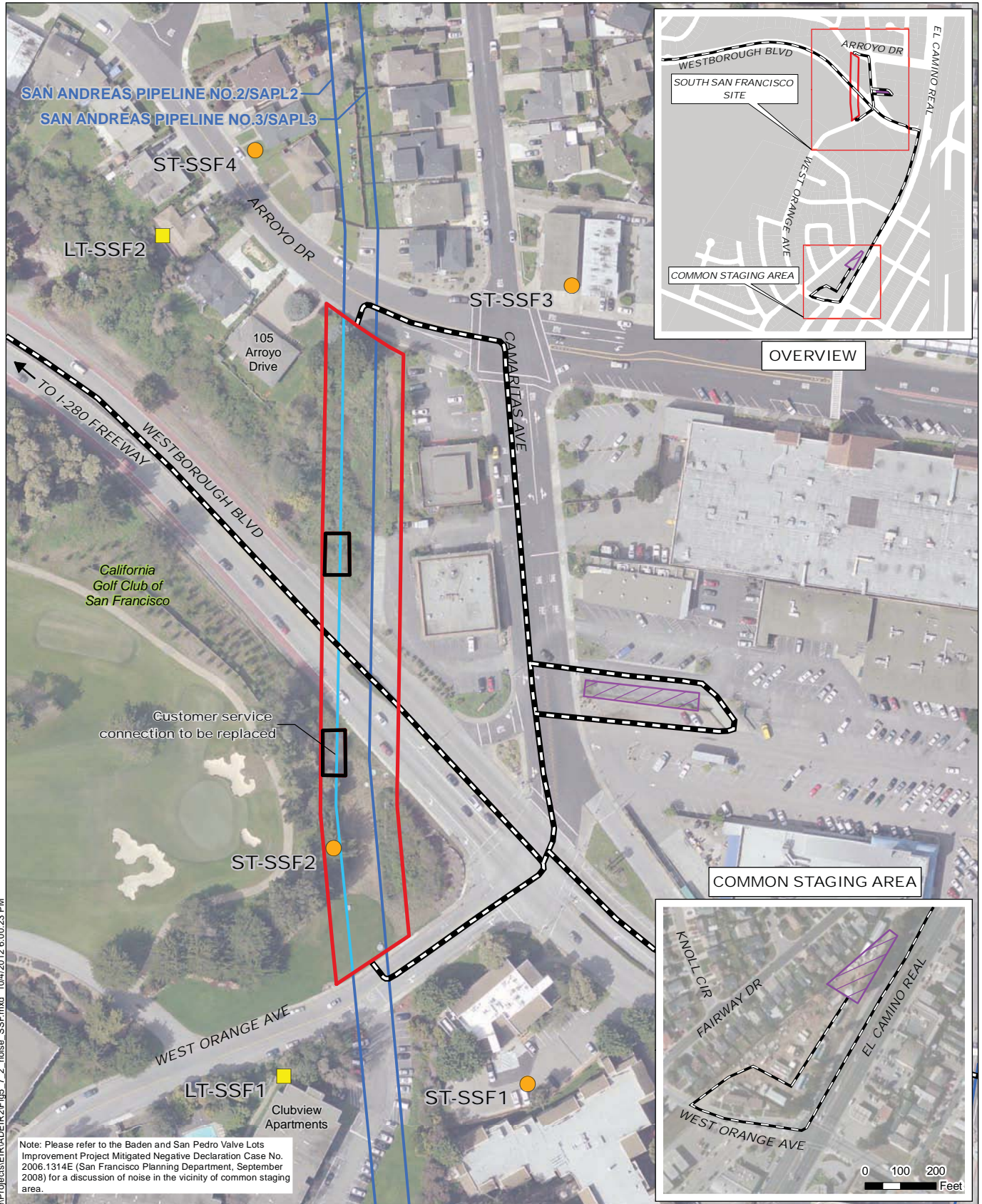
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 Source: SFPUC, 2011

- |   |                                    |
|---|------------------------------------|
| <b>Project Components</b>   | ● ST: Short-Term Noise Measurement |
| <span style="border: 2px solid red; display: inline-block; width: 15px; height: 10px;"></span> Construction Zone                      | ■ LT: Long-Term Noise Measurement  |
| <span style="border: 1px dashed purple; display: inline-block; width: 15px; height: 10px;"></span> Staging and Spoils Area            | C# : Denotes Location Number       |
| <span style="border-bottom: 1px dashed black; display: inline-block; width: 20px;"></span> Access Route                               |                                    |
| <span style="border-bottom: 2px solid blue; display: inline-block; width: 20px;"></span> SFPUC Water Transmission Line                |                                    |
| <span style="border-bottom: 2px solid cyan; display: inline-block; width: 20px;"></span> SFPUC Water Transmission Line to be Replaced |                                    |



**NOISE MEASUREMENT LOCATIONS**  
**COLMA SITE**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.7-1**



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 Source: SFPUC, 2011

**Project Components**

- Construction Zone
- Staging and Spoils Area
- Boring Pit
- Access Route
- SFPUC Water Transmission Line

- SFPUC Water Transmission Line to be Replaced
  - ST: Short-Term Noise Measurement
  - LT: Long-Term Noise Measurement
- SSF#: Denotes Location Number

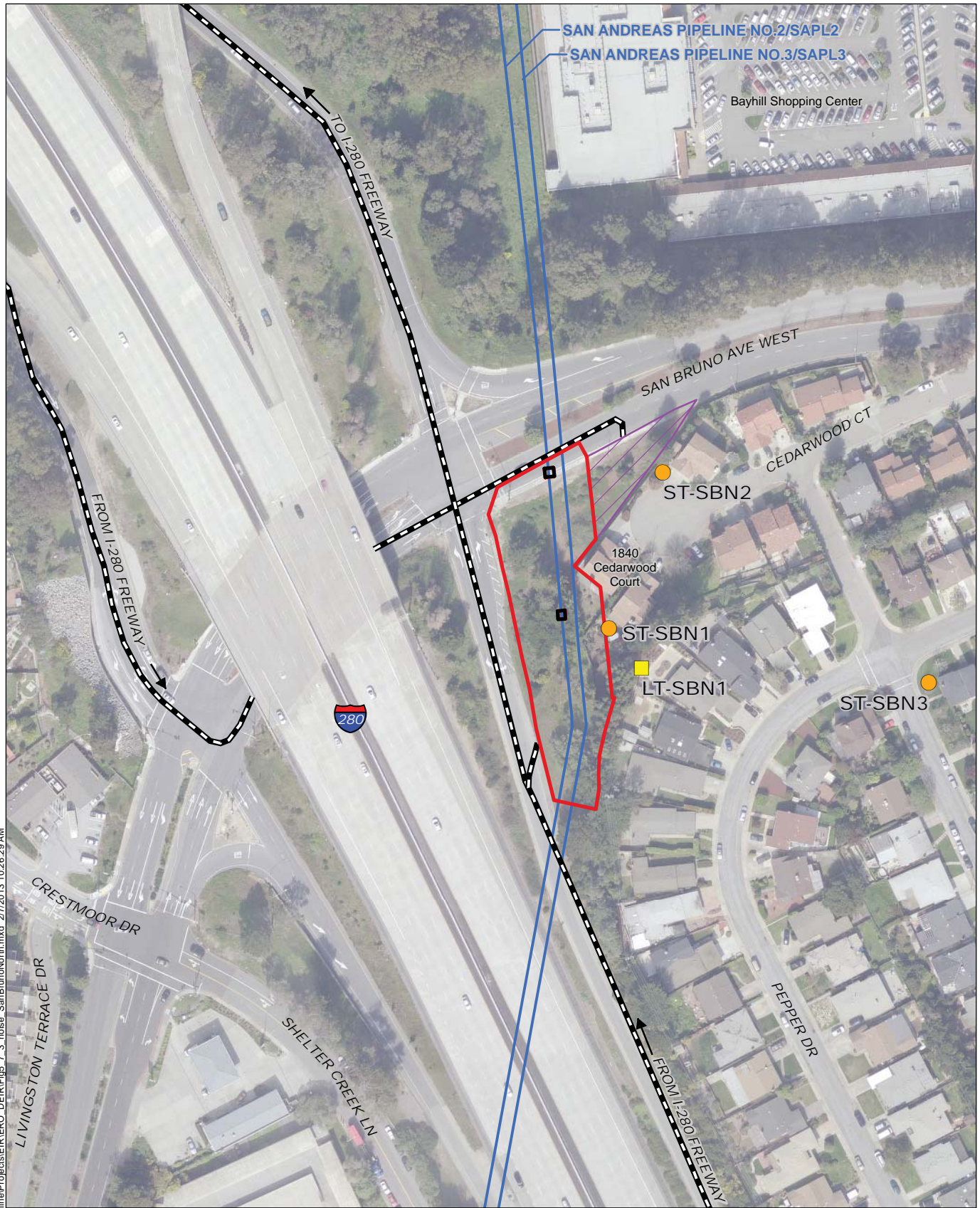


**NOISE MEASUREMENT LOCATIONS  
SOUTH SAN FRANCISCO SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.7-2**



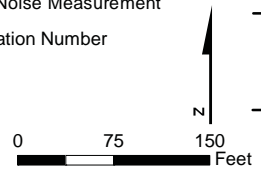


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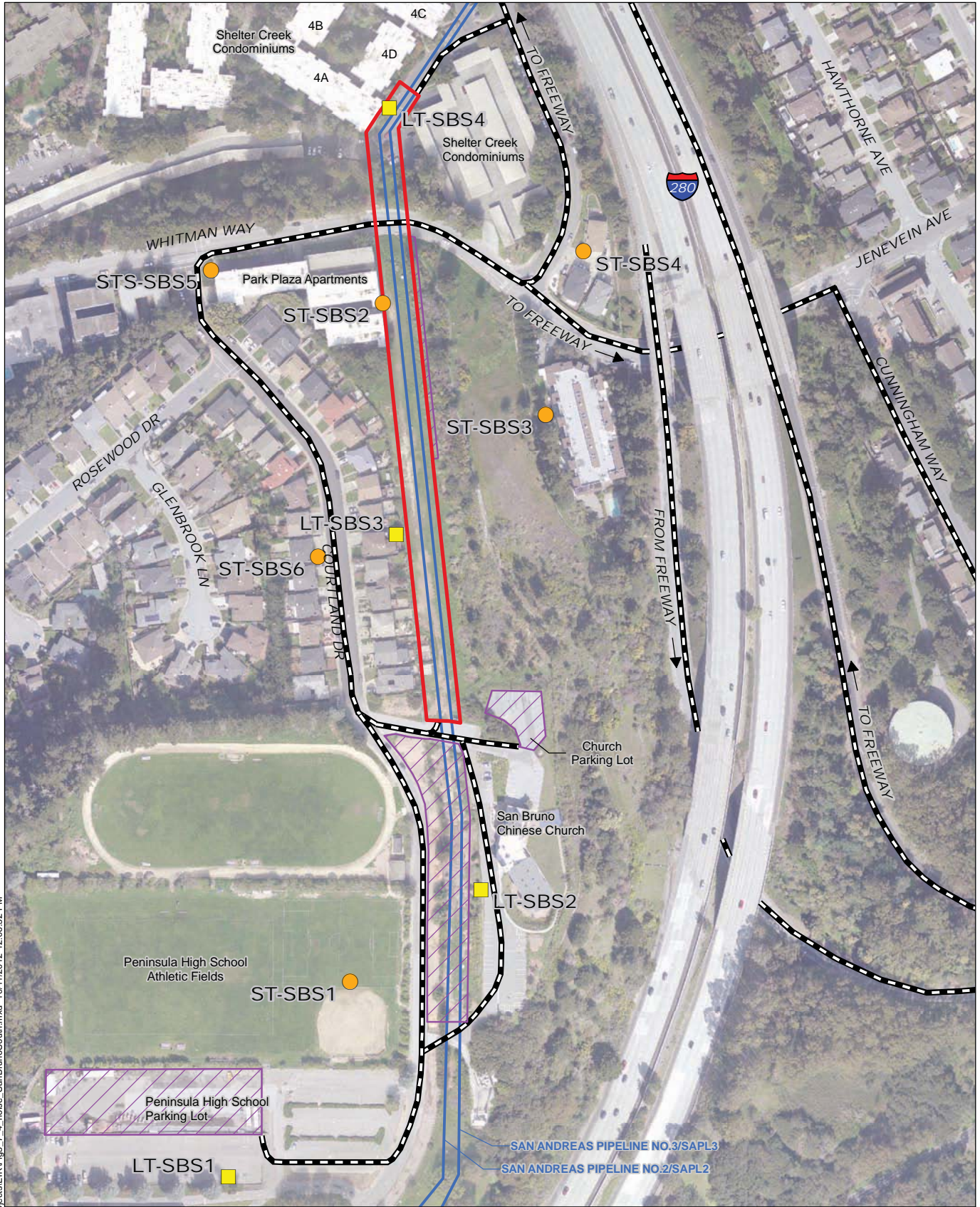
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|--|--|
| <b>Project Components</b>  | <span style="color: orange;">●</span> ST: Short-Term Noise Measurement |
| <span style="border: 2px solid red; display: inline-block; width: 20px; height: 10px;"></span> Construction Zone           | <span style="color: yellow;">■</span> LT: Long-Term Noise Measurement  |
| <span style="border: 2px dashed purple; display: inline-block; width: 20px; height: 10px;"></span> Staging and Spoils Area | SBN# : Denotes Location Number   |
| <span style="border: 2px solid black; display: inline-block; width: 20px; height: 10px;"></span> Access Portal             |  |
| <span style="border-bottom: 2px dashed black; display: inline-block; width: 20px;"></span> Access Route                    |  |
| <span style="border-bottom: 2px solid blue; display: inline-block; width: 20px;"></span> SFPUC Water Transmission Line     |  |

**NOISE MEASUREMENT LOCATIONS  
SAN BRUNO NORTH SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California



**FIGURE 5.7-3**



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- Project Components**
- Construction Zone
  - Access Route
  - SFPUC Water Transmission Line
  - ST: Short-Term Noise Measurement
  - LT: Long-Term Noise Measurement
  - SBS#: Denotes Location Number

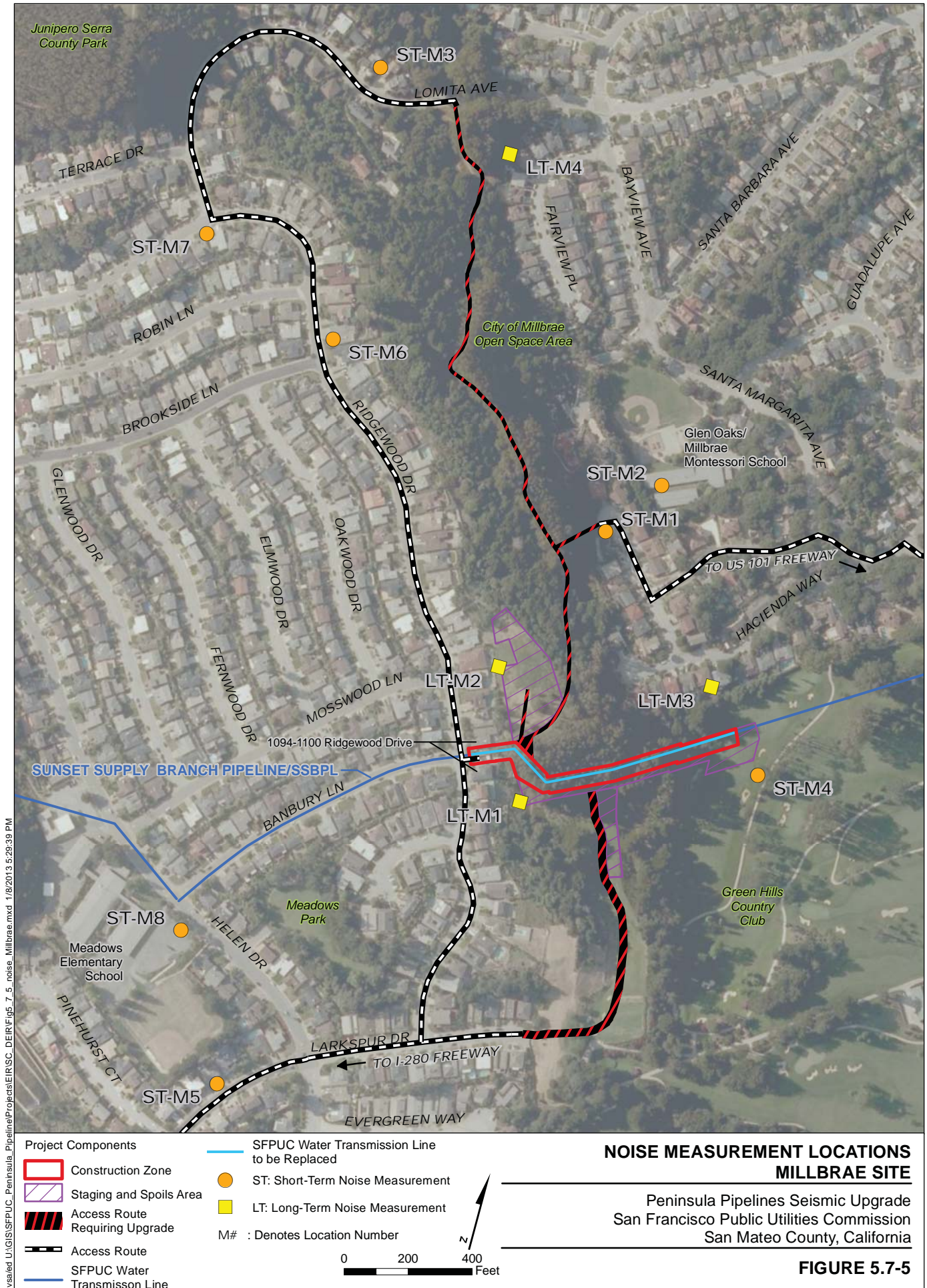
**NOISE MEASUREMENT LOCATIONS  
SAN BRUNO SOUTH SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

0 100 200 Feet

**FIGURE 5.7-4**

Source: SFPUC, 2011

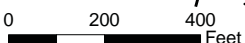


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 Sources: NAIP Aerial Imagery Summer 2010; SFPUC, 2011

**Project Components**

- Construction Zone
- Staging and Spoils Area
- Access Route Requiring Upgrade
- Access Route
- SFPUC Water Transmission Line

- SFPUC Water Transmission Line to be Replaced
- ST: Short-Term Noise Measurement
- LT: Long-Term Noise Measurement
- M# : Denotes Location Number



**NOISE MEASUREMENT LOCATIONS  
MILLBRAE SITE**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.7-5**

**Table 5.7-3  
Long-Term Measurements – Summary of Existing Noise Levels**

Location	Address	Nearby Project Component	Primary Noise Source	Noise Level (dBA)	
				Average Daytime $L_{eq}$	$L_{dn}$
<b>Colma Site</b>					
LT-C1	Home Sweet Home assisted living facility 205 Collins Avenue	Construction Zone	El Camino Real	55	61
<b>South San Francisco Site</b>					
LT-SSF1	Clubview Apartments 849 West Orange Avenue	Construction Zone	Westborough Boulevard	60	62
LT-SSF2	109 Arroyo Drive	Construction Zone	Westborough Boulevard	62	65
<b>San Bruno North Site</b>					
LT-SBN1	789 Pepper Drive	Construction Zone	I-280	65	66
<b>San Bruno South Site</b>					
LT-SBS1	Peninsula High School 300 Piedmont Avenue	Staging Area	I-280	53	55
LT-SBS2	San Bruno Chinese Church 250 Courtland Drive	Staging Area	I-280	55	59
LT-SBS3	326 Courtland Drive	Construction Zone	I-280	59	62
LT-SBS4	Shelter Creek Condominiums 701 Shelter Creek Lane	Construction Zone	I-280	62	62
<b>Millbrae Site</b>					
LT-M1	1120 Ridgewood Drive	Construction Zone	U.S. 101	52	55
LT-M2	1086 Ridgewood Drive	Staging Area	U.S. 101	57	56
LT-M3	877 Hacienda Way	Construction Zone	U.S. 101	52	55
LT-M4	18 Fairview Place	Access Route	U.S. 101	50	53
Source: Vibro-Acoustic Consultants (Appendix D).					
Notes:					
dBA = A-weighted sound level					
$L_{eq}$ = equivalent continuous noise level					
$L_{dn}$ = day-night average sound level					
LT = long-term noise measurement location					
LT-C# = denotes location number					

**Table 5.7-4  
Short-Term Measurements – Summary of Existing Noise Levels**

Location	Address	Nearby Project Component	Primary Noise Source	Noise Level (dBA)	
				Hourly Daytime L <sub>eq</sub>	Estimated L <sub>dn</sub>
<b>Colma Site</b>					
ST-C1	Cypress Lawn Memorial Cemetery 1370 El Camino Real	Staging Area	El Camino Real	54	59
<b>South San Francisco Site</b>					
ST-SSF1	Westborough Royale Assisted Living 89 Westborough Drive	Construction Zone	Westborough Drive	61	62
ST-SSF2	California Golf Club 844 West Orange Avenue	Construction Zone	Westborough Drive	59	61
ST-SSF3	82 to 90 Arroyo Drive	Access Route	Arroyo Drive and Camaritas Avenue	66	68
ST-SSF4	110 Arroyo Drive	Construction Zone	Arroyo Drive and I-280	61	64
<b>San Bruno North Site</b>					
ST-SBN1	1841 Cedarwood Court	Construction Zone	I-280	61	70
ST-SBN2	1820 Cedarwood Court	Staging Area	I-280	63	70
ST-SBN3	780 Cedar Avenue	Construction Zone	I-280	57	60
<b>San Bruno South Site</b>					
ST-SBS1	Peninsula High School Athletic Fields 300 Piedmont Avenue	Staging Area	I-280	54	57
ST-SBS2	Park Plaza Apartments 2081 Whitman Way	Construction Zone	I-280	60	64
ST-SBS3	Apartments at 2001 Jenevein Avenue	Construction Zone	I-280	55	57
ST-SBS4	20 Shelter Creek Lane	Access Route	I-280	65	68
ST-SBS5	Park Plaza Apartments 2081 Whitman Way	Access Route	Whitman Way and Courtland Drive	62	64
ST-SBS6	331 Courtland Drive	Access Route	I-280	58	61
<b>Millbrae Site</b>					
ST-M1	25 Bertocchi Lane	Access Route	U.S. 101	49	51
ST-M2	Montessori Schools 797 Santa Margarita Avenue	Construction Zone	U.S. 101	58	60
ST-M3	780 Lomita Avenue	Access Route	Lomita Avenue	63	65
ST-M4	Green Hills Country Club 500 Ludeman Lane	Construction Zone	Groundskeeping	48	51
ST-M5	916 Larkspur Drive	Access Route	Larkspur Drive	63	67
ST-M6	1206 Ridgewood Drive	Access Route	I-280 and U.S. 101	52	54
ST-M7	1235 Ridgewood Drive	Access Route	U.S. 101	54	55
ST-M8	Meadows Elementary School 1101 Helen Drive	Access Route	I-280	59	60
Source: Vibro-Acoustic Consultants (Appendix D).					
Notes:					
dBA = A-weighted decibel					
L <sub>eq</sub> = equivalent continuous noise level					
L <sub>dn</sub> = day-night average sound level					
ST = short-term noise measurement location					
ST-C# = denotes location number					

### ***San Bruno South Site***

The San Bruno South site is located east of Interstate 280 in a residential area in the San Bruno hills, in the vicinity of Shelter Creek Lane and Whitman Way. Traffic on I-280, Courtland Drive, and Whitman Way are the dominant noise sources, with aircraft flyovers also contributing to the noise field. The average daytime  $L_{eq}$  varies from 53 to 65 dBA.

### ***Millbrae Site***

The Millbrae site is located in a single-family residential neighborhood and extends through an open space area and golf course. Traffic on El Camino Real, U.S. 101, I-280, and local streets are the dominant noise sources, with aircraft flyovers also contributing to the noise field. The average daytime  $L_{eq}$  varies from 48 to 63 dBA.

### ***Common Staging Area***

The common staging area is located on the SFPUC's Baden Valve Lot between an adjacent single-family residential neighborhood and El Camino Real. The average daytime  $L_{eq}$  varies from 58 to 66 dBA at the western and southern boundaries of the Baden Valve Lot (SF Planning, 2008).

## **5.7.1.4 Sensitive Receptors**

Noise-sensitive land uses or receptors are typically defined as single- or multi-family residences, schools, daycare facilities, hospitals, churches, public libraries, or nursing homes. For this analysis, outdoor and recreational areas, such as parks and playgrounds, are also considered to be noise-sensitive receptors. Vibration-sensitive receptors would typically include single- or multi-family residences, historical or fragile structures, and advanced technology research or manufacturing facilities.

With the exception of the Colma site, which is located in a commercial area, the project sites are located in primarily residential areas, with several schools, a church, a cemetery, and recreational/outdoor areas in the vicinity. The sensitive receptors for each site are described below, with the closest receptors at each site summarized in Table 5.7-5.

### ***Colma Site***

As shown in Figure 5.7-1, sensitive receptors near the site include the Home Sweet Home assisted living facility (multi-unit residence) along Collins Avenue, and the Cypress Lawn Memorial Cemetery along El Camino Real. The cemetery holds burial services year round during daylight hours in its Memorial Park, which is located approximately 110 feet from the Colma site's southern staging area and 500 feet from the construction zone. The access routes to the site extend through primarily commercial areas.

### ***South San Francisco Site***

As shown in Figure 5.7-2, sensitive receptors near the site include single-family homes along Arroyo Drive, multi-family residences along West Orange Avenue and Westborough Boulevard,

**Table 5.7-5  
Nearest Distances Between Project Sites and Sensitive Receptors**

Project Site	Nearest Sensitive Receptor	Type of Receptor	Approximate Distance to Construction Activities <sup>1</sup> (feet)			
			Tree Removal	Pipeline Dewatering	Mobilization	Excavation and Restoration
Colma	Home Sweet Home assisted living facility, 205 Collins Avenue	Multi-unit residence	NA	NA	380	380
	Cypress Lawn Memorial Cemetery, 1370 El Camino Real	Cemetery	NA	NA	110	110
South San Francisco	105 Arroyo Drive	Single-family residence	30	NA	30	30
	Clubview Apartments, 849 West Orange Avenue	Multi-family residence	550	NA	125	125
	California Golf Club of San Francisco, 844 West Orange Avenue	Golf Course (recreational)	180	NA	30	30
San Bruno North	1840 Cedarwood Court	Single-family residence	NA	NA	15	15
San Bruno South	Park Plaza Apartments, 2081 Whitman Way	Multi-family residence	NA	55	10	10
	Shelter Creek Condominiums, 20 Shelter Creek Lane	Multi-family residence	NA	75	10	10
	Residences along Courtland Drive	Single-family residences	NA	315	10	10
	Peninsula High School, 300 Piedmont Avenue	School <sup>2</sup>	NA	1,830	150	150
	Peninsula High School 300 Piedmont Avenue	Athletic Fields (recreational) <sup>3</sup>	NA	950	40	40
	San Bruno Chinese Church, 250 Courtland Drive	Church	NA	1,050	30	30
Millbrae	1094/1100 Ridgewood Drive	Single-family residences	10	625	10	10
	Green Hills Country Club, 500 Ludeman Lane	Golf Course (recreational)	10	10	10	10
	Residences along Hacienda Way	Single-family residences	115	250	115	115
	Meadows Elementary School, 1101 Helen Drive	School	1,250	45	1,275	1,130
	Glen Oaks and Millbrae Montessori Schools, 797 Santa Margarita Avenue	School	750	825	615	750
	Residences along Helen Drive	Single-family residences	1,100	36	1,125	980
	Residences along Millwood Drive and Barcelona Drive	Single-family residences	1,800	40	1,800	1,800
Residences along Millwood Drive and Magnolia Avenue	Single-family residences	3,100	88	3,100	3,100	
Common Staging Area	Residences along Fairway Drive	Single-family residences	NA	NA	30	NA

Source: Vibro-Acoustic Consultants (Appendix D).

Notes:

<sup>1</sup> Construction activities described in Chapter 3, Project Description, include tree removal; pipeline dewatering (for shutdown, hydrostatic testing and disinfection); mobilization; shoring and excavation; pipeline removal and installation; intermittent dewatering; and backfill and restoration.

<sup>2</sup> The Peninsula High School receptor includes activities at Peninsula High School, including Crayon College (daycare) and Central Peninsula Church.

<sup>3</sup> The Peninsula High School athletic fields receptor includes activities sponsored by both Peninsula High School and San Bruno Community Services.

NA = not applicable

and the California Golf Club of San Francisco along West Orange Avenue. The nearest sensitive receptor is the single-family residence at 105 Arroyo Drive, located 30 feet from the project site. The construction zone and the southern boring pit at the South San Francisco site would be located near the California Golf Club of San Francisco. The golf course typically operates year round; operating hours vary with daylight. The access routes to the site would extend past commercial properties and sensitive residential receptors, such as single-family homes on Arroyo Drive and multi-family residential units on West Orange Avenue.

### ***San Bruno North Site***

As shown in Figure 5.7-3, sensitive receptors near the site include single-family homes along Cedarwood Court and Pepper Drive. The nearest sensitive receptor is the single-family residence at 1840 Cedarwood Drive, located 15 feet from the project site. The access routes would extend past sensitive receptors, including single-family homes with frontage along Pepper Drive and Cedarwood Court.

### ***San Bruno South Site***

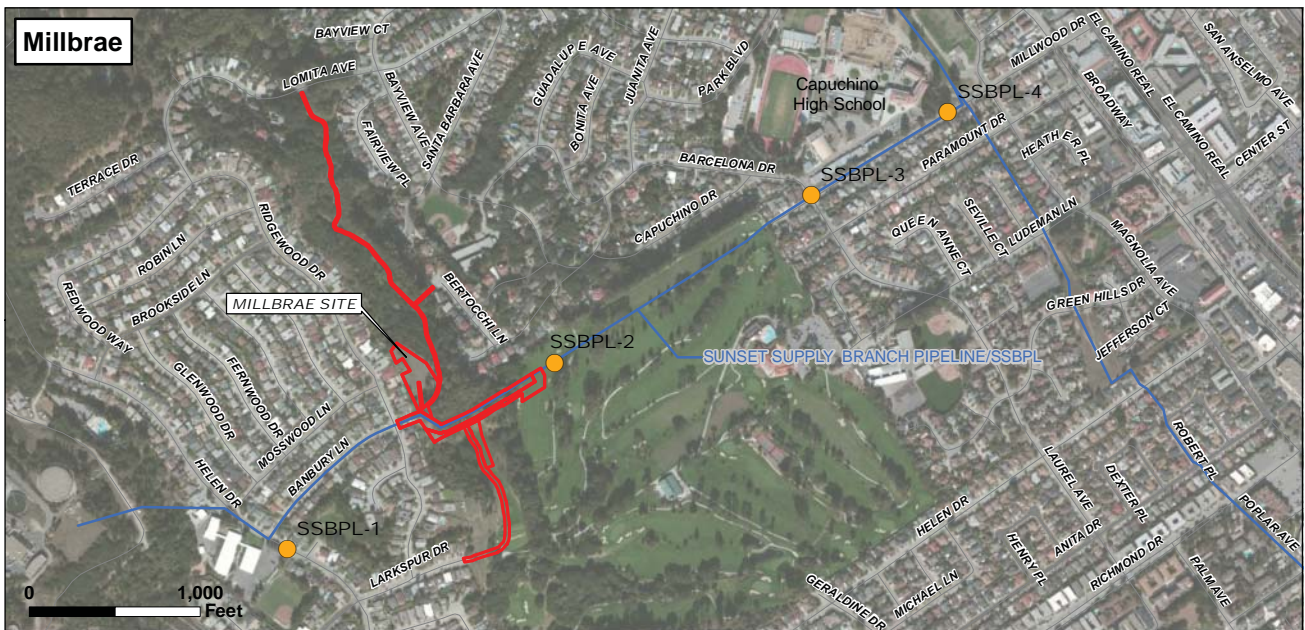
As shown in Figures 5.7-4 and 5.7-6, sensitive receptors near the site include the Shelter Creek Condominiums, single-family homes, and the San Bruno Chinese Church along Courtland Drive; apartment buildings at 2001 Jenevein Avenue and 2081 Whitman Way (Park Plaza Apartments); and the Peninsula High School along Piedmont Avenue.<sup>3</sup> The nearest sensitive receptors are the Shelter Creek Condominiums, the Park Plaza Apartments, and single-family residences along Courtland Drive, all of which are located 10 feet from the project site. The church is located approximately 30 feet from the San Bruno South staging area and 190 feet from the construction zone. In addition to worship services on Sundays, the church holds educational classes on Wednesdays, Fridays, and Saturdays during daytime hours from late August to early June. The school is located approximately 150 feet from the San Bruno South staging area and 1,000 feet from the construction zone and operates from 8:20 a.m. until 2:44 p.m. from late August to early June. The school's athletic fields are used daily by the high school and the community. Access routes to the site would extend past sensitive residential receptors, including single-family homes and multi-family residential properties.

### ***Millbrae Site***

As shown in Figures 5.7-5 and 5.7-6, sensitive receptors near the site include single-family homes along Ridgewood Drive, Banbury Lane, Hacienda Way, Bertocchi Lane, Helen Drive, Millwood Drive, Barcelona Drive, and Magnolia Avenue; Meadows Elementary School at 1101 Helen Drive; the Glen Oaks and Millbrae Montessori Schools at 797 Santa Margarita Avenue; Capuchino High School at 1501 Magnolia Avenue; and the Green Hills Country Club. The nearest sensitive receptors are the single-family residences at 1094 and 1100 Ridgewood Drive, both of which are located 10 feet from the project site. Meadows Elementary School is located approximately

<sup>3</sup> Other uses at the Peninsula High School, in addition to the continuation high school, include Crayon College (daycare), Central Peninsula Church, and San Bruno Community Services sports activities on the athletic fields. The analyses applied to the Peninsula High School building and athletic fields receptors are inclusive of these uses.





### 24-Hour Dewatering Locations

SAPL2-1	Whitman Way	SSBPL-1	Helen Drive and Banbury Lane
SAPL3-1 & SAPL3-2	Shelter Creek Lane	SSBPL-2	5th green on the Green Hills Country Club
		SSBPL-3	Millwood Drive and Barcelona Drive
		SSBPL-4	Millwood Drive and Magnolia Avenue (at the SFPUC's Capuchino Valve Lot)

- Project Site
- SFPUC Water Transmission Line
- 24-Hour Dewatering Locations



### 24-HOUR DEWATERING LOCATIONS

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.7-6**

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Source: SFPUC 2011; ESRI aerial imagery 2013.

1,250 feet from the Millbrae site staging area and 1,130 feet from the construction zone, and operates from 8:30 a.m. until 2:45 p.m. from late August to early June. The Millbrae Montessori School and the Glen Oaks Montessori School buildings are located approximately 615 feet from the Millbrae site staging area and 750 feet from the construction zone, and operate from 7:30 a.m. until 6 p.m. nearly year round. Portions of the Millbrae site staging area and construction zone are located on the Green Hills Country Club golf course, which typically operates year round during daylight hours. The access routes would extend past sensitive residential receptors, including single-family homes along Larkspur Drive, Ridgewood Drive, Lomita Avenue, Bertocchi Lane, and Capuchino Drive.

### *Common Staging Area*

Sensitive receptors near the common staging area at the Baden Valve Lot include single-family homes within approximately 30 feet of the western boundary of the staging area (SF Planning, 2008).

## **5.7.2 Regulatory Framework**

### **5.7.2.1 Federal**

There are no federal noise regulations that apply directly to the project. However, federal agencies have developed guidance related to noise and vibration that is relevant to the project. The U.S. Environmental Protection Agency (U.S. EPA) establishes that for indoor environments, the highest noise level identified for 100 percent speech intelligibility is 45 dBA. For outdoor environments, the highest noise level that permits normal conversation at a distance of 2 meters with 95 percent sentence intelligibility is 66 dBA (U.S. EPA, 1974).

### **5.7.2.2 State**

The California Vehicle Code (Section 27204) limits the noise generated by all on-road trucks manufactured since 1987 to 80 dBA when measured at 50 feet from the line of travel for any operating condition.

The California Occupational Safety and Health Administration (Cal/OSHA) requires backup warning alarms that activate immediately upon reverse movement on all vehicles used to haul dirt with a capacity of 2.5 cubic yards or more (Title 8, California Code of Regulations). Backup alarms must be audible above the surrounding ambient noise level at a distance of 200 feet.

The California Department of Transportation (Caltrans) has published a guidance manual to evaluate the potential vibration impacts from construction activities (Caltrans, 2004). These guidelines are derived from several sources over decades of research and field studies. Table 5.7-6 summarizes the Caltrans guidelines applicable to structures; the criteria are given in maximum allowable PPV in the vertical direction. Table 5.7-7 summarizes the Caltrans guidelines applicable to human disturbance.

### **5.7.2.3 Local**

At the local level, noise is addressed through implementation of General Plan policies, including noise and land use compatibility guidelines, and through enforcement of noise ordinances. General Plan

**Table 5.7-6  
Caltrans Guidelines for Vibration Damage Potential Threshold Criteria**

Structure and Condition	Maximum PPV (inches/sec)	
	Transient	Continuous/ Intermittent
Ruins, ancient monuments, extremely fragile historical structures	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
Source: Caltrans, 2004. Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/Intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. PPV = peak particle velocity		

**Table 5.7-7  
Caltrans Guidelines for Vibration Annoyance Potential Criteria**

Human Response	Maximum PPV (inches/sec)	
	Transient	Continuous/ Intermittent
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4
Source: Caltrans, 2004. Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/Intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. PPV = peak particle velocity		

policies provide guidelines for determining whether a noise environment is appropriate for a proposed or planned land use. Noise ordinances regulate sources such as mechanical equipment and amplified sounds as well as prescribe hours of heavy equipment operation such as for construction. The impact assessment presented below uses local ordinance noise limits to determine the significance of project noise impacts.

The following local noise standards are indicated for their applicability or use as guidance to determine significance under CEQA. For significance thresholds, the CEQA Guidelines, Appendix G, take into account the local general plan and noise ordinance standards. Therefore, for this analysis, a noise impact could be considered significant if project-related noise levels exceed the standards established in local noise ordinances.

The proposed project construction zones are located on the SFPUC right-of-way within the Town of Colma, unincorporated San Mateo County, and cities of South San Francisco, San Bruno, and Millbrae. Each jurisdiction has developed noise ordinances to regulate noise exposure at noise-sensitive land uses, which are summarized below.

### *San Mateo County*

The San Mateo County Ordinance Code (San Mateo County, 1990) exempts permitted construction activities on weekdays during the daytime hours of 7 a.m. to 6 p.m., and on Saturdays during the daytime hours of 9 a.m. to 5 p.m. On Sundays, holidays, and outside of these hours, construction work is subject to the noise limits shown in Table 5.7-8 for single and multi-family residential, schools, churches, and public libraries. There are no published limits for commercial or outdoor recreational land uses. The ordinance also states that whenever, for the good of the public, a government agency, public utility, or private utility determines a project must be done before 7:00 a.m., or after 6:00 p.m., or on weekends, and so states in its contract, change order(s), or bid documents, said work shall be exempted from this chapter.

**Table 5.7-8**  
**San Mateo County Exterior Noise Standards (dBA)<sup>1</sup>**

Category	Maximum Number of Minutes in any 1-Hour Period (dBA) <sup>2,3</sup>	Daytime Hours (7 a.m. to 10 p.m.) (dBA)	Nighttime Hours (10 p.m. to 7 a.m.) (dBA)
1	30	55	50
2	15	60	55
3	5	65	60
4	1	70	65
5	0	75	70

Source: San Mateo County, 1990.

Notes:

- <sup>1</sup> These standards apply to single or multi-family residential, schools, hospitals, churches, and public libraries.
- <sup>2</sup> In the event the measured background noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in 5-dBA increments so as to encompass the background noise level.
- <sup>3</sup> Each of the noise level standards specified above shall be reduced by 5 dBA for simple tone noises, consisting primarily of speech or music, or for recurring or intermittent impulsive noises.

dBA = A-weighted decibels

### *Town of Colma*

The Town of Colma Municipal Code states that permitted construction activities within any residential zone, including Planned Developments that include residential uses, or within a radius of 500 feet therefrom, are allowed on weekdays during the daytime hours of 7 a.m. to 8 p.m., and on weekends and holidays during the daytime hours of 10 a.m. to 6 p.m., if each piece of construction equipment is limited to a noise level of 85 dBA at a distance of 25 feet (Town of Colma, 2010). Outside of these hours, permitted construction activities are allowed if each piece of construction equipment is limited to a noise level of 60 dBA at a distance of 25 feet. The code also states that construction hours for projects occurring outside of residential zoning districts will be determined by the building official on a case-by-case basis.

### *City of South San Francisco*

The City of South San Francisco Municipal Code states that permitted construction activities are allowed weekdays during the daytime hours of 8 a.m. to 8 p.m.; on Saturdays during the daytime hours of 9 a.m. to 8 p.m.; and on Sundays and holidays during the daytime hours of 10 a.m. to 6 p.m., if the two following requirements are met: (1) each piece of construction equipment is limited to a noise level of 90 dBA at a distance of 25 feet; and (2) the noise level at any point outside the project boundary is limited to 90 dBA. Outside of these hours, noise from construction activities is limited to 60 dBA during daytime hours (7 a.m. to 10 p.m.) and 50 dBA during nighttime hours (10 p.m. to 7 a.m.) at single-family residential receptors; and 60 dBA during daytime hours (7 a.m. to 10 p.m.) and 55 dBA during nighttime hours (10 p.m. to 7 a.m.) at multi-family residential receptors (City of South San Francisco, 1990). Utility and street repair work is exempt from the noise ordinance (Section 8.32.050 [c]) (Kalkin, 2013).

### *City of San Bruno*

The City of San Bruno Municipal Code limits noise from construction activities to 85 dBA at a distance of 100 feet during the daytime hours of 7 a.m. to 10 p.m. During the nighttime hours of 10 p.m. to 7 a.m., noise from construction activities is limited to 60 dBA at a distance of 100 feet (City of San Bruno, 1998).

### *City of Millbrae*

The City of Millbrae Municipal Code limits construction activities to the daytime hours as follows: 7:30 a.m. to 7 p.m. Monday through Friday; 8 a.m. to 6 p.m. on Saturdays; and 9 a.m. to 6 p.m. on Sundays and holidays (City of Millbrae, 2011). The municipal code does not contain specific noise limits for construction during these hours.

## **5.7.3 Impacts and Mitigation Measures**

### **5.7.3.1 Significance Criteria**

The City and County of San Francisco 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;

- 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;
- Result in exposure of persons to generation of excessive groundborne vibration or groundborne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within 2 miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels;
- For a project located in the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels; or
- Be substantially affected by existing noise levels.

### 5.7.3.2 Approach to Analysis

Due to the nature of the proposed project, there would be no project impacts related to the following significance criteria. Therefore, an impact discussion is not provided for these topics for the reasons described below.

PPSU project operations, and in certain cases project construction, would have no impacts related to the following significance criteria:

- **Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance.** After completion of construction activities, operation and maintenance of the proposed project would not introduce new sources of noise. Future operations and maintenance would be the same as existing operations and maintenance activities and would continue to entail yearly visual inspections. Therefore, this significance criterion is not applicable to project operations, but is discussed below under Impact NO-3 as it applies to project construction activities.
- **Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.** Groundborne noise occurs when groundborne vibration causes the ground surface and structures to radiate audible acoustic energy. Groundborne noise is not a concern for the PPSU project because the airborne noise from the equipment would dominate any groundborne noise. After completion of construction activities, operation and maintenance of San Andreas Pipeline 2 (SAPL2), San Andreas Pipeline 3 (SAPL3), and Sunset Supply Branch Pipeline (SSBPL) would not introduce new sources of noise or vibration. Future operations and maintenance would be the same as existing operations and maintenance activities, and would continue to entail yearly visual inspections. No new sources of noise or vibration would be introduced during operations; therefore, project operations would not generate excessive groundborne noise or vibration. As a result, this significance criterion, as it relates to groundborne noise levels, is not applicable to project construction or operations. Additionally, this criterion is not applicable to operations-related groundborne vibration levels and is discussed below under Impact NO-4 only as it applies to project construction activities.

Both PPSU project construction and operations would have no impacts related to the following significance criteria:

- **Result in a substantial permanent increase in ambient noise levels.** As described above, project operations would not introduce new sources of noise or vibration. Therefore, this significance criterion related to a permanent increase in ambient noise levels is not applicable to the proposed project and is not considered further in this analysis.
- **Be located within 2 miles of a public airport or within an airport land use plan area and expose people to excessive noise levels.** The closest public airport is San Francisco International Airport (SFO), which is located approximately 1 mile from the Millbrae site (the closest project site to SFO) and approximately 4 miles from the Colma site (the farthest site from SFO) (see Figure 3-1 in Chapter 3, Project Description). However, the project as proposed would not introduce any new land uses where people would reside or work within an airport land use plan area. No impact to temporary construction workers would result, because the project sites are outside of the SFO CNEL 65-dBA contour. Additionally, neither construction nor operation of the proposed project would be adversely affected by existing noise levels. Therefore, this significance criterion is not applicable to the proposed project and is not analyzed further.
- **Be located in the vicinity of a private airstrip and expose people to excessive noise levels.** There are no private airstrips in the project vicinity. The closest private airstrips are in San Francisco and in San Carlos, located approximately 7.5 miles north and 11 miles south of the nearest PPSU project site, respectively. Therefore, the PPSU project would not result in the exposure of workers to excessive airport-related noise levels. The significance criterion related to noise levels near private airstrips is not applicable to the PPSU project and no further analysis is provided.
- **Be substantially affected by existing noise levels.** Since the PPSU project is not a noise-sensitive land use, this significance criterion related to whether the project would be substantially affected by existing noise levels is not applicable and is not analyzed further.

The noise impact assessment evaluates short-term (temporary) impacts associated with construction of project facilities. The majority of construction activities would occur during daytime hours, except for limited nighttime construction at the San Bruno North site and limited nighttime pipeline dewatering activities. For construction noise, the potential for impacts is assessed by considering several factors, including the proximity of construction-related noise sources to sensitive receptors, typical noise levels generated by construction equipment, the potential for construction noise levels to interfere with activities, the duration that sensitive receptors would be affected, and whether proposed activities would occur outside the construction time limits established in local noise ordinances.

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 additional indicator that nighttime pipeline dewatering noise could interfere with nighttime (10 p.m. to 7 a.m.) activities would be sleep interference.

This analysis uses the following criteria to define potential “substantial” noise impacts:

- **Speech Interference.** Speech interference is an indicator of impact on typical daytime and evening activities. 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 adjacent 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 (U.S. EPA, 1974). This noise reduction could be maintained only on a temporary basis in some cases, since 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  $L_{eq}$  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. For this analysis, a significant noise impact would occur if exterior noise levels remained above the 70-dBA  $L_{eq}$  speech interference threshold for longer than 2 weeks.

For outdoor land uses, noise levels above 66 dBA<sup>4</sup>  $L_{eq}$  are considered to be significant, because there are no building attenuation effects, and speech interference can therefore occur at lower noise levels. However, because visitors to the cemetery and users of playgrounds, athletic fields, and golf courses are transitory users and only use these outdoor areas for a limited time, they would be exposed to elevated noise levels for a short period of time. This exposure is considered to be less than significant. On the other hand, some outdoor activities in the project vicinity, such as burial services at the cemetery, are considered to be inherently sensitive uses despite the limited duration of exposure to elevated noise levels; therefore, these impacts would be considered to be significant.

- **Sleep Interference.** Based on available sleep criteria data, an interior nighttime level of 35 dBA is considered acceptable (U.S. EPA, 1974). Assuming a 25-dBA reduction with the windows closed, an exterior noise level of 60 dBA  $L_{eq}$  at sensitive receptors would maintain an acceptable interior noise environment of 35 dBA. Given the local climate conditions (cool evenings) and expected short duration of dewatering activities, it is reasonable to anticipate that windows would be closed during the nighttime hours; therefore, the exterior sleep interference threshold of 60 dBA  $L_{eq}$  is applied for this analysis.

This noise impact assessment estimates noise levels associated with proposed project construction. It also compares daytime construction noise levels at sensitive receptors with the speech interference threshold; and nighttime construction and pipeline dewatering noise levels at sensitive receptors with the sleep interference threshold.

To address the CEQA significance criterion regarding "noise levels in excess of standards established in the local noise ordinance," this Environmental Impact Report considers the standards in San Mateo County, Town of Colma, and cities of South San Francisco, San Bruno, and Millbrae Noise Ordinances. For this analysis, a noise impact could be considered significant if project-related noise levels exceeded the established construction hours or noise level standards of these jurisdictions.

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<sup>4</sup> As noted previously, for outdoor environments, the highest noise level that permits normal conversation at a distance of 2 meters with 95 percent sentence intelligibility is 66 dBA (U.S. EPA, 1974).



Project-related excavation and construction activities can result in groundborne vibration that could disturb nearby sensitive receptors, cause damage to buildings and structures, or cause damage to buried facilities such as pipelines. This assessment evaluates whether project-related construction activities would result in “excessive groundborne vibration” based on the thresholds of significance given below. CEQA significance thresholds for vibration are based on guidelines issued by Caltrans, which provide guidance for general construction projects as well as transportation projects (Caltrans, 2004); the applicable city ordinances do not address groundborne vibration.

- **Damage Potential Thresholds for Structures (0.3~0.5 in/sec PPV).** To assess the potential for construction-related vibration to cause threshold<sup>5</sup> damage to nearby structures, this analysis applies a 0.3 in/sec PPV threshold for continuous vibration sources (impact and vibratory pile drivers, vibratory compactors/rollers) and a 0.5 in/sec PPV threshold for transient vibration sources (blasting, ball drop). These thresholds are based on the Caltrans “older residential building” category<sup>6</sup> (Caltrans, 2004).
- **Nighttime Annoyance Potential Thresholds (0.01~0.04 in/sec PPV).** To assess the potential for construction-related vibration to cause disturbance or annoyance to residences, this analysis applies a 0.01 in/sec PPV threshold for continuous vibration sources (impact and vibratory pile drivers, vibratory compactors/rollers), and a 0.04 in/sec PPV threshold for transient vibration sources (blasting, ball drop) during the nighttime hours (10 p.m. to 7 a.m.). These thresholds are based on the Caltrans “barely perceptible” category (Caltrans, 2004). Consideration is given to the potentially affected use in determining significance. Excessive vibration at a residence would be a significant impact, whereas excessive vibration at an outdoor area serving as a transition area or with physical activity would not be considered significant. For this analysis, a significant vibration impact would occur if vibration levels exceeded the nighttime annoyance thresholds during nighttime hours.
- **Damage Potential Threshold for Buried Facilities (4.0 in/sec PPV).**<sup>7</sup> To assess the potential for construction-related vibration to cause damage to buried facilities such as pipelines, this analysis applies a 4.0 in/sec PPV damage threshold.

The impact analysis presented below estimates vibration levels at nearby structures and sensitive receptors based on the vibration source and setback distance. The estimated vibration levels are then compared to the thresholds described above to determine the potential for significant vibration impacts to occur.

The noise and vibration significance thresholds are summarized in Table 5.7-9.

<sup>5</sup> 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.

<sup>6</sup> As many of the residences near the PPSU construction zones were constructed in the early 1960s and have stucco facades at the exterior, the more conservative “older residential building” category is used. There are no historic, non-engineered structures adjacent to the PPSU construction zones; therefore, the “historic and some old buildings” category is not applicable to this project.

<sup>7</sup> Based on studies by the American Association of State Highway and Transportation Officials (AASHTO), vibration measured at ground level is much greater than the vibration measured at the buried pipelines. As a result, surface vibration measurements overestimate the vibration levels present at buried utilities. At least one major utility has established a criterion of 4.0 inch/sec PPV over its fiber-optic cables. Furthermore, a restrained monolithic concrete block (such as a pipeline encased in concrete) can experience 10.0 inch/sec PPV before cracking occurs (AASHTO, 2009). Therefore, buried utilities are more resistant to damage than even the strongest building structures and more relaxed criteria are appropriate.

**Table 5.7-9  
Summary of Noise and Vibration Significance Thresholds**

<b>Significance Threshold</b>	<b>Noise</b>	<b>Vibration</b>
Speech Interference	70 dBA Leq at exterior of sensitive receptors 66 dBA Leq at exterior use areas	NA
Sleep Interference	60 dBA Leq at exterior of sensitive receptors	NA
San Mateo County Noise Ordinance	Monday-Friday (7 a.m. to 6 p.m.), Saturdays (9 a.m. to 5 p.m.): no limit on construction noise Outside of these hours: no limit on construction noise for outdoor recreational areas	NA
Town of Colma Noise Ordinance	Within residential zones, including Planned Developments that include residential uses, or within a radius of 500 feet therefrom: Monday-Friday (7 a.m. to 8 p.m.), Weekends/Holidays (10 a.m. to 6 p.m.); each piece of equipment limited to 85 dBA at 25 feet Outside of these hours: each piece of equipment limited to 60 dBA at 25 feet Construction hours within all nonresidential zoning districts are assigned on a project-by-project basis by the Building Official	NA
City of South San Francisco Noise Ordinance	Monday-Friday (8 a.m. to 8 p.m.), Saturdays (9 a.m. to 8 p.m.), Sundays/Holidays (10 a.m. to 6 p.m.): each piece of equipment limited to 90 dBA at 25 feet; total construction noise at project boundary is limited to 90 dBA Outside of these hours: total construction noise at single-family residential receptors is 60 dBA during daytime hours (7 a.m. to 10 p.m.) and 50 dBA during nighttime hours (10 p.m. to 7 a.m.); total construction noise at multi-family residential receptors is 60 dBA during daytime hours (7 a.m. to 10 p.m.) and 55 dBA during nighttime hours (10 p.m. to 7 a.m.) Utility and street repair work is exempt from ordinance	NA
City of San Bruno Noise Ordinance	Daytime hours (7 a.m. to 10 p.m.): noise from construction activities limited to 85 dBA at 100 feet Nighttime hours (10 p.m. to 7 a.m.): noise from construction activities limited to 60 dBA at 100 feet	NA
City of Millbrae Noise Ordinance	Monday-Friday (7:30 a.m. to 7 p.m.), Saturdays (8 a.m. to 6 p.m.), Sundays/Holidays (9 a.m. to 6 p.m.): no limit on construction noise Outside of these hours: construction is not permitted	NA
Potential Damage	NA	0.3 inch/sec PPV for continuous sources 0.5 inch/sec PPV for transient sources
Nighttime Annoyance	NA	0.01 inch/sec PPV for continuous sources 0.04 inch/sec PPV for transient sources
Potential Damage to Buried Facilities	NA	4.0 inch/sec PPV
<p>Source: Caltrans, 2004; City of Millbrae, 2011; City of San Bruno, 1998; City of South San Francisco, 1990; San Mateo County, 1990; Town of Colma, 2010; U.S. EPA, 1974.</p> <p>Notes:</p> <p>For the purposes of this analysis, exceedances of the speech interference threshold of 2 weeks or less are considered less than significant. Exceedances of this threshold for longer than 2 weeks, or exceedances of the damage potential thresholds for any duration are considered significant.</p> <p>dBA = A-weighted decibels NA = Not Applicable PPV = peak particle velocity</p>		

### 5.7.3.3 Summary of Impacts

The proposed project's noise and vibration impacts and the resulting significance determinations are summarized in Table 5.7-10.

**Table 5.7-10**  
**Summary of Impacts – Noise and Vibration**

Impacts	Significance Determination					
	Colma	South San Francisco	San Bruno North	San Bruno South	Millbrae	Common Staging Area
<b>Impact NO-1:</b> Daytime construction activities could result in substantial temporary increases in ambient daytime noise levels that could interfere with nearby land uses.	LSM	SUM	SUM	SUM	SUM	LS
<b>Impact NO-2:</b> Nighttime construction and dewatering activities could result in substantial temporary increases in ambient nighttime noise levels that could interfere with nearby land uses.	NI	NI	SUM	LSM	LSM	NI
<b>Impact NO-3:</b> Construction activities could result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance.	LSM	NI	SUM	NI	SUM	LSM
<b>Impact NO-4:</b> Construction activities could result in exposure of persons or structures to generation of excessive groundborne vibration	LS	LSM	SUM	LSM	LSM	LS
<b>Impact C-NO:</b> Construction of the proposed project could result in a cumulatively considerable contribution to cumulative noise and vibration impacts.	LSM	LS	NI	NI	LS	LS
Notes: NI = No Impact LS = Less-than-Significant Impact, no mitigation required LSM = Less-than-Significant impact with Mitigation SUM = Significant and Unavoidable impact, with implementation of feasible Mitigation						

### 5.7.3.4 Construction Impacts and Mitigation Measures

***Impact NO-1: Daytime construction activities could result in substantial temporary increases in ambient daytime noise levels that could interfere with nearby land uses. (Significant and Unavoidable with Mitigation)***

Project-related construction activities would result in temporary noise increases at sensitive receptors located adjacent to or near the project sites. Construction noise levels would vary at any given receptor depending on the construction activity, equipment type, duration of use, distance between the source and receptor, and the presence or absence of barriers between the noise source and the receptor.

For construction noise, a “substantial” noise impact is defined as short-term interference with activities during daytime hours. One indicator that construction noise could interfere with daytime activities would be speech interference. A threshold of 70 dBA  $L_{eq}$  at the exterior wall of a structure (66 dBA  $L_{eq}$  for outdoor receptors) is applied for determining the significance of noise impacts associated with construction during daytime hours (7 a.m. to 10 p.m.).

As described in Section 3.8.9, Construction Schedule and Equipment, construction activities would occur primarily during weekdays from 7 a.m. to 5 p.m. To meet the construction schedule, weekend work may be required on a limited basis; weekend construction hours would be as described for weekdays. Nighttime construction would be limited to the San Bruno North site and nighttime dewatering activities, which would be required at up to seven locations, as analyzed under Impact NO-2. Overall project construction is planned to begin in October 2014 and end in September 2015.

#### ***Construction Equipment Noise***

The types of construction equipment likely to be used for the proposed project are listed in Table 3-6 in Chapter 3, Project Description. Table 5.7-11 shows typical maximum noise levels generated by similar equipment at 50 feet as well as the acoustical use factor which accounts for the fraction of time that the equipment is typically in use over a given period. The reference  $L_{eq}$  at 50 feet is calculated using the following equation (FTA, 2006):

$$L_{eq} = L_{max} + 10 \times \log(\text{use factor})$$

Construction equipment typically generates maximum noise levels ranging from 66 to 95 dBA  $L_{max}$  at a distance of 50 feet from the source. The rate of geometric attenuation is 6 dBA for every doubling of distance from a point source.

In order to estimate project-related construction noise levels at receptor locations, the noise levels were grouped by construction activity for each receptor and the minimum distances between sensitive receptors and project components were determined. These levels reflect the highest noise levels that would occur at the closest sensitive receptors (representing the maximum impact) but such levels would only occur when the equipment was operating at the closest location. Furthermore, these calculations do not include attenuation provided by intervening structures, elevation changes, existing solid fencing, or other elements.

**Table 5.7-11  
Construction Equipment Reference Noise Levels**

<b>Equipment</b>	<b>Reference L<sub>max</sub> at 50 feet</b>	<b>Usage Factor</b>	<b>Reference L<sub>eq</sub> at 50 feet</b>	<b>With Controls<sup>1</sup></b>	<b>L<sub>eq</sub> at 50 feet with Controls</b>
Backhoe	78	40	74	-3	71
Brush Chipper	80	40	76	0	76
Cement Drum Mixer	80	50	77	-5	72
Cement Mixer Truck	79	40	75	-4	71
Chain Saw	85	50	82	0	82
Compactor	83	20	76	0	76
Crane	81	16	73	-6	67
Dozer	82	40	78	-7	71
Dump Truck	76	40	72	-1	71
Flatbed Truck	74	40	70	0	70
Forklift	66	40	62	0	62
Generator, <25 kVA	73	100	73	-6	67
Generator, >25 kVA	81	100	81	-6	75
Grader	85	40	81	-10	71
Haul Truck	76	40	72	-1	71
Hoe Ram	90	20	83	0	83
Loader	79	40	75	-4	71
Pickup Truck	74	40	70	0	70
Pump, Concrete	81	20	74	-6	68
Pump, Water	81	50	78	-6	72
Skid Loader	79	40	75	-4	71
Track Loader	85	40	81	-5	76
Truck	80	40	76	-5	71
Vacuum Street Sweeper	82	10	72	0	72
Vibratory Pile Driver	95	20	88	-10	78
Water Truck	74	40	70	0	70
Welder, Diesel	74	40	70	0	70
Whole Tree Chipper	87	40	83	-4	79

Sources: U.S. EPA, 1971; FHWA, 2006; Health and Safety Laboratory, 2008.

<sup>1</sup> Estimated levels can be obtained by selecting quieter procedures or equipment and implementing noise control features that do not require major redesign or high cost (e.g., improved mufflers, equipment redesign, and use of silencers, shields, shrouds, ducts, and engine enclosures). These controls are required as part of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**.

Notes:

L<sub>eq</sub> = equivalent continuous noise level

L<sub>max</sub> = maximum A-weighted sound level

Preceding the pipeline replacement at the South San Francisco and Millbrae sites, tree removal activities would be required, occurring over approximately 2 weeks at the South San Francisco site and 1.5 months at the Millbrae site.

Additionally, as described in Section 3.8.9, Construction Schedule and Equipment, limited 24-hour dewatering activities (from 1 day up to 2 weeks) would occur at manholes, blow-outs, or valves along the three project pipelines during pipeline shutdown and start-up phases. Although the majority of dewatering activities would be via gravity and would not require pumping, seven of the dewatering locations near the San Bruno South and Millbrae sites would require pumping, as shown in Figure 5.7-6. At the other dewatering locations, pumping is not required and no noise or groundborne vibration generating equipment would be used. Therefore, these locations are not further considered in this analysis.

Pumping for dewatering would be required at the following locations. For SAPL3, the two locations where dewatering pumping would be required are on Shelter Creek Lane adjacent to the Shelter Creek Condominiums (SAPL3-1), and farther south near the Shelter Creek Condominiums driveway on Shelter Creek Lane (SAPL3-2). For SAPL2, the single location where pumping would be required for dewatering is within the project construction zone on Whitman Way by Park Plaza Apartments (SAPL2-1). For SSBPL, the four locations in Millbrae where pumping would be required are as follows: near the intersection of Helen Drive and Banbury Lane (SSBPL-1); near the fifth green of the Green Hills Country Club (SSBPL-2); at Millwood Drive and Barcelona Drive (SSBPL-3); and at Millwood Drive and Magnolia Avenue, at the SFPUC's Capuchino Valve Lot (SSBPL-4).

For dewatering, a customized pump would be used that implements manufacturer-designed noise controls. This pump would be similar to the Godwin NC150,<sup>8</sup> which is rated by the manufacturer to generate 69 dBA at a distance of 30 feet from the pump (Godwin Pumps of America, 2005). The pump would be parked on the street at the curb near the manhole, blow-out, or valve. The 70-dBA  $L_{eq}$  speech interference threshold would be met at a distance of 26 feet or greater from the pump.

Pipeline replacement would be performed using open-trench construction techniques at all project sites, with the exception of San Bruno North. Additionally, at the South San Francisco site, the jack-and-bore construction technique would also be used to replace the pipeline beneath Westborough Boulevard. At the San Bruno North site, the existing pipeline would be stabilized within the tunnel through which it currently extends by the addition of structural supports. At the Colma site, replacement of the pipeline would occur over approximately 2 months; and at the South San Francisco site, replacement would occur over approximately 2.5 months. At the San Bruno North site, the pipeline stabilization would occur over approximately 1 month. The pipeline replacement at the San Bruno South site would occur over approximately 9 months. At the Millbrae site, replacement of the pipeline would occur over approximately 3 months.

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<sup>8</sup> The Godwin NC150 pump is designed with an acoustically designed silencing enclosure. The pump is intended for use where pumping is required, but engine and other noise must be kept to a minimum.

The noisiest pieces of construction equipment proposed for each type of construction activity are as follows: tree removal (chain saw, track loader, and whole tree chipper); pipeline dewatering (dewatering pump); mobilization (haul truck); and excavation and restoration (grader, generator, and vibratory pile driver). Haul trucks must have back-up alarms that are audible above the surrounding ambient noise level at a distance of 200 feet. The alarms are often designed to be 10 to 15 dBA higher than the worst-case environment. As the proposed equipment on this project varies from 62 to 88 dBA at 50 feet, the alarms would typically be designed to be as loud as 103 dBA at 50 feet.

An impact analysis for each site and the common staging area is provided below. Table 5.7-12 summarizes the impacts at the closest sensitive receptors. Descriptions of the impact significance determination for each receptor follow the table. For additional details regarding estimates of the daytime construction-related noise levels at the closest sensitive receptors, refer to Tables D-3.1 through D-3.25 in Appendix D-3.<sup>9</sup> As described in the impact analysis, locations where it is not feasible to achieve the performance standards identified in **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** are shown as “significant and unavoidable with mitigation” in Table 5.7-12.

#### *Colma Site (Less than Significant with Mitigation)*

**Home Sweet Home Assisted Living Facility:** As indicated in Table D-3.1 in Appendix D-3, noise resulting from construction activities would not exceed the 70-dBA  $L_{eq}$  speech interference threshold at the closest residential receptor during any of the construction phases. When compared to the average daytime ambient noise levels, noise from construction-related activities would typically be equivalent to the average daytime level. Therefore, the impact from noise levels would be *less than significant*.

**Cypress Lawn Memorial Cemetery:** As indicated in Table D-3.2, construction noise would exceed the 66-dBA  $L_{eq}$  speech interference threshold by 1 to 8 dBA at the Cypress Lawn Memorial Cemetery during the excavation and restoration phase. When compared to the average daytime ambient noise levels, construction-related noise levels could occasionally exceed the average ambient levels by several dB at the cemetery’s outdoor areas closest to the project staging/spoils area. Visitors to the cemetery are considered transient users, and would only be exposed to elevated noise levels due to the project construction activities for a short period of time. However, elevated noise levels would be a significant impact to burial services held at the cemetery, due to the sensitive nature of these outdoor activities. Implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**, which requires noise control measures and noise barrier walls as part of a Noise Control Plan, would reduce noise levels to below the speech interference threshold when burial services are in progress. Therefore, the noise levels would be *less than significant with mitigation*.

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<sup>9</sup> Appendix D contains an analysis of the closest sensitive receptors to the construction activities.

**Table 5.7-12  
Summary of Daytime Construction Noise Impacts by Site and Construction Phase**

Receiver	Impact by Construction Phase			
	Tree Removal	Pipeline Dewatering <sup>1</sup>	Mobilization	Excavation and Restoration
<b>Colma Site</b>				
Home Sweet Home Assisted Living Facility	NA	NA	LS	LS
Cypress Lawn Memorial Cemetery	NA	NA	LS	LSM
<b>South San Francisco Site</b>				
Residences along Arroyo Drive	SUM <sup>2</sup>	NA	LSM	SUM <sup>2</sup>
Clubview Apartments	LS	NA	LS	LSM
Golf Club of San Francisco	LS	NA	LS	LS
<b>San Bruno North Site</b>				
Residences along Cedarwood Court and Pepper Drive	NA	NA	SUM <sup>3</sup>	SUM <sup>3</sup>
<b>San Bruno South Site</b>				
Park Plaza Apartments and Shelter Creek Condominiums	NA	LSM	SUM <sup>4</sup>	SUM <sup>4</sup>
Residences along Courtland Drive	NA	LS	SUM <sup>5</sup>	SUM <sup>5</sup>
Peninsula High School	NA	LS	LS	LSM
Peninsula High School Athletic Fields	NA	LS	LS	LS
San Bruno Chinese Church	NA	LS	LSM	LSM
<b>Millbrae Site</b>				
Residences along Ridgewood Drive and Banbury Lane	SUM <sup>6</sup>	LS	SUM <sup>6</sup>	SUM <sup>6</sup>
Green Hills Country Club	LS	LS	LS	LS
Residences along Hacienda Way	SUM <sup>7</sup>	LS	LS	LSM
Meadows Elementary School	LS	LS	LS	LS
Glen Oaks and Millbrae Montessori Schools	LS	LS	LS	LS
Residences along Helen Drive	LS	LSM	LS	LS
Residences along Millwood Drive and Barcelona Drive	LS	LSM	LS	LS
Residences along Millwood Drive and Magnolia Avenue	LS	LS	LS	LS
<b>Common Staging Area</b>				
Residences along Fairway Drive	NA	NA	LS	NA
Source: Vibro-Acoustic Consultants (Appendix D).				
Notes:				
<sup>1</sup> Impact significance determinations for nighttime dewatering activities are included in the table and described under Impact NO-2. Daytime pipeline dewatering activities would either be NA or LS, as described in Impact NO-1.				
<sup>2</sup> At the South San Francisco site, even with mitigation, three residences on Arroyo Drive (105, 107 and 108) would experience noise levels that exceed the speech interference threshold. Other residences would have an LS or LSM finding. Please refer to text for greater detail.				
<sup>3</sup> At the San Bruno North site, even with mitigation, four residences on Cedarwood Court (1800, 1820, 1840, and 1841) and five on Pepper Drive (769, 773, 779, 783, and 789) would experience noise levels that exceed the speech interference threshold. Other residences would have an LS or LSM finding. Please refer to text for greater detail.				
<sup>4</sup> At the San Bruno South site, even with mitigation, Shelter Creek Buildings 4A, 4B, and 4D only, and units at Park Plaza Apartments within 150 feet of the construction limit would experience noise levels that exceed the speech interference threshold. Other units would have an LS or LSM finding. Please refer to text for greater detail.				
<sup>5</sup> At the San Bruno South site, even with mitigation, 12 residences on Courtland Drive (300, 306, 310, 316, 320, 326, 330, 336, 340, 350, 360, and 370) would experience noise levels that exceed the speech interference threshold. Other residences would have an LS or LSM finding. Please refer to text for greater detail.				
<sup>6</sup> At the Millbrae site, even with mitigation, 11 residences on Ridgewood Drive (1078, 1086, 1094, 1100, 1101, 1106, 1110, 1116, 1120, 1126, and 1130) and one on Banbury Lane (971) would experience noise levels that exceed the speech interference threshold. Other residences would have an LS or LSM finding. Please refer to text for greater detail.				
<sup>7</sup> At the Millbrae site, even with mitigation, nine residences on Hacienda Way (859, 869, 873, 877, 881, 885, 889, 913, and 917) would experience noise levels that exceed the speech interference threshold. Other residences would have an LS or LSM finding. Please refer to text for greater detail.				
NA = Not Applicable NI = No Impact LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant impact with Mitigation SUM = Significant and Unavoidable impact, with implementation of feasible Mitigation				



An analysis of impacts at the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites, as well as the common staging area, is provided below, following the text of Mitigation Measure M-NO-1.

### **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**

This mitigation measure applies to all project sites, but does not apply to the common staging area. The SFPUC shall include in construction contract specifications the requirement to prepare a noise control plan. The contractor shall submit a noise control plan, prepared by a qualified noise consultant, to the SFPUC for review and approval at least 21 days before the start of mobilization/construction. The SFPUC shall require the noise consultant to be a board-certified Institute of Noise Control Engineering member or other qualified consultant or engineer, to be approved by the SFPUC project construction manager. The noise control plan shall contain performance standards based on the more-restrictive of the 70-dBA  $L_{eq}$  speech interference threshold and the limits established in noise ordinances of San Mateo County, the Town of Colma, and the cities of San Bruno and Millbrae. The noise control plan shall identify the applicable threshold for each project site. The noise control plan shall, at a minimum, contain the following elements:

- Location of equipment, parking, and other noise generating sources.
- Detailed list of potential noise control methods to meet the performance standards. Locations where it is not feasible to meet the performance standards shall be identified.
- Proposed staging and schedule of noise control measures.
- Anticipated performance of noise control measures.
- Number and location of monitoring locations and relation to stationary noise controls and sensitive receptors.
- Schedule for ongoing monitoring and reporting of construction noise levels to meet performance standards. Monitoring shall occur at least weekly, or more often if needed, in response to complaints.

Specific noise control measures that shall be contained in the plan may include, but are not limited to, the following:

- a) Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will be used for all equipment and trucks in order to minimize construction noise impacts.
- b) If impact equipment (e.g., concrete/rock breaker, rock drill) is used during project construction, hydraulically or electric-powered equipment will be used to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust will be used (a muffler can lower noise levels

from the exhaust by up to 10 dBA). External jackets on the tools themselves will be used, which could achieve a reduction of 5 dBA. Quieter procedures, such as drilling or vibratory methods rather than impact equipment, will be used.

- c) Alternative shoring installation techniques, such as beam-and-plate or drilled soldier piles, shall be employed to meet noise thresholds.
- d) The use of vibratory rollers and pile drivers shall be limited to the hours between 7 a.m. to 5 p.m.
- e) Locate stationary noise sources away from sensitive receptors. If the sources must be located near receptors, adequate muffling (with enclosures where appropriate) will be used to ensure performance standards are met. Enclosure openings or vents will face away from sensitive receptors. If any stationary equipment (pumps, ventilation fans, generators) is operated beyond the ordinance time limits, this equipment will conform to the affected jurisdiction's noise limits.
- f) Erect temporary noise barriers to maintain construction noise levels at or below the performance standards. Barriers shall be constructed with a solid material with a density of at least 2 pounds per square foot with no gaps. The location and specification of the barriers shall be determined by the approved noise consultant as part of the noise control plan.
- g) Designate a project liaison to be responsible for responding to noise complaints during construction. The name and phone number of the liaison will be conspicuously posted at construction areas and on all advanced notifications. The liaison will take steps to resolve complaints, including the arrangement of periodic noise monitoring, if necessary. Results of noise monitoring will be presented at regular project meetings with the project contractor, and the liaison will coordinate with the contractor to modify any construction activities that generated excessive noise levels.
- h) In the event of noise complaints, the contractor shall provide information to the SFPUC within 48 hours of being notified of the complaint regarding the noise levels measured and activities that correspond to the complaints. The SFPUC will compare the noise levels to the information in the noise control plan, and the effectiveness of the noise control measures will be verified by the contractor. The contractor will be responsible for the correct installation and use of all implemented noise control measures and for complying with noise specifications.

To mitigate the contribution to elevated noise levels from back-up alarms, the contractor may use administrative controls instead of audible back-up alarms, subject to safety priorities and consistency with state and federal worker safety laws. Administrative controls may include designing traffic patterns at the project sites to minimize the need for backward movement, or requiring a spotter or flagger in clear view of the operator to direct the backing operation, or requiring the operator to dismount and circle the vehicle immediately prior to starting a reverse operation.

Alternatively, the SFPUC may consult with the California Division of Occupational Safety and Health (Cal/OSHA) to determine whether additional noise reductions may be achieved through Cal/OSHA-approved alternatives to back-up alarms without compromising site safety. If Cal/OSHA indicates that such alternatives are a viable option and the SFPUC, in consultation with the contractor, determines that site safety would not be compromised, then the contractor shall apply for a variance from Cal/OSHA and use such alternatives consistent with Cal/OSHA requirements. Such alternatives could include, but are not limited to:

- “Smart” alarms that have an audible range of 77 to 103 dBA (but limit the warning signal to 5 dBA over ambient noise levels).
- Radar presence-sensing alarms that identify objects in the reversing path of a truck.
- Use of “bbs-tek” broadband back-up alarm systems that use a broadband sound instead of a more noticeable single-frequency sound.
- Use of strobe lights instead of audible alarms.

The administrative source controls and alternatives identified above that are approved by Cal/OSHA instead of back-up alarms shall be included in the noise control plan. If none of these alternatives to back-up alarms can be implemented, the use of back-up alarms shall be minimized by routing the trucks and equipment through sites in a manner that reduces the need to back up.

#### ***South San Francisco Site (Significant and Unavoidable with Mitigation)***

**Residences along Arroyo Drive:** Based on the results provided in Table D-3.3 in Appendix D, noise from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at approximately three homes along Arroyo Drive during the tree removal, mobilization, and excavation and restoration phases of construction, resulting in a potentially significant impact. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barrier walls as part of a Noise Control Plan, construction-related noise levels could still exceed the 70-dBA  $L_{eq}$  speech interference threshold during the tree removal and excavation and restoration phases for longer than 2 weeks. When compared to the average daytime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 19 dB. With such an exceedance, the mitigated construction noise levels would be clearly audible during daytime hours. Therefore, the noise levels would be *significant and unavoidable with mitigation*.

**Clubview Apartments:** As indicated in Table D-3.4 in Appendix D, noise from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at the Clubview Apartments and other residential receptors along West Orange Avenue during the excavation and restoration phase, for a period longer than 2 weeks, which is a significant impact. Implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures as part of a Noise Control Plan, would reduce the construction-related noise levels to below the 70-dBA  $L_{eq}$  speech interference threshold. When compared to the average daytime ambient noise levels, the mitigated noise levels would typically be less than the average ambient level. Therefore, noise levels would be *less than significant with mitigation*.

**California Golf Club of San Francisco:** As indicated in Table D-3.5 in Appendix D, noise resulting from construction activities would exceed the 66-dBA  $L_{eq}$  speech interference threshold at the California Golf Club of San Francisco during the excavation and restoration phase. When compared to the average daytime ambient noise levels, the noise levels would exceed the average ambient levels by several dB at the portion of the golf course closest to the eastern construction zone. However, the golf course users are mobile and are considered transient users, and would only be exposed to project noise levels for a short period of time; therefore, construction-related noise levels would be *less than significant*.

***San Bruno North Site (Significant and Unavoidable with Mitigation)***

**Residences along Cedarwood Court and Pepper Drive:** Based on the results provided in Table D-3.6 in Appendix D, noise from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at the four closest residential receptors along Cedarwood Court and the five closest residential receptors along Pepper Drive, during the mobilization and excavation and restoration construction phases, a potentially significant impact. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barrier walls as part of a Noise Control Plan, construction-related noise levels could still exceed the 70-dBA  $L_{eq}$  speech interference threshold for longer than 2 weeks, and by up to 13 dBA. When compared to the average daytime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 22 dB. Such an exceedance indicates that the construction noise levels would be clearly audible during daytime hours. Therefore, the mitigated noise levels would be *significant and unavoidable with mitigation*.

***San Bruno South Site (Significant and Unavoidable with Mitigation)***

**Shelter Creek Condominiums:** Based on the results provided in Table D-3.7 in Appendix D, noise resulting from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at Buildings 4A, 4B, and 4D during the mobilization and excavation and restoration phases of construction, a period longer than 2 weeks, which is a significant impact. Daytime pipeline dewatering is the only phase that would not exceed the 70-dBA  $L_{eq}$  speech interference threshold. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barrier walls as part of a Noise Control Plan, construction-related noise levels could still exceed the 70-dBA  $L_{eq}$  speech interference threshold by up to 22 dBA. When compared to the average daytime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 30 dB. With such an exceedance, the mitigated construction noise levels would be clearly audible during daytime hours. Although noise barrier walls can be employed to mitigate noise at ground floor receptors, it would not be feasible to construct noise barrier walls tall enough to mitigate construction-related noise levels at upper floor receptors. Therefore, the mitigated noise levels would be *significant and unavoidable with mitigation*.

**Park Plaza Apartments:** Based on the results provided in Table D-3.7 in Appendix D, noise resulting from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at apartment units within 150 feet of the construction zone during the mobilization and excavation and restoration phases of construction, a period longer than 2 weeks, which is a significant impact. Daytime pipeline dewatering is the only phase that would not exceed the

70-dBA  $L_{eq}$  speech interference threshold. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barrier walls as part of a Noise Control Plan, construction-related noise levels could still exceed the 70-dBA  $L_{eq}$  speech interference threshold by up to 22 dBA. When compared to the average daytime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 33 dB. With such an exceedance, the mitigated construction noise levels would be clearly audible during daytime hours. Although noise barrier walls can be employed to mitigate noise at ground floor receptors, it would not be feasible to construct noise barrier walls tall enough to mitigate construction-related noise levels at upper floor receptors. Therefore, the mitigated noise levels would be *significant and unavoidable with mitigation*.

**Residences along Courtland Drive:** Based on the results provided in Table D-3.8 in Appendix D, noise resulting from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at the closest residential receptors along the construction zone (approximately 12 homes on the eastern side of Courtland Drive) during the mobilization and excavation and restoration phases of construction, a period longer than 2 weeks, which is a significant impact. Daytime pipeline dewatering is the only phase that would not exceed the 70-dBA  $L_{eq}$  speech interference threshold. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barrier walls as part of a Noise Control Plan, construction-related noise levels could still exceed the 70-dBA  $L_{eq}$  speech interference threshold by up to 22 dBA. When compared to the average daytime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 33 dB. With such an exceedance, the mitigated construction noise levels would be clearly audible during daytime hours. Therefore, the mitigated noise levels would be *significant and unavoidable with mitigation*.

**Peninsula High School:** As indicated in Table D-3.9 in Appendix D, noise resulting from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at Peninsula High School during the excavation and restoration phase, a period longer than 2 weeks, which is a significant impact. Daytime pipeline dewatering and the mobilization phases would not exceed the 70-dBA  $L_{eq}$  speech interference threshold. Implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barriers walls as part of a Noise Control Plan, would reduce the construction-related noise levels to below the 70-dBA  $L_{eq}$  speech interference threshold. When compared to the average daytime ambient noise levels, the mitigated construction-related noise levels would typically be less than the average ambient level. Therefore, the noise levels would be *less than significant with mitigation*.

As indicated in Table D-3.10 in Appendix D, noise resulting from construction activities would exceed the 66-dBA  $L_{eq}$  speech interference threshold at the Peninsula High School athletic fields during the mobilization and excavation and restoration construction phases, but daytime pipeline dewatering would not exceed the speech interference threshold. When compared to the average daytime ambient noise levels, the noise levels would exceed the average ambient levels by up to 29 dB at the athletic fields. However, the athletic field users are considered transient users, and would only be exposed to project noise levels for a short period of time; therefore, the construction-related noise levels would be *less than significant*.

**San Bruno Chinese Church:** As indicated in Table D-3.11 in Appendix D, noise resulting from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at the San Bruno Chinese Church during the mobilization and excavation and restoration phases, a period longer than 2 weeks, which is a significant impact. However, daytime pipeline dewatering would not exceed the speech interference threshold. Implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barrier walls as part of a Noise Control Plan, would reduce construction-related noise levels to below the 70-dBA  $L_{eq}$  speech interference threshold. When compared to the average daytime ambient noise levels, the mitigated noise levels would typically be less than the average ambient level. Therefore, the noise levels would be *less than significant with mitigation*.

#### ***Millbrae Site (Significant and Unavoidable with Mitigation)***

**Residences along Ridgewood Drive and Banbury Lane:** Based on the results provided in Table D-3.12 in Appendix D, noise resulting from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at up to 11 homes along Ridgewood Drive and at one home along Banbury Lane, depending on the phase of construction and placement of contractor equipment, a potentially significant impact. However, daytime pipeline dewatering would not exceed the speech interference threshold. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above), which requires noise control measures and noise barrier walls as part of a Noise Control Plan, construction-related noise levels could still exceed the 70-dBA  $L_{eq}$  speech interference threshold by up to 17 dBA. When compared to the average daytime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 35 dB. Such an exceedance indicates that the mitigated construction noise levels would be clearly audible during daytime hours, and could continue over a period longer than 2 weeks. Due to the residences being located at a higher elevation than most of the construction zone, the use of noise barrier walls may only be mildly effective to reduce construction-related noise levels, particularly at the receptors located directly above the construction zone. Therefore, the mitigated noise levels would be *significant and unavoidable with mitigation*.

**Green Hill Country Club Golf Course:** As indicated in Table D-3.13 in Appendix D, noise resulting from construction activities would exceed the 66-dBA  $L_{eq}$  speech interference threshold at the Green Hills Country Club Golf Course during all phases of construction. When compared to the average daytime ambient noise levels, the noise levels would exceed the average ambient levels by up to 54 dB at the northern portion of the golf course. However, the golf course users are mobile and are considered transient users, and would only be exposed to project noise levels for a short period of time; therefore, the construction-related noise levels would be *less than significant*.

**Residences along Hacienda Way:** Based on the results provided in Table D-3.14 in Appendix D, noise resulting from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at approximately nine homes along Hacienda Way during the tree removal and excavation and restoration phases, a period longer than 2 weeks, which is a significant impact. However, daytime pipeline dewatering would not exceed the speech interference threshold. With implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and**

**Source Controls** (described above), which requires noise control measures as part of a Noise Control Plan, construction-related noise levels would meet the 70-dBA  $L_{eq}$  speech interference threshold, except during the tree removal period and when the pile driver is in use during excavation. When compared to the average daytime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 18 dB. Such an exceedance indicates that the mitigated construction noise levels would be clearly audible during daytime hours. Due to the residences being located at a higher elevation than most of the construction zone, it would not be feasible to construct noise barrier walls tall enough to reduce construction-related noise levels at the residential receptors. As the tree removal period is expected to take 1.5 months, this represents a substantial impact. Therefore, the mitigated noise levels would be *significant and unavoidable with mitigation*.

**Residences along Helen Drive/Millwood Drive/Barcelona Drive/Magnolia Avenue:** As indicated in Table D-3.21, Table D-3.23, and Table D-3.24 in Appendix D, daytime pipeline dewatering would not exceed the 70-dBA  $L_{eq}$  speech interference threshold. Therefore, the construction-related noise levels would be *less than significant*.

**Meadows Elementary/Montessori Schools/Capuchino High School:** As indicated in Table D-3.15, Table D-3.16, Table D-3.21, and Table D-3.24 in Appendix D, noise from construction activities would not exceed the 70- or the 66-dBA  $L_{eq}$  speech interference thresholds at the Meadows Elementary School, Glen Oaks and Millbrae Montessori Schools, or Capuchino High School during any of the construction phases. When compared to the average daytime ambient noise levels, construction-related noise levels would typically be less than the average ambient level. Therefore, the noise levels would be *less than significant*.

#### ***Common Staging Area (Less than Significant)***

**Residences along Fairway Drive:** Based on the results provided in Table D-3.17 in Appendix D, noise from construction activities would exceed the 70-dBA  $L_{eq}$  speech interference threshold at approximately eight homes directly to the west of the staging area along Fairway Drive during the mobilization phase. When compared to the average daytime ambient noise levels, construction-related noise levels would exceed the average ambient levels by several dB. With such an exceedance, the construction noise levels would be clearly audible during daytime hours. However, the overall expected duration of mobilization activities at the common staging area is only 2 weeks. Activities lasting 2 weeks or less are not considered to be a substantial impact. After the site mobilization, the common staging area would be used for crew parking for the duration of the project. As these vehicles would be on-road vehicles and the total volume of cars would not significantly increase the traffic or noise levels on El Camino Real, this represents a less-than-significant impact. Therefore, construction-related noise levels would be *less than significant*.

#### ***Access Route Traffic***

Truck noise levels depend on vehicle speed, load, terrain, and other factors and the effects of construction-related truck traffic would depend on the level of background noise already occurring at a particular receptor. In quiet noise environments such as residential neighborhoods protected by freeway noise barrier walls ( $L_{eq}$  averaging 50 dBA), one truck per hour would be noticeable, even though such a low volume would not measurably increase noise levels. In slightly noisier

environments such as the freeway interchange vicinity in front of noise barrier walls ( $L_{eq}$  averaging 60 dBA), the threshold level is higher, and 10 trucks per hour would be required to noticeably increase the noise exposure. In moderately noisy environments ( $L_{eq}$  averaging 70 dBA), a noise increase would be perceptible with the addition of 100 trucks per hour (Caltrans, 1998).

In quiet environments or during quieter times of the day, truck noise is mainly a single-event disturbance; although the hourly average noise level associated with short, single events is not very high, individual noise peaks of 80 dBA at 50 feet are common during a truck passage. However, in noisier environments or during less noise-sensitive hours, truck noise is perceived as part of the total noise environment rather than as an individual disturbance. Therefore, this analysis estimates noise levels associated with hourly haul truck volumes (rather than a single passing truck).

Haul truck volumes associated with the proposed project would vary from day to day, with the highest volumes generally occurring during the excavation and backfilling stages of pipeline replacement. Table 5.6.-6 in Section 5.6, Transportation, presents the estimated average and maximum haul trips for each project site. Site access and construction vehicle routes for each project site are described in Section 3.8.7 in Chapter 3, Project Description. The estimated noise levels, on an hourly basis, are presented below in Table 5.7-13.

**Table 5.7-13**  
**Estimated Hourly  $L_{eq}$  Along Project Access Routes**

Project Site	Daily Construction Truck Trips		Estimated Hourly $L_{eq}$ (Average Truck Trips/Day)	Estimated Hourly $L_{eq}$ (Maximum Truck Trips/Day)
	Average	Maximum		
Colma	22	88	41 dBA	48 dBA
South San Francisco	54	160	55 dBA	59 dBA
San Bruno North	4	16	40 dBA	46 dBA
San Bruno South	42	236	57 dBA	65 dBA
Millbrae	24	130	55 dBA	62 dBA

Source: Roche, 2011; PPSU project analysis, Vibro-Acoustic Consultants.

Notes:  
dBA = A-weighted decibels  
 $L_{eq}$  = equivalent continuous noise level

The estimated maximum hourly noise levels from haul traffic could range from 46 dBA  $L_{eq}$  to 65 dBA  $L_{eq}$  during daytime hours, as shown in Table 5.7-13. The 70-dBA  $L_{eq}$  speech interference criterion would not be exceeded at any of the project sites. Therefore, noise impacts associated with construction trucks would be *less than significant*.

Truck trip estimates are not provided for the common staging area in Table 5.7-13 because the area would be used primarily for field offices and for construction worker parking for the 12-month duration of the PPSU project, and there would primarily be vehicle trips (not truck trips) associated with the site.



***Impact NO-2: Nighttime construction and pipeline dewatering activities could result in substantial temporary increases in ambient nighttime noise levels that could interfere with nearby land uses. (Significant and Unavoidable with Mitigation)***

Daytime noise associated with construction and dewatering activities is assessed under Impact NO-1, above. Construction at the San Bruno North site is anticipated to require nighttime activities to avoid traffic impacts during peak hours. Nighttime pipeline dewatering is proposed at the San Bruno South and Millbrae sites. No other nighttime activities are proposed.

A nighttime “substantial” noise impact is defined as short-term interference with activities during nighttime hours (10 p.m. to 7 a.m.). One indicator that construction or dewatering noise could interfere with nighttime activities would be sleep interference. A sleep interference threshold of 60 dBA  $L_{eq}$  at the exterior wall of a structure is applied for determining the significance of noise impacts associated with dewatering during nighttime hours. Project-related pipeline dewatering activities would result in temporary noise increases at sensitive receptors adjacent to or near the dewatering sites, as described above under Impact NO-1, and as shown on Figure 5.7-6. Dewatering noise levels would vary at any given receptor depending on the distance between the pump and receptor, and the presence or absence of barriers between the pump and the receptor. Based on the use of a customized pump and the rate of noise attenuation, the 60-dBA  $L_{eq}$  sleep interference threshold would be met at a distance of 80 feet or greater from the pump.

An impact analysis for each site with nighttime construction or nighttime dewatering activities is provided below; Table 5.7-14 summarizes the impacts at the closest sensitive receptors.

**Table 5.7-14  
Summary of Nighttime Construction Noise Impacts by Site and Construction Phase**

Receiver	Impact by Construction Phase			
	Tree Removal	Pipeline Dewatering	Mobilization	Excavation and Restoration
<b>San Bruno North Site</b>				
Residences along Cedarwood Court and Pepper Drive	NA	NA	SUM <sup>1</sup>	SUM <sup>1</sup>
<b>San Bruno South Site</b>				
Park Plaza Apartments and Shelter Creek Condominiums	NA	LSM	NA	NA
<b>Millbrae Site</b>				
Residences along Helen Drive	NA	LSM	NA	NA
Residences along Hacienda Way	NA	LS	NA	NA
Residences along Millwood Drive/Barcelona Drive/Magnolia Avenue	NA	LSM	NA	NA
Capuchino High School	NA	LS	NA	NA
Source: Vibro-Acoustic Consultants (Appendix D).				
Notes:				
<sup>1</sup> At the San Bruno North site, even with mitigation, seven residences on Cedarwood Court (1790, 1800, 1801, 1820, 1821, 1840, and 1841) and eight on Pepper Drive (763, 769, 773, 779, 783, 789, 793, and 795) would experience noise levels that exceed the sleep interference threshold. Other residences would have an LS or LSM finding. Please refer to text for greater detail.				
NA = Not Applicable				
LS = Less-than-Significant impact, no mitigation required				
LSM = Less-than-Significant impact with Mitigation				
SUM = Significant and Unavoidable impact, with implementation of feasible Mitigation				

### ***San Bruno North Site (Significant and Unavoidable with Mitigation)***

**Residences along Cedarwood Court and Pepper Drive:** Based on the results provided in Table D-3.25 in Appendix D, noise from nighttime construction activities would exceed the 60-dBA  $L_{eq}$  sleep interference threshold at the seven closest residential receptors along Cedarwood Court and the eight closest residential receptors along Pepper Drive during the mobilization and excavation and restoration construction phases, a potentially significant impact. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (described above under Impact NO-1), which requires noise control measures and noise barrier walls as part of a Noise Control Plan and prohibits nighttime vibratory rolling and pile driving activities, construction-related noise levels could still exceed the 60-dBA  $L_{eq}$  sleep interference threshold by up to 20 dBA. When compared to the average nighttime ambient noise levels, the mitigated noise levels would exceed the average ambient levels by up to 22 dB. Such an exceedance indicates that the construction noise levels would be clearly audible during nighttime hours. Therefore, the mitigated noise levels would be *significant and unavoidable with mitigation*.

### ***San Bruno South Site (Less than Significant with Mitigation)***

**Park Plaza Apartments:** The closest sensitive receptor to the SAPL2-1 dewatering site is the Park Plaza Apartments building, located approximately 55 feet from the site. As indicated in Table D-3.18 in Appendix D-3, noise resulting from dewatering activities would be 64 dBA at this receptor. Therefore, it would exceed the 60-dBA  $L_{eq}$  sleep interference threshold at apartment units within 80 feet of the dewatering site, a potentially significant impact. With implementation of Mitigation Measure M-NO-1, which requires noise barrier walls as part of a Noise Control Plan, the noise levels would be reduced to below the 60-dBA  $L_{eq}$  sleep interference threshold. Therefore, the noise levels would be *less than significant with mitigation*.

**Shelter Creek Condominiums:** Buildings 1-B and 2-D are approximately 75 feet from the dewatering site SAPL3-1. As indicated in Table D-3.19 in Appendix D-3, noise resulting from dewatering activities would be 61 dBA at the closest sensitive receptor. This noise level would exceed the 60-dBA  $L_{eq}$  sleep interference threshold at condominium units within 80 feet of the dewatering site, a potentially significant impact. With implementation of Mitigation Measure M-NO-1, which requires noise barrier walls as part of a Noise Control Plan, the noise levels would be reduced to below the 60-dBA  $L_{eq}$  sleep interference threshold. Therefore, the noise levels would be *less than significant with mitigation*.

There are no sensitive receptors within 80 feet of the SAPL3-2 dewatering site. As indicated in Table D-3.20 in Appendix D-3, noise resulting from dewatering activities would not exceed the 60-dBA  $L_{eq}$  sleep interference threshold at the Shelter Creek Condominiums. Therefore the impact would be *less than significant*.

### ***Millbrae Site (Less than Significant with Mitigation)***

**Residences along Helen Drive:** There are three residential receptors within 80 feet of the SSBPL-1 dewatering site (the distance for the sleep interference threshold). As indicated in Table D-3.21 in Appendix D-3, noise resulting from dewatering activities would be 67 dBA at the closest sensitive receptor. This noise level exceeds the 60-dBA  $L_{eq}$  sleep interference threshold, a

potentially significant impact. With implementation of Mitigation Measure M-NO-1, which requires noise barrier walls as part of a Noise Control Plan, the noise levels would be reduced to below the 60-dBA  $L_{eq}$  sleep interference threshold. Therefore, the noise levels would be *less than significant with mitigation*.

**Residences along Hacienda Way:** There are no residential receptors within 80 feet of the SSBPL-2 dewatering site located near the fifth green of the Green Hills Country Club. As indicated in Table D-3.22 in Appendix D-3, noise resulting from dewatering activities would not exceed the 60-dBA  $L_{eq}$  sleep interference threshold at the closest residential receptor. Therefore, the impact would be *less than significant*.

**Residences along Millwood Drive/Barcelona Drive/Magnolia Avenue:** There is one residential receptor within 80 feet of the SSBPL-3 dewatering site at Millwood Drive and Barcelona Drive. As indicated in Table D-3.23 in Appendix D-3, noise resulting from dewatering activities would be 67 dBA at the closest sensitive receptor. This noise level would exceed the 60-dBA  $L_{eq}$  sleep interference threshold, a potentially significant impact. With implementation of Mitigation Measure M-NO-1, which requires noise barrier walls as part of a Noise Control Plan, the noise levels would be reduced to below the 60-dBA  $L_{eq}$  sleep interference threshold. Therefore, the noise levels would be *less than significant with mitigation*.

There are no residential receptors within 80 feet of the SSBPL-4 dewatering site at Millwood Drive and Magnolia Avenue. As indicated in Table D-3.24 in Appendix D-3, noise resulting from dewatering activities would not exceed the 60-dBA  $L_{eq}$  sleep interference threshold at the closest residential receptor. Therefore the impact would be *less than significant*.

**Capuchino High School:** The school does not operate during nighttime hours, and there are no school buildings or athletic fields within 80 feet of either the SSBPL-3 or SSBPL-4 dewatering sites. Therefore, the noise impact resulting from dewatering activities at the Capuchino High School is *less than significant*.

**Impact NO-3: Construction activities could result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance. (Significant and Unavoidable with Mitigation)**

#### ***Colma Site (Less than Significant with Mitigation)***

The Colma site is located in a commercial zone and is within 500 feet of Home Sweet Home assisted living facility, which is a Planned Development that includes residential uses. Therefore, the noise levels provided in the Town of Colma Noise Ordinance would apply. Under the Colma noise ordinance, construction hours are determined by the building official on a case-by-case basis for projects outside of residential zoning districts. Because it is uncertain at this time what hours would be established by the building official, this analysis uses the conservative hours provided in the ordinance for residential uses. The ordinance limits each piece of construction equipment to a noise level of 85 dBA at a distance of 25 feet. The equivalent noise limit at 50 feet would be 79 dBA. With implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**, which requires noise control measures as part of a Noise Control Plan, all equipment proposed for the project would meet the ordinance limit of

79 dBA at a distance of 50 feet with the implementation of the required noise control measures shown in Table 5.7-11.

The proposed construction activities would start 3 hours before the ordinance time limits on weekends. Outside of the time limits, the ordinance limits noise from each piece of construction equipment to a level of 60 dBA at a distance of 25 feet. The equivalent noise limit at 50 feet would be 54 dBA. As indicated in Table 5.7-11, all equipment proposed for the project exceeds the ordinance limit of 54 dBA at a distance of 50 feet, even with the required noise control measures, a potentially significant impact. Implementation of **Mitigation Measure M-NO-3a: Limit Hours of Construction at Colma Site** would limit the hours and permissible noise levels of construction at the Colma site, and would reduce this impact to *less than significant with mitigation*.

#### **Mitigation Measure M-NO-3a: Limit Hours of Construction at Colma Site**

This mitigation measure applies to the Colma site. Any construction work conducted within the Town of Colma shall be limited to the hours established in the Town noise ordinance (weekdays 7:00 a.m. to 8 p.m. and Saturdays 10 a.m. to 6 p.m.), unless determined otherwise by the Colma building official.

#### ***South San Francisco Site (No Impact)***

The California Golf Club of San Francisco is the only sensitive receptor located in unincorporated San Mateo County; the other sensitive receptors are located within the City of South San Francisco, discussed below. In the San Mateo County Noise Ordinance, there are no published limits to noise levels generated by construction activities occurring on weekdays between 7 a.m. and 6 p.m., and on Saturdays between 9 a.m. and 5 p.m. Furthermore, there are no published limits to noise levels at outdoor recreational land uses outside of these hours. Therefore, the noise levels generated by the project would not conflict with the ordinance and would result in *no impact*.

Utility and street repair work is exempt from the City of South San Francisco Noise Ordinance (Section 8.32.050 [c]). Therefore, the construction activities at the South San Francisco site would not conflict with the ordinance, and would result in *no impact*.

#### ***San Bruno North Site (Significant and Unavoidable with Mitigation)***

During the City of San Bruno Noise Ordinance time limits, the noise level from construction-related activities is limited to 85 dBA at a distance of 100 feet during daytime hours (7 a.m. to 10 p.m.), and to 60 dBA at a distance of 100 feet during nighttime hours (10 p.m. to 7 a.m.). The equivalent noise limits at 50 feet would be 91 dBA and 66 dBA, respectively. As indicated in Table 5.7-11, all equipment proposed for the project meets the daytime ordinance limit of 91 dBA at a distance of 50 feet. However, the majority of equipment proposed for use in the project construction exceeds the nighttime ordinance limit of 66 dBA at a distance of 50 feet. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**, which requires noise control measures and noise barrier walls as part of a Noise Control Plan, construction-related noise levels would exceed the nighttime ordinance limit by up to 4 dB. Therefore, construction-related noise levels would be *significant and unavoidable with mitigation*.

### ***San Bruno South Site (No Impact)***

As described above, the noise level from construction-related activities is limited to 91 dBA at a distance of 50 feet in San Bruno during daytime hours (7 a.m. to 10 p.m.), and to 66 dBA at a distance of 50 feet during nighttime hours (10 p.m. to 7 a.m.). As indicated in Table 5.7-11, all equipment proposed for the project meets the daytime ordinance limit of 91 dBA at a distance of 50 feet. As indicated in Impact NO-1, the pipeline dewatering pump generates 69 dBA at a distance of 30 feet; the resultant level at 50 feet is 65 dBA. The pipeline dewatering pump proposed for the project meets the ordinance limits during both daytime and nighttime hours. Therefore, the construction equipment noise levels would have *no impact*.

### ***Millbrae Site (Significant and Unavoidable with Mitigation)***

In the City of Millbrae Noise Ordinance, there are no published limits to noise levels generated by construction activities occurring on weekdays between 7:30 a.m. and 7 p.m., on Saturdays between 8 a.m. and 6 p.m., and on Sundays and holidays between 9 a.m. and 6 p.m. Therefore, the noise levels generated by the project during the regulated time limits would not conflict with the ordinance.

As described under Impact NO-1 above, the proposed daytime construction activities would start one-half hour before the ordinance time limits on weekdays, 1 hour before the time limits on Saturdays, and 2 hours before the time limits on Sundays. Construction occurring outside of the ordinance time limits would be inconsistent with the ordinance and therefore could result in a significant impact. Implementation of **Mitigation Measure M-NO-3b: Limit Hours of Construction at Millbrae Site** would limit the hours and permissible noise levels of construction at the Millbrae site, and would reduce this impact to less than significant with mitigation.

However, because the proposed pipeline dewatering activities would extend over 24-hour periods, these activities would occur outside of the City of Millbrae Noise Ordinance time limits. Construction occurring outside of the ordinance time limits would be inconsistent with the ordinance, and therefore could result in a significant noise impact. Even with implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**, which requires the SFPUC to reduce pipeline dewatering noise levels to the speech interference and sleep interference thresholds, this impact would remain *significant and unavoidable with mitigation*.

#### **Mitigation Measure M-NO-3b: Limit Hours of Construction at Millbrae Site**

This mitigation measure applies to the Millbrae site. Except for dewatering activities, any construction work conducted within the City of Millbrae shall be limited to the hours established in the City noise ordinance (weekdays 7:30 a.m. to 7 p.m.; Saturdays 8 a.m. to 6 p.m.; and Sundays and holidays 9 a.m. to 6 p.m.).

### ***Common Staging Area (Less than Significant with Mitigation)***

The common staging area would be used for staging equipment and materials, as well as for temporary offices and personnel parking for the PPSU and other SFPUC projects in the region. Trucks moving equipment on and off site would generate the most noise associated with use of the common staging area. Because utility work is not being performed at this site, construction activities

at the common staging area are not considered to be exempt from the City of South San Francisco Municipal Code for the purposes of this analysis. During the Municipal Code time limits, each piece of construction equipment is limited to a noise level of 84 dBA at a distance of 50 feet and the noise level at the project boundary is limited to 90 dBA. As indicated in Table 5.7-11, all equipment proposed for the project meet the ordinance limits of 84 dBA at a distance of 50 feet. Based on the results provided in Table D-3.17 in Appendix D, noise from construction activities also meets the ordinance limits of 90 dBA at the project boundary. Therefore, in regard to the South San Francisco Municipal Code, the project would have *no impact*.

When compared to the Municipal Code, the proposed construction activities would start 1 hour before the ordinance time limits on weekdays, 2 hours before the time limits on Saturdays, and 3 hours before the time limits on Sundays and holidays. Outside of the time limits, the ordinance limits noise from construction activities to 60 dBA at residential receptors during daytime hours. As indicated in Table D-3.17 in Appendix D, noise resulting from construction activities could exceed the 60-dBA limit at residential receptors along Fairway Drive, a potentially significant impact. Implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** (detailed under Impact NO-1), which requires noise control measures as part of a Noise Control Plan, would reduce this impact to a less-than-significant level. Therefore, this impact would be *less than significant with mitigation*.

After the site mobilization, the common staging area would be used for crew parking for the duration of the project. As these vehicles would be on-road vehicles generating similar noise to any vehicle parking along El Camino Real, and the total volume of cars would not significantly increase the traffic on El Camino Real, this represents a *less-than-significant* impact.

***Impact NO-4: Construction activities could result in exposure of persons or structures to generation of excessive groundborne vibration. (Significant and Unavoidable with Mitigation)***

Vibration levels generated by construction activities would vary depending on project conditions such as soil, construction methods, and equipment used. The use of pile drivers, vibratory rollers/compactors, and heavy trucks would generate groundborne vibration in the vicinity of the activity. As described above in Section 5.7.3.2, this analysis applies two significance thresholds, one related to potential damage and one related to nighttime vibration-related annoyance. The significance threshold related to potential damage is 0.3 in/sec PPV for continuous vibration and 0.5 in/sec PPV for transient vibration. A significance threshold of 0.01 in/sec PPV for continuous vibration and 0.04 in/sec for transient vibration is applied to nighttime construction activities for vibration-related annoyance at residential receptors. However, none of the proposed equipment or construction methods meet the description of a transient source; therefore, the transient thresholds will not be considered further in this analysis.

Table 5.7-15 summarizes vibration source levels from various types and sizes of vibration-producing equipment that may be used for the PPSU project. The distance needed for vibration to attenuate to the vibration significance threshold levels has been calculated based on the following equation (Caltrans, 2004):

$$PPV = PPV_{ref} \times (25/Distance)^{1.1}$$

Distances calculated for potential vibration annoyance or building damage, such as those presented in Table 5.7-15, should be measured from the source of the vibration to the closest part of the actual structure (not the property line or at exterior locations away from the structure).

**Table 5.7-15**  
**Distance Within Which Vibration Annoyance and Damage Potential Thresholds For**  
**Continuous Construction Sources Would Be Exceeded**

Equipment	Reference PPV at 25 feet	Distance to 0.3 in/sec PPV Damage Potential Threshold (older residential structure)	Distance to 0.01 in/sec PPV Annoyance Threshold (nighttime residential receptor)
Large Bulldozer	0.089	10 feet	190 feet
Loaded Trucks	0.076	10 feet	160 feet
Small Bulldozer	0.003	5 feet	10 feet
Vibratory Pile Driver	0.170/0.734 <sup>1</sup>	15/60 feet <sup>2</sup>	330/1,250 feet <sup>2</sup>
Vibratory Roller	0.210	20 feet	400 feet

Source: FTA, 2006; PPSU project analysis, Vibro-Acoustic Consultants.

Notes:

<sup>1</sup> The 0.170 PPV level refers to typical levels; the 0.734 PPV level refers to the maximum level.

<sup>2</sup> The smaller distance applies to typical vibration levels; the larger distance applies to the maximum vibration level.

### ***Colma Site (Less than Significant)***

The estimated vibration levels from construction-related activities at the nearest residential receptor would be 0.04 in/sec PPV or less. These levels would be below the damage potential threshold. There would be no construction during nighttime hours at this site; therefore, no nighttime vibration impacts would occur. Therefore, impacts from groundborne vibration generated by construction activities at the Colma site would be *less than significant*.

### ***South San Francisco Site (Less than Significant with Mitigation)***

There is a single residential receptor on Arroyo Drive, which would be potentially located within 60 feet of pile driving activities that would generate vibration levels of 0.14 to 0.6 in/sec PPV; these levels may exceed the damage potential threshold, a potentially significant impact. There would be no construction during nighttime hours; therefore, no nighttime vibration impacts would occur. Implementation of **Mitigation Measure M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting**, which requires vibration control measures and monitoring as part of a Vibration Control Plan, would reduce vibration impacts to *less than significant with mitigation*.

An impact analysis for the San Bruno North, San Bruno South, and Millbrae sites is provided below, following the text of Mitigation Measure M-NO-4.

#### **Mitigation Measure M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting**

This mitigation measure applies to the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites. The SFPUC shall include in construction contract specifications the requirement to prepare and implement a vibration control plan. The contractor shall submit a vibration control plan, prepared by a qualified vibration consultant, to the SFPUC for review and approval at least 21 days before the start of mobilization/construction. The vibration control plan shall contain measures to reduce construction-related vibration to meet the 0.3 in/sec PPV damage potential threshold. In addition, at the San Bruno North site, the plan shall contain measures to reduce construction-related vibration to meet the 0.01 in/sec PPV nighttime annoyance potential threshold, to the extent feasible.

The vibration control plan shall, at a minimum, contain the following elements:

- Procedures outlining the coordination among the SFPUC, the contractor, field monitors, and property owners.
- Address the use of low-vibration equipment (or using lower power equipment or lower power setting) and methods when working near residential receptors.

Specific vibration control measures that could be addressed in the plan include, but are not limited to, the following:

- a) Avoiding or reducing simultaneous operation of multiple pieces of construction equipment in proximity to buildings.
- b) The use of vibratory rollers and pile drivers shall be limited to the hours between 7 a.m. and 10 p.m.
- c) Continuous monitoring of vibration levels when vibratory equipment is in use within 50 feet of residential receptors.
- d) Continuous monitoring of pile driving vibration levels within 150 feet of residential receptors.
- e) Pile driving is not to occur within 60 feet of residential structures; the contractor must provide trench shoring using another less-vibration-intensive method within 60 feet of residential structures.
- f) Weekly reporting of the vibration monitoring results.

If construction vibration monitoring demonstrates that the project-generated vibration is lower than the values estimated, then the SFPUC could allow these activities to be conducted within the buffer zones, based on evaluation of monitoring data by a qualified vibration consultant.

The SFPUC will consult with a California-licensed geotechnical engineer to develop procedures to reduce vibration impacts on adjacent sensitive receptors. The SFPUC will ensure that the construction contractor follows the recommendations of the final



geotechnical report regarding excavation and construction. The SFPUC will also ensure that the construction contractor monitors adjacent residential receptors during construction as recommended by the geotechnical engineer.

The construction contractor will use low-vibration equipment and appropriate trench shoring when working close to buildings, when required by the geotechnical engineer. If necessary, trench shoring near buildings will be designed with the capacity to support the soil loading, as determined by the project structural and/or geotechnical engineer. The construction contractor will monitor the building until the trench is backfilled.

SFPUC and the contractor will coordinate with property owners to attempt to gain property access where necessary for vibration monitoring. Where access is granted, the SFPUC shall conduct monitoring to assess construction vibration impacts on adjacent buildings. The SFPUC shall assess the building's pre-construction conditions, identify potential sources of background vibration, and monitor construction vibration near adjacent residential receptors using appropriate monitoring equipment. The SFPUC will coordinate with the construction contractor to adjust construction techniques so as to keep vibration levels below the 0.3-in/sec PPV threshold potential damage criterion. The SFPUC will conduct visual surveys during construction, monitor for cracks and other damage, and conduct a post-construction structural evaluation.

SFPUC will provide outreach and information to affected residential receptors regarding projected vibration. At a minimum, this will be provided to residences with structures within approximately 200 feet of construction activities. For residential structures within these zones, the SFPUC will convey to the owners the fact that structural damage occurs at very high vibration levels, far above the threshold of human perception, and that vibration from construction activities will be monitored to prevent structural damage.

### ***San Bruno North Site (Significant and Unavoidable with Mitigation)***

The four residential receptors along Cedarwood Court closest to the construction and staging areas are potentially within 50 feet of vibratory roller activities, and within 60 feet of pile driving activities. At these receptors, vibratory roller activities could generate vibration levels up to 0.37 in/sec PPV, and pile driving activities could generate vibration levels of 0.3 to 1.29 in/sec PPV; these levels exceed the damage potential threshold, a potentially significant impact. Implementation of **Mitigation Measure M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting**, which requires vibration control measures and monitoring as part of a Vibration Control Plan, would reduce vibration impacts to *less than significant with mitigation*.

There are eight residential receptors along Cedarwood Court, and eight residential receptors along Pepper Drive that are potentially within 190 feet of construction activities (1790, 1791, 1800, 1801, 1820, 1821, 1840, and 1841 Cedarwood Court; 763, 769, 773, 779, 783, 789, 793, and 795 Pepper Drive). At these receptors, the vibration levels from loaded trucks and bulldozers could be up to 0.16 in/sec PPV; these levels are below the damage potential threshold but exceed the nighttime annoyance threshold of 0.01 in/sec PPV, a potentially significant impact. Residential receptors within 400 feet of vibratory rolling activities and 1,250 feet of pile driving activities could be subjected to vibration levels exceeding the nighttime annoyance threshold of 0.01 in/sec PPV, a

potentially significant impact. Implementation of **Mitigation Measure M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting**, which requires vibration control measures to the extent feasible and prohibits vibratory rolling and pile driving activities during nighttime hours as part of a Vibration Control Plan, would reduce vibration impacts but not necessarily to a less-than-significant level. Because this exceedance would potentially occur for up to 1 month, the nighttime vibration impact would be *significant and unavoidable with mitigation*.

#### ***San Bruno South Site (Less than Significant with Mitigation)***

There are 11 single-family homes along Courtland Drive; several units at the Park Plaza Apartments; and the Shelter Creek Condominium Buildings 4A, 4B, and 4D potentially located within 50 feet of vibratory roller activities and within 60 feet of pile driving activities. At these receptors, vibratory roller activities could generate vibration levels up to 0.58 in/sec PPV and pile driving activities could generate vibration levels of 0.47 to 2.0 in/sec PPV; these levels exceed the damage potential threshold, a potentially significant impact. Implementation of **Mitigation Measure M-NO-: Develop and Implement Vibration Planning, Monitoring, and Reporting**, which requires vibration control measures and monitoring as part of a Vibration Control Plan, would reduce vibration impacts to *less than significant with mitigation*.

Nighttime activities would be limited to pipeline dewatering. Because the pump for the dewatering would be mounted to a trailer supported on rubber tires, it would not generate substantial vibration levels. Therefore, pipeline dewatering-related vibration levels would be *less than significant*.

#### ***Millbrae Site (Less than Significant with Mitigation)***

The five residential receptors along Ridgewood Drive closest to the construction zone are potentially located within 50 feet of vibratory roller activities and within 60 feet of pile driving activities. At these receptors, vibratory roller activities could generate vibration levels up to 0.58 in/sec PPV and pile driving activities could generate vibration levels of 0.47 to 2.0 in/sec PPV; these levels exceed the damage potential threshold, a potentially significant impact. Implementation of **Mitigation Measure M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting**, which requires vibration control measures and monitoring as part of a Vibration Control Plan, would reduce vibration impacts to *less than significant with mitigation*.

Nighttime activities would be limited to pipeline dewatering. Because the pump for the dewatering would be mounted to a trailer supported on rubber tires, it would not generate substantial vibration levels. Therefore, pipeline dewatering-related vibration levels would be *less than significant*.

#### ***Common Staging Area (Less than Significant)***

The estimated vibration levels from construction-related activities at the nearest residential receptor would be 0.06 in/sec PPV or less. These levels are below the damage potential threshold. Therefore, groundborne vibration generated by construction activities at the common staging area would be *less than significant*.

### 5.7.3.5 Operational Impacts and Mitigation Measures

As described above, during operation, the proposed project would not introduce new sources of noise or vibration. Future operations and maintenance would be the same as existing operations and maintenance activities and would continue to entail yearly visual inspections of the pipelines. As no new sources of noise or vibration would be introduced and yearly maintenance activities are extremely limited in duration, the proposed project would not have operations-related noise or vibration impacts, and there would be *no impact*.

### 5.7.3.6 Cumulative Impacts and Mitigation Measures

*Impact C-NO: Project construction could result in a cumulatively considerable contribution to cumulative noise and vibration impacts. (Less than Significant with Mitigation)*

For cumulative construction-related noise and vibration impacts, the geographic scope encompasses the sensitive residential receptors adjacent to the construction zones and access routes for the cumulative project sites and the PPSU project site. As indicated in Section 5.1, Overview, and shown on Figure 5.1-1, construction of the following two projects could overlap geographically and/or occur concurrently with PPSU construction activities at the project sites:

- Regional Groundwater Storage and Recovery (GSR) project at the Colma and South San Francisco sites, and at the Common Staging Area; and
- Harry Tracy Water Treatment Plant (HTWTP) Long-Term Improvements project at the Millbrae site.

At the San Bruno North and San Bruno South sites, no cumulative noise impacts would occur because there are no other projects that would combine with the proposed project at these sites; therefore, cumulative impacts at these sites are not discussed below.

#### Construction Equipment

If construction activities from the PPSU and GSR projects were to coincide at the Colma or the South San Francisco sites, or if construction activities from the PPSU and HTWTP projects were to coincide at the Millbrae site, it is possible that the cumulative noise levels could exceed the speech interference criterion, which would be a cumulatively significant impact.

As discussed in Impact NO-1, construction-related noise levels from the PPSU project at the Colma site would be less than significant with mitigation. Implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**, which requires noise control measures and noise barrier walls as part of a Noise Control Plan, would reduce noise from construction activities associated with the PPSU project to 60 dBA  $L_{eq}$  or less at the Home Sweet Home facility, at least 10 dB below the speech interference threshold. Therefore, the project's mitigated noise level would not be cumulatively considerable, and the cumulative impact at the Home Sweet Home facility would be *less than significant with mitigation*.

If the GSR project coincides with the PPSU project, it is possible that the cumulative noise levels could exceed the speech interference criterion at the Cypress Lawn Cemetery, which would be a

cumulatively significant impact. Implementation of **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls**, which requires noise control measures and noise barrier walls as part of a Noise Control Plan, would reduce construction-related noise levels from the PPSU project at the Cypress Lawn Cemetery to 62 dBA  $L_{eq}$  or less, below the 66-dBA  $L_{eq}$  speech interference threshold for outdoor areas. In addition, the project description for the GSR project indicates that GSR construction activities would be halted during burial services (Zhang, 2012). As a result, the cumulative noise levels from the PPSU and GSR projects would not cumulatively combine to exceed the 66-dBA  $L_{eq}$  speech interference criterion during burial services. Therefore, the cumulative impact would be *less than significant with mitigation*.

At the South San Francisco site, the closest GSR project sites are approximately 850 feet and 1,250 feet away from the closest sensitive receptors to the PPSU project site. At these distances, construction-related noise levels would be expected to decrease by 59 and 62 dBA, respectively. Thus, due to the distance between the two projects, noise from PPSU construction activities would not combine with noise from the GSR project at this location; therefore, the cumulative impact would be *less than significant*.

At the Millbrae site, the HTWTP construction activities are expected to be complete in March 2015; therefore, HTWTP construction activities will overlap with the tree removal phase of the PPSU project. However, construction-related noise levels at the Meadows Elementary School and residential receptors along Helen Drive from the tree removal phase of the PPSU project would be at least 10 dB lower than the speech interference threshold. The PPSU project noise levels would not combine with the noise levels associated with the HTWTP project to exceed the speech interference threshold; therefore, the cumulative impact would be *less than significant*.

At the common staging area, the PPSU and GSR projects will overlap geographically and occur concurrently. As discussed in Impact NO-1, construction-related noise levels from the PPSU project would exceed the speech interference threshold. When combined with noise levels from the GSR project, the total noise levels could exceed the speech interference threshold at the residential receptors west of the common staging area. However, the duration of this exceedance will be limited to a 2-week period during mobilization for the PPSU project. Therefore, the cumulative impact would be *less than significant*.

### **Access Route Traffic**

The GSR project is projected to use the same access routes as the PPSU project at the Colma and South San Francisco sites. It is estimated that the GSR project would have peak truck traffic of approximately 20 round trips per day at the PPSU site, and approximately 53 round trips per day at the South San Francisco site (Zhang, 2012). Conservatively, it can be estimated that maximum hourly noise levels from cumulative traffic activity could reach 49 dBA  $L_{eq}$  at the Colma site and 60 dBA  $L_{eq}$  at the South San Francisco site. These levels would not exceed the 70-dBA  $L_{eq}$  speech interference criterion. Therefore, there would be no significant cumulative impact. At the Millbrae site, the HTWTP project will also use Larkspur Drive as an access route; however, this route will only be used for heavy trucks during the Sunset Branch Pipeline relining phase, which is estimated to be complete by December 2013. Therefore, the access routes will not be used simultaneously, and there would be no significant cumulative impact. For all of these reasons, cumulative impacts related to access route traffic would be *less than significant*.

### **Exposure of Persons to Noise Levels in Excess of Standards Established in the Local Noise Ordinance**

The Town of Colma Noise Ordinance regulates the noise for single pieces of construction equipment, rather than noise levels at a sensitive receptor. Therefore, cumulative impacts from multiple projects would not conflict with the noise code, and would have *no impact*.

The City of South San Francisco Noise Ordinance limits noise levels to 90 dBA at the project boundary; as discussed above under Construction Equipment, the noise from the GSR project sites would not combine to raise noise levels at the project boundaries. Therefore, the cumulative noise levels from PPSU project in combination with the GSR project would not conflict with the South San Francisco Noise Ordinance, and impacts would be *less than significant*.

As described above, none of the cumulative projects would be located in close enough proximity to the PPSU project at the San Bruno North or San Bruno South sites to combine with the noise or vibration impacts associated with the PPSU project; therefore, there would be *no impacts* associated with the City of San Bruno Noise Ordinance. The City of Millbrae Noise Ordinance does not regulate the noise levels from construction during the permitted time limits. Therefore, cumulative noise from multiple projects would not conflict with the ordinance, and the cumulative impact would be *less than significant*.

### **Exposure of Persons or Structures to Excessive Groundborne Vibration**

The Colma site and common staging area have the potential for combined vibration impacts due to proximity of cumulative projects to these PPSU sites. On the other hand, in the area of the South San Francisco and Millbrae sites, where there would be activities from the GSR and HTWTP sites, respectively, groundborne vibrations would be attenuated due to the distance between the sites in such a way that there would be no cumulative increase at any sensitive receptors.

At the Colma site, concurrent activities from the PPSU and GSR projects could result in an increase of construction-related vibration levels at sensitive receptors. However, the proposed GSR project components would have approximately the same setbacks from sensitive receptors as the PPSU project components and would use similar types of construction equipment (Zhang, 2012); the resulting cumulative levels would not exceed the potential damage threshold. Therefore, the cumulative impact would be *less than significant*.

At the common staging area, the concurrent activities from the PPSU and GSR projects could result in an increase of construction-related vibration levels at sensitive receptors. However, because of the distance between the boundaries of the two projects and the nearby sensitive receptors, the combined vibration levels would be below the potential damage threshold at the sensitive receptors. Therefore, the cumulative impact would be *less than significant*.

## 5.7.4 References

AASHTO (American Association of State Highway and Transportation Officials), 2009. Evaluation of Transportation-Related Earthborne Vibrations, Publication No. R 8-96 (2009).

Caltrans (California Department of Transportation), 1998. Technical Noise Supplement, prepared by Noise, Air Quality, and Hazardous Waste Management Office. October.

Caltrans (California Department of Transportation), 2004. Transportation and Construction-Induced Vibration Guidance Manual, prepared by Jones & Stokes, Publication No. J&S 02-039.

City of Millbrae, 2011. City of Millbrae Municipal Code, Chapter 6.25, Community Preservation. Adopted October 11, 2011.

City of San Bruno, 1998. City of San Bruno Municipal Code, Chapter 6.16, Noise Regulations. Adopted October 2011.

City of South San Francisco, 1990. City of South San Francisco Municipal Code, Chapter 8.32, Noise Regulations. Adopted October 2011.

Foreman, John E.K., 1990. Sound Analysis and Noise Control. Van Nostrand Reinhold, New York.

FHWA (Federal Highway Administration), 2006. Construction Noise Handbook, Publication No. FHWA-HEP-06-015.

FTA (Federal Transit Administration), 2006. Transit Noise and Vibration Impact Assessment, Publication No. FTA-VA-90-1003-06.

Godwin Pumps of America, 2005. Critically-Silenced Dri-Prime Pumps Engineering Data, *Engineering Catalog*, Issue 4.

Harris, Cyril M., 1998. Handbook of Acoustical Measurements and Noise Control, Third Edition. McGraw-Hill, Inc., New York.

Health and Safety Laboratory, 2008. Noise Emissions and Exposure From Mobile Wood Chippers, Publication No. RR618.

Kalkin, Susy, 2013. Personal communication between Susy Kalkin, Chief Planner, City of South San Francisco, and Hannah Young, URS. January 2.

Long, Marshall, 2006. Architectural Acoustics. Published by Elsevier Academic Press.

Roche, Anna, 2011. Personal e-mail communication between Anna Roche, PPSU Environmental Project Manager, SFPUC, and Hannah Young, URS. November 8.

San Mateo County, 1990. County of San Mateo Municipal Code, Chapter 4.88, Noise Control. Adopted June 2012.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

Town of Colma, 2010. Town of Colma Municipal Code, Chapter 5.04.120, Regulations. Adopted March 2010.

U.S. EPA (U.S. Environmental Protection Agency), 1971. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, Publication No. EPA NTID300.1. December.

U.S. EPA (U.S. Environmental Protection Agency), 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, Publication No. EPA 550/9-74-004. March.

Zhang, YinLan, 2012. Personal communication between YinLan Zhang, SFPUC Environmental Project Manager, and Hannah Young, URS, regarding the Regional Groundwater Storage and Recovery Project. December 20.

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## 5.8 Air Quality

This section addresses the air quality impacts that could result from implementation of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project. The principal air emissions generated by the proposed project would be short term in nature and associated with the construction of project facilities. Impacts specific to greenhouse gas emissions and climate change are evaluated in Section 5.9, Greenhouse Gas Emissions.

### 5.8.1 Setting

The project sites are located in San Mateo County in the Town of Colma and the cities of South San Francisco, San Bruno, and Millbrae. The project areas are within the San Francisco Bay Area Air Basin (SFBAAB), which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, as well as the southern portion of Sonoma County and the southwest portion of Solano County. Ambient concentrations of air pollutants in the project area are a product of the quantity of pollutants emitted by local sources, and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect air quality and pollutant transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight.

#### 5.8.1.1 Meteorology

The peninsula region of the SFBAAB extends from the area northwest of San Jose to the Golden Gate. The Santa Cruz Mountains extend up the center of the peninsula, with elevations exceeding 2,000 feet at the south end, and gradually decreasing to an elevation of 500 feet in South San Francisco, where it terminates. San Francisco is at the north end of the peninsula and because most of the topography of San Francisco is below 200 feet, the marine layer is able to flow across most of the city, making its climate relatively cool and windy.

Average maximum and minimum winter (i.e., January) temperatures in the project areas are 56 and 42 degrees Fahrenheit (°F), respectively, while average summer (i.e., July) maximum and minimum temperatures are 72 and 54 °F, respectively. Precipitation at the project areas averages approximately 20 inches per year. Annual average wind speeds range from 5 to 10 miles per hour (mph) throughout the peninsula.

#### 5.8.1.2 Ambient Air Quality

The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network that measures the ambient concentrations of six criteria air pollutants: ozone, carbon monoxide (CO), particulate matter less than or equal to 10 microns in diameter (PM<sub>10</sub>), particulate matter less than or equal to 2.5 microns in diameter (PM<sub>2.5</sub>), nitrogen dioxide (NO<sub>2</sub>), and sulfur dioxide (SO<sub>2</sub>). Existing and probable future air quality in the project area can best be inferred by examining ambient air quality measurements taken by the BAAQMD at its San Francisco–Arkansas Street monitoring station over the past 3 years. The San Francisco–Arkansas Street monitoring station is the closest station to the project areas, 6 miles north of the Colma site (northernmost site) and 10 miles north of the Millbrae site (southernmost site). Table 5.8-1 presents a 3-year summary of monitoring data (2009–2011) from the San Francisco–Arkansas

**Table 5.8-1  
San Francisco-Arkansas Street Ambient Air Quality Monitoring Summary 2009-2011**

Pollutant	Most Stringent Applicable Standard	Number of Days Standards were Exceeded and Maximum Concentrations Measured		
		2009	2010	2011
<b>Ozone</b>				
Maximum 1-hour concentration (ppm)		0.072	0.079	0.070
Days 1-hour standard exceeded	>0.09 ppm <sup>1</sup>	0	0	0
Maximum 8-hour concentration (ppm)		0.057	0.051	0.054
Days 8-hour standard exceeded	>0.07 ppm <sup>1</sup>	0	0	0
Days 8-hour standard exceeded	>0.075 ppm <sup>2</sup>	0	0	0
<b>Carbon Monoxide</b>				
Maximum 8-hour concentration (ppm)		2.86	1.37	1.20
Maximum 1-hour concentration (ppm)		4.3	1.8	1.8
Days 1-hour standards exceeded	>20 ppm <sup>1</sup>	0	0	0
Days 8-hour standards exceeded	>9 ppm <sup>1,2</sup>	0	0	0
<b>Nitrogen Dioxide</b>				
Maximum 1-hour concentration (ppm)		0.059	0.093	0.093
Days 1-hour standard exceeded	>0.18 ppm <sup>1</sup>	0	0	0
<b>Suspended Particulates (PM<sub>10</sub>)</b>				
Maximum 24-hour concentration (µg/m <sup>3</sup> )		36.0	39.7	45.6
Days 24-hour standard exceeded	>50 µg/m <sup>3</sup> <sup>1</sup>	0	0	0
Days 24-hour standard exceeded	>150 µg/m <sup>3</sup> <sup>2</sup>	0	0	0
<b>Suspended Fine Particulates (PM<sub>2.5</sub>)</b>				
Maximum 24-hour concentration (µg/m <sup>3</sup> )		35.5	45.3	47.5
Days 24-hour standard exceeded	>35 µg/m <sup>3</sup>	1	3	2
<b>Annual Average (µg/m<sup>3</sup>)</b>		-	10.5	9.5
Annual standard exceeded?	>12 µg/m <sup>3</sup> <sup>1</sup>	-	No	No
Sources: CARB, 2009 to 2011; U.S. EPA, 2009 to 2011.				
Notes:				
<sup>1</sup> State Standard, not to be exceeded.				
<sup>2</sup> Federal standard, not to be exceeded.				
"-" indicates that data are not available				
µg/m <sup>3</sup> = micrograms per cubic meter				
ppm = parts per million				

Street monitoring station, and compares measured maximum pollutant concentrations against the most stringent applicable ambient air quality standards (both State and federal standards are described below in Section 5.8.2). SO<sub>2</sub> is not included in the table because this pollutant was not monitored at the San Francisco–Arkansas Street monitoring station.

### ***Ozone***

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO<sub>x</sub>). The main sources of NO<sub>x</sub> and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. Automobiles are the single largest source of ozone precursors in the Bay Area. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process, resulting in the regional dispersion of ozone. Ozone causes eye irritation, airway constriction, and shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema (BAAQMD, 2011a). Table 5.8-1 shows that, according to published data, the more stringent applicable standards have not been exceeded during the past 3 years.

### ***Carbon Monoxide***

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, dizziness, fatigue, unconsciousness, and even death (BAAQMD, 2011a). Table 5.8-1 shows that no exceedances of CO standards were recorded at the San Francisco–Arkansas Street monitoring station between 2009 and 2011. Maximum 8-hour CO levels average less than 25 percent of the allowable 8-hour standard.

### ***Suspended and Inhalable Particulate Matter***

Particulate matter is a class of air pollutants that consists of solid and liquid airborne particles in an extremely small size range. Particulate matter is measured in two size ranges: PM<sub>10</sub> for particles less than 10 microns in diameter, and PM<sub>2.5</sub> for particles less than 2.5 microns in diameter. Motor vehicles generate about half of all Bay Area particulates, through tailpipe emissions as well as brake pad and tire wear. Another large source of fine particulates is wood burning in fireplaces and stoves. Fine particulates small enough to be inhaled into the deepest parts of the human lung can cause adverse health effects. Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM<sub>2.5</sub> poses an increased health risk because the particles can deposit deep in the lungs, and they contain substances that are particularly harmful to human health (BAAQMD, 2011a).

Diesel exhaust is an important concern in the Bay Area and throughout California. The California Air Resources Board (CARB) identified diesel particulate matter (DPM) as a toxic air contaminant (TAC), and DPM has also been identified as a human carcinogen. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Many of these toxic compounds adhere to the diesel soot particles, which are very small

and can penetrate deeply into the lungs. Several medical research studies have linked near-road pollution exposure to a variety of adverse health outcomes impacting children and adults, including significant allergic response and elevated production of specific antibodies (BAAQMD, 2011a).

Table 5.8-1 shows that no exceedances of the State PM<sub>10</sub> standard occurred at the San Francisco–Arkansas Street monitoring station over the last 3 years. The less stringent federal 24-hour PM<sub>10</sub> standard, therefore, was also not exceeded during this period.

In 2006, the U.S. Environmental Protection Agency (U.S. EPA) revised the standard for PM<sub>2.5</sub>, which represents the fine fraction of particulate matter. California’s annual average standard went into effect in 2003. Table 5.8-1 presents the PM<sub>2.5</sub> data from the San Francisco–Arkansas Street monitoring station for 2009 through 2011. The federal 24-hour PM<sub>2.5</sub> standard was exceeded once in 2009, three times in 2010, and twice in 2011.

### *Other Criteria Pollutants*

The standards for NO<sub>2</sub>, SO<sub>2</sub>, and lead are being met in the SFBAAB, and pollutant trends suggest that the air basin will continue to meet these standards for the foreseeable future.

### **5.8.1.3 Toxic Air Contaminants**

TACs are a defined set of airborne air pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor vehicles, emit TACs. Like PM<sub>2.5</sub>, TACs can be emitted directly and can also be formed in the atmosphere through reactions with different pollutants. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic damage; or short-term acute effects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches. DPM, a component of PM<sub>2.5</sub>, accounts for more than 80 percent of the inhalation cancer risk from TACs in the Bay Area, and is one of the TACs of greatest concern. There are two categories of the most common sources of TACs: stationary sources such as backup diesel generators, drycleaners, and gasoline stations; and on-road mobile sources from cars and trucks on high traffic volume roadways, and off-road mobile sources such as construction equipment, ships, and trains.

In addition to monitoring criteria air pollutants, both the BAAQMD and the CARB operate TAC monitoring networks in the San Francisco Bay Area. These stations measure 10 to 15 TACs, depending on the specific station. The TACs selected for monitoring are those that have traditionally been found in the highest concentrations in ambient air, and therefore tend to produce the most significant risk. The San Francisco–Arkansas Street monitoring station measures TAC concentrations in addition to criteria pollutants. Average TAC concentrations in at the monitoring station were within the range measured at other TAC monitoring stations within the SFBAAB (BAAQMD, 2009a).

In the Bay Area, there are a number of areas where the exposure of sensitive populations to TACs is relatively high. These areas are identified by the BAAQMD as Impacted Communities. The PPSU project areas are not located within any Impacted Community boundaries.

### ***Permitted Stationary Sources, Mobile Sources, and Concurrent Construction Projects in the Project Vicinity<sup>1</sup>***

Stationary emission sources permitted by the BAAQMD and major roadway sources (>10,000 annual average daily traffic [AADT]) located within 1,000 feet of the project area are listed in Table 5.8-2 and shown on Figure 1 in Appendix E. No major nonpermitted sources (e.g., train yards, distribution facilities, and high volume fueling stations) are located within 1,000 feet of the project area.

There is only one construction project within the project's 1,000-foot buffer zone: the Regional Groundwater Storage and Recovery (GSR) project, which would be constructed from June 2014 through May 2016, and would coincide with the project's construction period.

**Stationary Sources.** The screening  $PM_{2.5}$  concentration, cancer risks, and hazards values for permitted stationary sources were obtained from the BAAQMD county-specific files for Google Earth™ (BAAQMD, 2012b). The BAAQMD gas station cancer risk and chronic hazard distance multipliers were used for gas stations, such as the Westborough Chevron, Comino Petroleum, Orange Avenue Shell, and the Shelter Creek Chevron. The multiplier is based on the distance between the gas station and the nearest sensitive receptor. There was one diesel generator for which BAAQMD did not provide screening values. The  $PM_{2.5}$  concentrations, cancer risks, and hazards values for that source were included in the cumulative analysis by modeling permitted emission rates, provided by the BAAQMD, in Industrial Source Complex Short Term Model 3 (ISCST3).

**Major Roadways.** The screening  $PM_{2.5}$  concentration, cancer risks, and hazards values for highways and major roadways greater than 10,000 AADT were obtained from the BAAQMD county-specific files for Google Earth™ (BAAQMD, 2012b), based on distance from the nearest sensitive receptor. Traffic data for major surface roadways were obtained from the California Environmental Health Tracking Program traffic tool (CEHTP, 2012).

**Other Construction Projects.** As mentioned above, the only construction project within the 1,000-foot buffer zone that is anticipated to be constructed during the PPSU construction period is the GSR project. Two GSR wells are in the vicinity of the Colma site, and three GSR wells are in the vicinity of the South San Francisco site. The cancer risk, acute or chronic hazard index, and  $PM_{2.5}$  concentrations for these wells were obtained from the GSR Air Quality Technical Report (Illingworth and Rodkins, Inc., 2012), and used to estimate construction cumulative health risk values.

#### **5.8.1.4 Sensitive Receptors**

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive than the general population to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. People engaged in strenuous work or exercise are also more sensitive to poor air quality.

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<sup>1</sup> Permitted stationary sources, mobile sources, and concurrent construction projects in the project vicinity are analyzed together with the PPSU project in Section 5.8.3.6, Cumulative Impacts and Mitigation Measures.

**Table 5.8-2  
Permitted Stationary, Mobile, and Concurrent Construction Project Emissions Sources in the Project Vicinity<sup>1</sup>**

Project Site	Nearby Sources <sup>5</sup>				Nearby Construction Projects			
	Plant Number/Plant Name	Annual Average PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Cancer Risk (per million)	Chronic Hazard	Project Name	Annual Average PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Cancer Risk (per million)	Chronic Hazard
Colma Site	G11198: Lexus of Serramonte	N/A	8.722	0.012	Regional Groundwater Storage and Recovery Project <sup>7</sup>	0.010	1.1	0.18
	8758: Serramonte Ford Body Shop	0.018	0.000	0.000				
	12251: G & M Auto Body	0.000	0.040	0.000				
	12368: Honda of Serramonte	0.000	0.000	0.000				
	G8650: Home of Peace Cemetery	N/A	0.222	0.000				
	El Camino Real <sup>2</sup>	0.077	2.571	0.030				
	Serramonte Boulevard <sup>2</sup>	0.034	1.161	0.030				
South San Francisco Site (including common staging area)	G11428: <sup>6</sup> Westborough Chevron	N/A	0.331	0.001	Regional Groundwater Storage and Recovery Project <sup>7</sup>	0.070	7.9	0.46
	19316: <sup>4</sup> Access Properties LLC	0.000	0.008	0.000				
	El Camino Real <sup>2</sup>	0.020	0.804	0.030				
	Westborough Boulevard <sup>2</sup>	0.204	5.903	0.030				
	5611: Daland Body Shop	0.000	0.000	0.000				
	14240: SFPUC Water Supply and Treatment Division	0.104	58.80	0.021				
	19842: Chestnut Cleaners	0.000	7.490	0.020				
	G11391: <sup>6</sup> Camino Petroleum	N/A	0.214	0.019				
G12394: <sup>6</sup> Orange Avenue Shell	N/A	0.149	0.013					
San Bruno North Site	G3134: <sup>6</sup> Shelter Creek Chevron	N/A	0.618	0.001	N/A	N/A	N/A	N/A
	I-280 <sup>3</sup>	0.118	6.843	0.009				
San Bruno South Site	16280: Verizon Wireless Highway 35/280	0.003	11.140	0.004	N/A	N/A	N/A	N/A
	I-280 <sup>3</sup>	0.034	2.008	0.002				
Millbrae Site	G7549: Green Hills Country Club	N/A	0.635	0.001	N/A	N/A	N/A	N/A

Sources: BAAQMD, 2012b; Illingworth and Rodkins, Inc., 2012.

Notes:

- <sup>1</sup> Permitted stationary sources, mobile sources, and concurrent construction projects in the project vicinity are analyzed together with the PPSU project in Section 5.8.3.6, Cumulative Impacts and Mitigation Measures.
- <sup>2</sup> Roadway annual average PM<sub>2.5</sub> and cancer risk for surface streets >10,000 AADT were estimated from screening tables provided by BAAQMD (BAAQMD, 2012b) and traffic data from the California Environmental Health Tracking Program traffic tool (CEHTP, 2012). The maximum acute and chronic HI for roadways will be less than 0.03 µg/m<sup>3</sup>.
- <sup>3</sup> Interstate annual average PM<sub>2.5</sub>, cancer risk, and chronic hazard values were estimated from the BAAQMD highway screening analysis tool for San Mateo County (BAAQMD, 2012b).
- <sup>4</sup> For Source #19316, URS was provided average daily emissions, and not annual average PM<sub>2.5</sub>, cancer risk, or chronic hazard. Consequently, the annual PM<sub>2.5</sub> concentration, cancer risk, and chronic hazard were estimated by assuming this source was located at the construction site, and the same ratio methodology described in footnote 4 was used to calculate a worst case impact.
- <sup>5</sup> Some nearby sources emit PM<sub>2.5</sub>, but in quantities below the significant figures reported to the BAAQMD. These are represented by zero. Sources that do not emit PM<sub>2.5</sub> (e.g., gas stations) have N/A for PM<sub>2.5</sub> concentrations. In addition, for cancer risk and chronic hazard, some sites register values below the significant figures used by the BAAQMD.
- <sup>6</sup> The BAAQMD gas station cancer risk and chronic hazard distance multipliers were used where appropriate using the distance between the gas station and the nearest sensitive receptor.
- <sup>7</sup> GSR wells 8 and 17 (alternate) are in the vicinity of the Colma site, and GSR wells 11, 12, and 19 (alternate) are in the vicinity of the South San Francisco site.

AAADT = annual average daily traffic

BAAQMD = Bay Area Air Quality Management District

HI = hazard index

I-280 = Interstate 280

µg/m<sup>3</sup> = micrograms per cubic meter

PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter

SFPUC = San Francisco Public Utilities Commission

Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational uses or parks are also considered sensitive due to the greater exposure to ambient air quality conditions, and because the presence of pollution detracts from the recreational experience.

All sites, with the exception of the Colma site, are located within residential areas. Figures 2 through 6 in Appendix E identify the sensitive receptors within 1,000 feet of the sites.

As shown on Figure 2 in Appendix E, sensitive receptors at the Colma site include Home Sweet Home assisted living center and the adjacent residence along El Camino Real, east of the construction zone.

As shown on Figure 3 in Appendix E, sensitive receptors within the 1,000-foot buffer at the South San Francisco site are residences along West Orange Avenue, Fairway Drive, and Southwood Drive to the south of the project construction zone and east of the staging and spoils area; and residences along Arroyo Drive, Alta Mesa Drive, Indio Drive, Del Monte Drive, Camaritas Avenue, Del Paso Drive, Hermosa Lane, and Chico Court to the north of the project construction zone and the staging and spoils area. There are also residences along A Street, B Street, and C Street to the south of the project construction area and west of the staging and spoils area. Other sensitive receptors identified on Figure 3 within the 1,000-foot buffer zone include the Westborough Royale Assisted Living Center and Our Redeemers Lutheran Church. Baden High School, South San Francisco Adult School, and Los Cerritos Elementary School are located just outside the 1,000-foot buffer zone.

As shown on Figure 4 in Appendix E, sensitive receptors within a 1,000-foot buffer zone at the San Bruno North site include residences along Crestwood Drive, Cunningham Highway, and Hawthorne Avenue to the east of the project construction zone and the staging and spoils area; residences along Cedarwood Court, Hickory Avenue, Juniper Avenue, Holly Avenue, and Pepper Drive to the east of the project construction zone and the staging and spoils area; and the Shelter Creek condominiums to the southwest of the project construction zone.

As shown on Figure 5 in Appendix E, the San Bruno South site includes sensitive receptors within a 1,000-foot buffer zone, such as residences along Rosewood Drive, Madison Avenue, and Glenbrook Lane to the west of the project construction zone and the staging and spoils area; the Peninsula High School<sup>2</sup> to the south of the project construction zone and the staging and spoils area; and the San Bruno Chinese Church to the east of the project staging and spoil area.

As shown on Figure 6 in Appendix E, sensitive receptors near the construction area and the staging and spoils areas at the Millbrae site include the residences along Lomita Avenue, Terrance Drive, Ridgewood Drive, Robin Lane, Brookside Lane, Glenwood Drive, Fernwood Drive, Elmwood Drive, Oakwood Lane, and Banbury Lane to the west of the project construction zone and the staging and spoils area; residences along Parkview Drive, Bayview Avenue, Santa Barbara Avenue, Guadalupe Avenue, and Santa Margarita Avenue to the east of the project

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<sup>2</sup> Other uses at the Peninsula High School, in addition to the continuation high school, include Crayon College (a daycare), Central Peninsula Church, and San Bruno Community Services sports activities on the athletic fields.

staging and spoils area; and residences along Ridgewood Drive, Helen Drive, and Evergreen Way to the south of the project construction zone and the staging and spoils area. Other notable sensitive receptors within the 1,000-foot area of the emission sources at the Millbrae site include the Glen Oaks Montessori School and Millbrae Montessori School north of the construction zone. Meadows Elementary School is identified as a sensitive receptor on Figure 6 in Appendix E, even though it is outside of the 1,000-foot buffer zone, because of potential impacts given the proximity to the project.<sup>3</sup>

## 5.8.2 Regulatory Framework

### 5.8.2.1 Federal and State Regulations

The Clean Air Act Amendments of 1970 established national ambient air quality standards, and individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological problems in California, there is considerable diversity between the State and national ambient air quality standards, as shown in Table 5.8-3. California ambient standards tend to be at least as protective as national ambient standards, and are often more stringent.

The ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, the elderly, people weak from other illness or disease, or people engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above the ambient air quality standards before adverse health effects are observed.

#### *Federal Clean Air Act*

The 1977 Clean Air Act (last amended in 1990; United States Code, Title 42, Section 7401 et seq.) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled to achieve all standards within the deadlines specified in the Clean Air Act.

In 1982, the Association of Bay Area Governments, the Metropolitan Transportation Commission, and the BAAQMD jointly prepared the Bay Area Air Quality Plan for the SFBAAB. The plan predicted attainment of the federal clean air standards within the air basin by 1987; however, federal clean air standards were not attained throughout the entire air basin until 1991. The Bay

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<sup>3</sup> Meadows Elementary School is located approximately 1,200 feet from the emission sources at the Millbrae site. BAAQMD guidance states that impacts to sensitive receptors within the 1,000-foot area of the project site should be analyzed. Even though the school falls outside the 1,000-foot buffer zone, the school was conservatively included in the health risk analysis because of its proximity to the project and the construction access routes.



**Table 5.8-3  
State and Federal Ambient Air Quality Standards and SFBAAB Attainment Status**

Pollutant	Averaging Time	State Standards <sup>1</sup>		Federal Standards <sup>2</sup>	
		Concentration	Attainment Status	Concentration <sup>3</sup>	Attainment Status
Ozone	1 hour	0.09 ppm (180 µg/m <sup>3</sup> )	N	N/A	–
	8 hour	0.07 ppm (137 µg/m <sup>3</sup> )	N	0.075 ppm (147 µg/m <sup>3</sup> )	N <sup>4</sup>
Carbon Monoxide	1 hour	20 ppm (23 mg/m <sup>3</sup> )	A	35 ppm (40 mg/m <sup>3</sup> )	A
	8 hour	9 ppm (10 mg/m <sup>3</sup> )	A	9 ppm (10 mg/m <sup>3</sup> )	A
Nitrogen Dioxide	1 hour	0.18 ppm (339 µg/m <sup>3</sup> )	A	0.10 ppm <sup>5</sup>	U
	Annual arithmetic mean	0.030 ppm (57 µg/m <sup>3</sup> )	N/A	0.053 ppm (100 µg/m <sup>3</sup> )	A
Sulfur Dioxide <sup>6</sup>	1 hour	0.25 ppm (655 µg/m <sup>3</sup> )	A	0.075 ppm (196 µg/m <sup>3</sup> )	A
	24 hour	0.04 ppm (105 µg/m <sup>3</sup> )	A	0.14 ppm (365 mg/m <sup>3</sup> )	A
	Annual arithmetic mean	N/A	–	0.03 ppm (80 mg/m <sup>3</sup> )	A
Particulate Matter (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3</sup>	N	150 µg/m <sup>3</sup>	U
	Annual arithmetic mean	20 µg/m <sup>3</sup>	N	N/A	–
Fine Particulate Matter (PM <sub>2.5</sub> )	24 hour	N/A	–	35 µg/m <sup>3</sup> <sup>7</sup>	N
	Annual arithmetic mean	12 µg/m <sup>3</sup>	N	15 µg/m <sup>3</sup>	A
Sulfates	24 hour	25 µg/m <sup>3</sup>	A	N/A	–
Lead <sup>8</sup>	30 day average	1.5 µg/m <sup>3</sup>	–	N/A	A
	Calendar quarter	N/A	–	1.5 µg/m <sup>3</sup>	A
	Rolling 3 month average <sup>9</sup>	N/A	–	0.15 µg/m <sup>3</sup>	<sup>9</sup>
Hydrogen Sulfide	1 hour	0.03 ppm (42 µg/m <sup>3</sup> )	U	N/A	–

**Table 5.8-3  
State and Federal Ambient Air Quality Standards and SFBAAB Attainment Status (Continued)**

Pollutant	Averaging Time	State Standards <sup>1</sup>		Federal Standards <sup>2</sup>	
		Concentration	Attainment Status	Concentration <sup>3</sup>	Attainment Status
Vinyl Chloride <sup>8</sup>	24 hour	0.01 ppm (26 µg/m <sup>3</sup> )	-	N/A	-

Source: BAAQMD, 2012a

Notes:

- <sup>1</sup> State ambient air quality standards (California). The State standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and suspended particulate matter (PM<sub>10</sub>) are values that are not to be exceeded. All other State standards shown are values not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM<sub>10</sub> annual standard), then some measurements may be excluded. In particular, measurements are excluded that the CARB determined would occur less than once per year on the average.
- <sup>2</sup> National ambient air quality standards. National standards shown are the "primary standards" designed to protect public health. National standards, other than for ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentration is 0.075 ppm (775 ppb) or less. The 24-hour PM<sub>10</sub> standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m<sup>3</sup>. The 24-hour PM<sub>2.5</sub> standard is attained when the 3-year average of 98th percentile is less than 35 µg/m<sup>3</sup>.
- <sup>3</sup> National air quality standards are set by U.S. EPA at levels determined to be protective of public health with an adequate margin of safety.
- <sup>4</sup> In early January 2010, the U.S. EPA proposed a stricter air quality standard for ground level ozone. The new ozone proposal would set the primary smog standard at a level between 0.060 and 0.070 ppm measured over an 8-hour period. The U.S. EPA released a draft ambient air quality standard preamble for ozone in July 2011, but no standards have been finalized as of February 2013.
- <sup>5</sup> To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
- <sup>6</sup> On June 2, 2010, the U.S. EPA established a new 1-hour SO<sub>2</sub> standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO<sub>2</sub> national standards must continue to be used, however, until 1 year following U.S. EPA initial designations of the new 1-hour SO<sub>2</sub> national standard. The 1971 SO<sub>2</sub> 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.
- <sup>7</sup> The U.S. EPA designated the SFBAAB as nonattainment of the PM<sub>2.5</sub> standard on October 8, 2009. The effective date of the designation is December 14, 2009, and the BAAQMD has 3 years to develop SIP that demonstrates the SFBAAB will achieve the revised standard by December 14, 2014. CARB revised the SIP on December 6, 2012, and submitted it to the U.S. EPA on January 14, 2013.
- <sup>8</sup> The CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure below which there are no adverse health effects determined.
- <sup>9</sup> National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations effective December 31, 2011.

A = attainment; N = nonattainment; U = unclassified; N/A = not applicable or no applicable standard; - = not indicated or no information available

CARB = California Air Resources Board

µg/m<sup>3</sup> = micrograms per cubic meter

mg/m<sup>3</sup> = milligrams per cubic meter

PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter

PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter

ppb = parts per billion

ppm = parts per million

SFBAAB = San Francisco Bay Area Air Basin

SIP = State Implementation Plan

SO<sub>2</sub> = sulfur dioxide

U.S. EPA = U.S. Environmental Protection Agency

Area Air Quality Plan was incorporated into California's State Implementation Plan (SIP), a plan required under the federal Clean Air Act. A SIP must contain control strategies that demonstrate attainment of national ambient air quality standards by specific Clean Air Act deadlines.

The SFBAAB's current attainment status with respect to federal standards is summarized in Table 5.8-3. In general, the Bay Area experiences low concentrations of most pollutants when compared to federal standards, except for ozone and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), for which standards are exceeded periodically. The SFBAAB's attainment status for ozone has changed several times over the past decade, first from "nonattainment" to "attainment" in 1995, then back to "unclassified nonattainment" in 1998 for the 1-hour federal ozone standard. In June 2004, the Bay Area was designated as "marginal nonattainment" for the 8-hour ozone standard. In 2008, the U.S. EPA lowered the 8-hour ozone standard from 0.08 part per million (ppm) to 0.075 ppm. As a designated "marginal" nonattainment area for the federal 8-hour ozone standard, preparation of a SIP is currently not required.

### *California Clean Air Act*

In 1988, California passed the California Clean Air Act (California Health and Safety Code Section 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on the State ambient air quality standards rather than the federal standards. The attainment status of the SFBAAB with respect to State standards is summarized in Table 5.8-3. As shown in the table, the Bay Area experiences low concentrations of most pollutants when compared to State standards, except for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>, for which standards are exceeded periodically. The California Clean Air Act requires that air districts in which State air quality standards are exceeded must prepare a plan that documents reasonable progress towards attainment. A 3-year update is required. In the Bay Area, this planning process is incorporated into the Clean Air Plan (CAP) (BAAQMD, 2010a), and the BAAQMD adopted the CAP in 2010 (see discussion below under the heading Bay Area Air Quality Management Basin).

### *California Air Resources Board*

The CARB is the State agency responsible for regulating air quality. Its responsibilities include establishing State ambient air quality standards, emissions standards, and regulations for mobile emissions sources (e.g., autos and trucks), in addition to overseeing the efforts of countywide and multi-county air pollution control districts, which have primary responsibility over stationary sources. The emission standards most relevant to the proposed project are those related to on- and off-road heavy-duty diesel engines. The CARB also regulates vehicle fuels with the intent of reducing emissions; it has set emission reduction performance requirements for gasoline (California reformulated gasoline), and limited the sulfur and aromatic content of diesel fuel to make it burn cleaner. The CARB also sets the standards used to pass or fail vehicles in smog-check and heavy-duty truck inspection programs. In 2005, the CARB approved the Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling to reduce emissions of toxic and criteria pollutants by limiting the idling of new heavy-duty diesel vehicles, which altered five sections of Title 13 of the California Code of Regulations (CCR). The relevant changes with respect to the proposed project are in Section 2485. Pertinent requirements of the measure include:

(c) The driver of any vehicle subject to this section:

1. shall not idle the vehicle's primary diesel engine for greater than 5 minutes at any location, except as noted below; and
2. shall not operate a diesel-fueled auxiliary power system to power a heater, air conditioner, or any ancillary equipment on that vehicle during sleeping or resting in a sleeper berth for greater than five minutes at any location when within 100 feet of a restricted area, except as noted below.

"Restricted area" means any real property zoned for individual or multifamily housing that has one or more such units. There are 12 exceptions to this requirement (e.g., emergency situations, military, adverse weather conditions, etc.), including when a vehicle's power takeoff is being used to run pumps, blowers, or other equipment; when a vehicle is stuck in traffic, stopped at a light, or under direction of a police officer; when a vehicle is queuing beyond 100 feet from any restricted area; and when an engine is being tested, serviced, or repaired.

### **5.8.2.2 Local Regulations**

#### ***Bay Area Air Quality Management District***

The BAAQMD replaced its former guidelines (December 1999) by issuing the California Environmental Quality Act (CEQA) Air Quality Guidelines, including Air Quality CEQA Thresholds of Significance, in June 2010 and updating them in May 2011 with new risk and hazard thresholds for sensitive receptors (BAAQMD, 2010b; BAAQMD, 2011a). The guidelines include new thresholds of significance to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. These guidelines include recommendations for analytical methodologies to determine air quality impacts and identify mitigation measures that can be used to avoid or reduce air quality impacts.

BAAQMD's guidelines include procedures for evaluating whether a project's construction and operational criteria pollutant emissions would result in a significant air quality impact, along with mitigation to reduce or eliminate any significant air impacts. BAAQMD's guidelines also include procedures for evaluating TAC impacts resulting from project construction and operation. These procedures consist of a step-by-step approach for determining whether a project's TAC emissions would result in significant acute, chronic, or carcinogenic health risks.

The BAAQMD's adoption of significance thresholds for air quality analysis in 2010 and 2011 were the subject of judicial actions, and adoption of the thresholds has been set aside. However, SF Planning has determined that Appendix D of the BAAQMD CEQA Air Quality Guidelines, in combination with BAAQMD's Revised Draft Options and Justification Report (BAAQMD, 2009b), provide substantial evidence to support the BAAQMD recommended thresholds. Therefore, the Planning Department has determined they are appropriate for use in this analysis as standards of significance.

A more detailed discussion of BAAQMD's significance thresholds and the recommended analysis methodologies used in this analysis are described in the impact assessment section below.

## 5.8.3 Impacts and Mitigation Measures

### 5.8.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to air quality, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal, State, or regional ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

### 5.8.3.2 Approach to Analysis

Due to the general nature of the CEQA Appendix G checklist thresholds, BAAQMD developed the following quantitative CEQA thresholds, which are being used in this analysis and are described in Section 5.8.2.2 above. This section discusses the thresholds for determining whether a project would result in a significant air quality impact. Table 5.8-4 summarizes the air quality thresholds of significance, followed by a discussion of each threshold.

**Ozone Precursors.** As discussed previously, the SFBAAB is currently designated as nonattainment for ozone and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NO<sub>x</sub>. The BAAQMD is the primary regulatory agency in the SFBAAB charged with ensuring that the region attains applicable federal and State ambient air quality standards. 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 Clean Air Acts emissions limits for stationary sources. The federal New Source Review (NSR) program was created by the federal Clean Air Act 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. Similarly, 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<sub>x</sub>, the offset emissions level is an annual average of 10 tons per year (or 54 pounds per day) (BAAQMD, 2009b, page 17). 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.

**Table 5.8-4  
Air Quality Significance Thresholds**

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (pounds/day)	Average Daily Emissions (pounds/day)	Annual Average Emissions (tons/year)
<b>Criteria Air Pollutants</b>			
ROG	54	54	10
NO <sub>x</sub>	54	54	10
PM <sub>10</sub>	82 <sup>1</sup>	82	15
PM <sub>2.5</sub>	54 <sup>1</sup>	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
<b>Health Risks and Hazards for New Sources</b>			
Excess Cancer Risk	10 per one million	10 per one million	
Chronic or Acute Hazard Index	1.0	1.0	
Incremental annual average PM <sub>2.5</sub>	0.3 µg/m <sup>3</sup>	0.3 µg/m <sup>3</sup>	
<b>Health Risks and Hazards for Sensitive Receptors (Cumulative from all sources within 1,000-foot zone of influence) and Cumulative Thresholds for New Sources</b>			
Excess Cancer Risk	100 per one million		
Chronic Hazard Index	10.0		
Annual Average PM <sub>2.5</sub>	0.8 µg/m <sup>3</sup>		
Source: BAAQMD, 2010b.			
Notes:			
<sup>1</sup> PM <sub>10</sub> and PM <sub>2.5</sub> thresholds for construction apply only to exhaust emissions and do not include the fugitive dust component.			
CO = carbon monoxide			
µg/m <sup>3</sup> = micrograms per cubic meter			
NO <sub>x</sub> = oxides of nitrogen			
PM <sub>10</sub> = particulate matter less than or equal to 10 microns in diameter			
PM <sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter			
ppm = parts per million			
ROG = reactive organic gas			

Although this regulation applies to new or modified stationary sources, land use development projects result in ROG and NO<sub>x</sub> emissions as a result of increases in vehicle trips, architectural coating, and construction activities. Therefore, the thresholds discussed above can be applied to the construction and operational phases of land use projects, and those projects that result in 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 ROG and NO<sub>x</sub> emissions. Because construction activities are temporary in nature, only the average daily thresholds are applicable to construction phase emissions.

**Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>).** The BAAQMD has not established an offset limit for PM<sub>2.5</sub>, and the current federal Prevention of Significant Deterioration offset limit of 100 tons per year for PM<sub>10</sub> is too high and would not be an appropriate significance threshold for the SFBAAB considering the nonattainment status of PM<sub>10</sub>. However, the emissions limits provided for in the federal NSR that apply to stationary sources that emit criteria air pollutants in areas that are currently designated as nonattainment is an appropriate significance threshold. For PM<sub>10</sub> and PM<sub>2.5</sub>, the emissions limit under NSR is 15 tons per year (82 pounds per day) and 10 tons per year (54 pounds per day), respectively. These emissions limits represent levels at which a source is not expected to have an impact on air quality (BAAQMD, 2009b, page 16). Similar to ozone precursor thresholds identified above, land use development projects typically result in particulate matter emissions as a result of increases in vehicle trips, space heating and natural gas combustion, landscape maintenance, and construction activities. Therefore, the thresholds discussed above can be applied to the construction and operational phases of a land use project. Those projects that result in emissions below the NSR emissions limits would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in PM<sub>10</sub> and PM<sub>2.5</sub> emissions. Because construction activities are temporary in nature, only the average daily thresholds are applicable to construction-phase emissions.

**Other Criteria Pollutants.** Regional concentrations of CO in the SFBAAB have not exceeded the California ambient air quality standards in the past 11 years, and SO<sub>2</sub> concentrations have never exceeded the standards. The primary source of CO impacts from land use projects is vehicle traffic. Construction-related SO<sub>2</sub> emissions represent a negligible portion of the total basin-wide emissions, and construction-related CO emissions represent less than 5 percent of the SFBAAB total basin-wide CO emissions (BAAQMD, 2009b, page 27). As discussed previously, the SFBAAB is designated as attainment for both CO and SO<sub>2</sub>. Furthermore, the BAAQMD has demonstrated that to exceed the California ambient air quality standard of 9.0 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 SFBAAB's attainment status and the limited CO and SO<sub>2</sub> emissions that could result from land use projects, land use projects would not result in a cumulatively considerable net increase in CO or SO<sub>2</sub>, and quantitative analysis is not required.

**Fugitive Dust.** Fugitive dust emissions are typically generated during construction phases. Studies have shown that the application of best management practices (BMPs) at construction sites significantly control fugitive dust (Western Regional Air Partnership, 2006). Individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to 90 percent (BAAQMD, 2009b, page 27). The BAAQMD has identified a number of BMPs to control fugitive

dust emissions from construction activities (BAAQMD, 2011a). The BAAQMD does not require quantification of fugitive dust emissions for projects employing fugitive dust control BMPs.

**Health Risks and Hazards from New or Modified Sources.** Construction activities typically require the use of heavy-duty diesel vehicles and equipment, which emit DPM. CARB identified DPM as a TAC in 1998, based on evidence demonstrating cancer effects in humans (CARB, 1998). The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways. Other sources of health risks and hazards include gas stations, stationary diesel engines (i.e., backup generators), dry cleaners, crematories, spray booths, diesel-fueled railroads, major ports, railyards, airports, oil refineries, power plants, and cement plants (BAAQMD, 2011b, page 11). Land use projects that require a substantial amount of heavy-duty diesel vehicles and equipment, as well as projects that require stationary sources, such as a diesel backup generator, would result in emissions of DPM and possibly other TACs that may affect nearby sensitive receptors. Construction-phase TACs, however, would be temporary, and current health risk modeling methodologies are associated with longer-term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities, resulting in difficulties with producing accurate modeling results (BAAQMD, 2009b, page 29). Nevertheless, DPM is a known TAC; therefore, appropriate thresholds are identified to ensure that a project does not expose sensitive receptors to substantial pollutant concentrations.

Similar to criteria pollutant thresholds identified above, the 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 noncarcinogenic chronic and acute health hazards. Acute and chronic noncancer health hazards are expressed in terms of an HI, which is a ratio of the TAC concentration to a reference exposure level (REL), a level below which no adverse health effects are expected, even for sensitive individuals (BAAQMD, 2009b, page D-35). 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 increase in chronic or acute HI of 1.0 at the MEI. This threshold is designed to ensure that the source does not contribute to a cumulatively significant health risk impact (BAAQMD, 2011a, page D-40).

In addition, 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 (San Francisco Department of Public Health, 2008). Therefore, estimates of PM<sub>2.5</sub> emissions from a new source can be used to approximate broader potential adverse health effects. The U.S. EPA has proposed a Significant Impact Level (SIL) for PM<sub>2.5</sub>. For developed urban areas, including much of San Francisco, the U.S. EPA has proposed a SIL of between 0.3 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and 0.8  $\mu\text{g}/\text{m}^3$ . The SIL represents the level of incremental PM<sub>2.5</sub> emissions that represents a significant contribution to regional nonattainment (BAAQMD, 2011a, page D-36). The BAAQMD has determined that on balance the annual average PM<sub>2.5</sub> threshold of 0.3  $\mu\text{g}/\text{m}^3$  will afford the same health protections as required by San Francisco's Health Code Article 38 (BAAQMD, 2011a, page 41). Therefore, the lower range



of the U.S. EPA's recommended SIL of  $0.3 \mu\text{g}/\text{m}^3$  is an appropriate threshold for determining the significance of a source's  $\text{PM}_{2.5}$  impact.

In determining the potential distance that emissions from a new source (construction sources or operational sources) may affect nearby sensitive receptors, a summary of research findings in 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 (BAAQMD, 2011a, page D-38). Given the scientific data on dispersion of TACs from a source, the BAAQMD recommends assessing impacts of sources of TACs on nearby receptors within a 1,000-foot radius (BAAQMD, 2011a, page D-40). This radius is also consistent with CARB's Land Use Compatibility Handbook and Health and Safety Code Section 42301.6 (Notice for Possible Source Near School) (BAAQMD, 2011a, page 40).

In summary, potential health risks and hazards from new sources on existing or proposed 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 one million, chronic or acute HI of 1.0, and annual average  $\text{PM}_{2.5}$  increase of  $0.3 \mu\text{g}/\text{m}^3$ .

**Cumulative Air Quality Impacts.** Regional air quality impacts are by their very nature cumulative impacts. Emissions from past, present, and future projects contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts (BAAQMD, 2010b). As described above, the project-level thresholds for criteria air pollutants are based on levels 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. Therefore, if a project's emissions are below the project-level thresholds, the project would not be considered to result in a considerable contribution to cumulative regional air quality impacts.

With respect to localized health risks and hazards, as described above, the significance thresholds for sensitive receptors represent a cumulative impact analysis, because this analysis considers all potential sources that may result in adverse health impacts within a receptor's zone of influence. Similarly, new sources that contribute to health risks and hazards at nearby sensitive receptors that exceed these cumulative thresholds would result in a significant health risk and hazards impact to existing sensitive receptors.

**Consistency with Applicable Air Quality Plan.** As discussed previously, the BAAQMD has published the 2010 CAP, representing 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 an applicable air quality plan.

This analysis evaluates the proposed project's potential effects on air quality during project construction. Construction-related effects on air quality relate strictly to direct and indirect impacts that could occur during construction activities, including site preparation and cleaning, excavation, dewatering, construction of improvements, and demobilization and site restoration. Due to the nature of the project, which entails replacement of underground portions of an

existing pipeline and restoration of the sites to pre-construction conditions, there are no operational impacts associated with the project. There would be no new emission sources added, and no substantial changes to current operation; therefore, operation-related effects on air quality are not analyzed further.

### 5.8.3.3 Summary of Impacts

The proposed project’s impacts on air quality and the resulting significance determinations are summarized in Table 5.8-5.

**Table 5.8-5  
 Summary of Impacts – Air Quality**

Impacts	Significance Determination
<b>Impact AQ-1:</b> Project construction could violate air quality standards or contribute significantly to an existing air quality violation.	LSM
<b>Impact AQ-2:</b> Project construction would not expose sensitive receptors to substantial pollutant concentrations.	LS
<b>Impact AQ-3:</b> Project construction would not create objectionable odors affecting a substantial number of people.	LS
<b>Impact AQ-4:</b> Project construction would not conflict with or obstruct implementation of the applicable air quality plan.	LS
<b>Impact C-AQ:</b> Project construction could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).	LSM
Note: LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant impact with Mitigation	

### 5.8.3.4 Construction Impacts and Mitigation Measures

*Impact AQ-1: Project construction could violate air quality standards or contribute significantly to an existing air quality violation. (Less than Significant with Mitigation)*

#### Criteria Pollutants

Criteria pollutants would be emitted during construction of all project components. Construction is planned to occur over approximately 12 months, from October 2014 through September 2015. Criteria pollutants would be generated from the exhaust emissions of construction equipment and vehicles.

The BAAQMD CEQA Guidelines require quantification of construction-related emissions (equipment exhaust). The BAAQMD's daily criteria pollutant emissions significance thresholds for construction activities, which are the thresholds used for purposes of this analysis, are presented in Table 5.8-6.

**Table 5.8-6  
Average Daily Emissions and Total Emissions of Criteria Pollutants During Construction**

Emission Source	ROG	NO <sub>x</sub>	Exhaust PM <sub>10</sub> <sup>1</sup>	Exhaust PM <sub>2.5</sub> <sup>1</sup>
Construction Equipment (total tons) <sup>2</sup>	<1	4	<1	<1
Haul Trucks (total tons)	<1	<1	<1	<1
Worker Commute (total tons)	1	<1	<1	<1
<b>Total construction emissions (tons)</b>	<b>1</b>	<b>4</b>	<b>&lt;1</b>	<b>&lt;1</b>
<b>Average daily construction emissions (pounds/day)</b>	<b>5</b>	<b>36</b>	<b>2</b>	<b>2</b>
<b>Construction Threshold</b>	<b>54</b>	<b>54</b>	<b>82</b>	<b>54</b>
Significant Impact?	No	No	No	No

Source: BAAQMD, 2010b; URS (Appendix E).

Notes:

<sup>1</sup> BAAQMD's proposed construction-related significance thresholds for PM<sub>10</sub> and PM<sub>2.5</sub>, which have been used for purposes of the analysis in this Environmental Impact Report, apply to exhaust emissions only and not to fugitive dust.

<sup>2</sup> PM<sub>2.5</sub> emission factors are not available using OFFROAD2011, so the emissions for PM<sub>2.5</sub> were based on the CEIDARS 0.92 PM<sub>10</sub>/PM<sub>2.5</sub> conversion ratio (SCAQMD, 2006).

BAAQMD = Bay Area Air Quality Management District  
 N/A = not applicable  
 NO<sub>x</sub> = oxides of nitrogen  
 PM<sub>10</sub> = particulate matter less than or equal to 10 microns in diameter  
 PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter  
 ROG = reactive organic gases

Emissions from the PPSU project's construction equipment and vehicles would be generated from multiple sources, including heavy mobile equipment and delivery/haul trucks, worker vehicles, and semi-stationary sources such as air compressors and generators. Construction related criteria pollutant emissions were calculated for the PPSU project as a function of construction activity, construction duration, average haul truck mileage, and worker trips (auto/light-truck mileage). The CARB's computer models, OFFROAD2011 (for offroad construction equipment) and EMFAC2011 (for onroad delivery trucks and worker vehicles), were used to calculate construction activity emissions based on the equipment list and workforce estimates presented in Sections 3.8.8 and 3.8.9, and in Table 3.6 in Chapter 3, Project Description, but adjusted to reflect average daily conditions for average daily construction assumptions (see Appendix E). Table 5.8-6 summarizes the PPSU project's estimated average daily construction emissions for the years 2014 and 2015. The model results indicate that the BAAQMD CEQA significance thresholds for emissions of criteria pollutants generated during construction would not be exceeded in 2014 or 2015, and such emissions would therefore be less than significant.

Because there are no operational emissions associated with the PPSU project, these thresholds apply only to the construction phase of the project.

### **Fugitive Dust**

Fugitive dust emissions are typically generated during construction phases. Project construction would generate fugitive dust (including PM<sub>10</sub> and PM<sub>2.5</sub>) during various construction activities, including excavation, grading, demolition, and vehicle travel on both paved and unpaved surfaces.

Dust can be an irritant causing watering eyes or irritation to the lungs, nose, and throat. Demolition, excavation, grading, and other construction activities can cause wind-blown dust to add to particulate matter in the local atmosphere. 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.

Studies have shown that the application of best management practices (BMPs) at construction sites significantly control fugitive dust (Western Regional Air Partnership, 2006). Individual measures have been shown to reduce fugitive dust by anywhere from 30 to 90 percent (BAAQMD, 2009b). The BAAQMD has identified a number of BMPs to control fugitive dust emissions from construction activities (BAAQMD, 2011a).

BAAQMD and this Environmental Impact Report consider uncontrolled fugitive dust from construction activities to be significant. Consequently, BAAQMD has developed Basic Construction Measures (**Mitigation Measure M-AQ-1: BAAQMD Basic Construction Measures**) that, if implemented, would reduce fugitive dust emissions to *less than significant with mitigation*.

#### **Mitigation Measure M-AQ-1: BAAQMD Basic Construction Measures**

This mitigation measure applies to all project sites and the common staging area. The SFPUC shall post one or more publicly visible signs with the telephone number and person to contact at the SFPUC 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 included in all construction contract specifications for the proposed project:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite shall be covered.

- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- Vehicle speeds on unpaved areas shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times for construction equipment (including vehicles) shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes. 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.

***Impact AQ-2: Project construction would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)***

The PPSU project would entail seismic upgrades to the SFPUC's San Andreas Pipeline No. 2, San Andreas Pipeline No. 3, and Sunset Supply Branch Pipeline, drinking water transmission pipelines that deliver water from the Harry Tracy Water Treatment Plant to the SFPUC's regional water system. Combustion emissions from construction equipment and vehicles (i.e., heavy equipment and delivery/haul trucks, worker commute vehicles, air compressors, and generators) would be generated during project construction and could expose sensitive receptors to DPM and other TACs. Offsite DPM and other TAC emissions include those generated by construction worker commute vehicles and by diesel haul/delivery trucks used during construction, particularly trucks used to transport excavated materials from the project area and construction materials to the project area. TAC emissions from construction worker commute trips would be minor compared to the emissions generated by construction equipment and haul/delivery trucks. In addition to these offsite emissions, diesel-powered construction equipment would release DPM onsite along the internal construction site access routes. Combustion and exhaust contain a number of different TACs that are associated with various health risk factors (SCAQMD, 2010). DPM exhaust emissions from off-road heavy equipment and from on-road haul/delivery trucks operating within the project area during project construction were calculated using currently accepted calculation protocols, and are described in detail in the PPSU Air Quality Technical Report (see Appendix E). Because there are no operational emissions associated with the PPSU project, these health risk thresholds apply only to the construction phase of the project.

A description of sensitive receptors near the project sites is given in Section 5.8.1.4.

### **Construction-Related Cancer Risk**

Results for cancer risk impacts were modeled for the San Bruno South site, because this site had the longest construction period. If the health risk for the San Bruno South site was above the significance thresholds, the site with the second-longest construction period would have been

modeled. Because the health risks for the San Bruno South project site were below the significance thresholds, the health risks for other project sites were based on the modeling results for the San Bruno South site.

Based on the assessment described above, it was determined that the MEI would be exposed to an incremental cancer risk of 6.9 in one million at the San Bruno South site, which is below the threshold of 10 in one million. Thus, incremental cancer risks at the various project sites would be below the cancer risk threshold (as presented in Table 5.8-7). The incremental cancer risks for the Colma, South San Francisco,<sup>4</sup> San Bruno North, and Millbrae sites were 2.3, 2.4, 0.5, and 3.2, respectively, and were calculated based on the ratio of DPM emissions at each site relative to the San Bruno South site. This method was appropriate for incremental cancer risk estimation, as well as for chronic and acute HI estimation, because the MEI at the San Bruno South site was adjacent to the construction area, providing the most conservative estimate at the other sites, and the meteorology remained the same at each site. The impact would be *less than significant*. Modeling results are presented in Appendix E.

#### **Construction-Related Chronic Noncancer Hazard Index**

The potential for exposure to result in chronic noncancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the chemical-specific noncancer chronic RELs. The chronic REL is the inhalation exposure concentration at which no adverse chronic health effects would be anticipated following exposure. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient (HQ). To evaluate the potential for adverse chronic noncancer health effects from simultaneous exposure to multiple chemicals, the HQs for all chemicals are summed, yielding a HI. The results are presented in Table 5.8-7. As shown in the table, TAC exposure from the project's construction emissions would result in a maximum chronic HI of 0.016 at the San Bruno South site, which is well below the threshold of 1.0. The maximum chronic HI at the Colma, South San Francisco, San Bruno North, and Millbrae sites were 0.005, 0.006, 0.001, and 0.007, respectively; therefore, chronic noncancer health impacts at existing receptors would be *less than significant*.

#### **Construction-Related Acute Noncancer Hazard Index**

The potential exposure to emissions of pollutants resulting in acute noncancer effects is evaluated by comparing the estimated 1-hour maximum air concentration to the chemical-specific noncancer acute RELs. The acute REL is the inhalation exposure concentration at which no adverse acute health effects would be anticipated following exposure. When calculated for a single chemical, the comparison yields a ratio termed a HQ. To evaluate the potential for adverse acute noncancer health effects from simultaneous exposure to multiple chemicals, the HQs for all chemicals are summed, yielding an HI. There is currently no acute noncancer toxicity value

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<sup>4</sup> The analysis for the South San Francisco site includes the common staging area. Emissions anticipated at the common staging area would be from mobile sources (truck trips and worker vehicle trips). No off-road emissions would result from activities at the common staging area. These minor emissions associated with the common staging area were combined with the anticipated construction emissions at the South San Francisco site for impact analysis purposes.

**Table 5.8-7  
Construction-Related Cancer Risk, Acute, and Chronic Noncancer Health Risk at MEI**

Site	Project Impact (Unmitigated)			
	Annual Average PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Cancer Risk (per million) <sup>3</sup>	Chronic Hazard Quotient <sup>4</sup>	Acute Hazard Quotient <sup>5</sup>
Colma <sup>1</sup>	0.024	2.3	0.005	2.280E-07
South SF <sup>1</sup> (including common staging area)	0.025	2.4	0.006	2.280E-07
San Bruno North <sup>1,2</sup>	0.005	0.5	0.001	0.000E+00
San Bruno South	0.072	6.9	0.016	4.561E-07
Millbrae <sup>1</sup>	0.033	3.2	0.007	2.280E-08
<b>Thresholds<sup>3</sup></b>	<b>0.3</b>	<b>10</b>	<b>1</b>	<b>1</b>

Sources: BAAQMD, 2010b; URS (Appendix E).

Notes:

- Only the San Bruno South site was modeled using ISCST3 (U.S. EPA, 2002). PM<sub>2.5</sub> and DPM concentrations for the other sites were calculated by using the ratio of each site's total emissions to the San Bruno South site's total emissions. The nearest sensitive receptor to the San Bruno South site was adjacent to the construction area; therefore, these results present a worst case scenario at each of the other sites. Meteorological conditions are similar at all sites.
- The San Bruno North site Acute Hazard is zero because no gasoline operated equipment would be used during construction at the site. DPM does not cause acute health effects.
- The cancer risk was estimated for DPM and TOG at the Colma, South San Francisco, San Bruno South, and Millbrae sites. The cancer risk was estimated for DPM only at the San Bruno North site because there would be no gasoline-operated equipment at that site. The cancer risk for speciated TOG, such as acetaldehyde, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, and naphthalene, was estimated based on the TOG dose multiplied by the individual speciated TOG cancer potency factor (BAAQMD, 2011b). There is no cancer potency factor available for acrolein, so cancer risks from acrolein were not estimated.
- The chronic hazard quotient was estimated for DPM at all sites by dividing the modeled DPM concentration at each site by the DPM chronic inhalation REL. The chronic hazard quotient for speciated TOG, such as acrolein (for on-road sources only), acetaldehyde, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, and naphthalene, was estimated at all sites except San Bruno North, because the San Bruno North site would not have any gasoline equipment onsite. The chronic hazard quotient for speciated TOG was estimated by multiplying the modeled TOG concentration by the EMFAC speciated TOG percent, and dividing it by the speciated TOG chronic inhalation REL.
- There is no acute inhalation REL for DPM, 1,3-butadiene, ethylbenzene, and naphthalene, so an acute hazard quotient for those pollutants was not estimated. An acute hazard quotient was estimated for speciated TOGs, such as acrolein (for on-road sources only), acetaldehyde, benzene, and formaldehyde, at all sites except San Bruno North, because the San Bruno North site does not operate any gasoline equipment onsite. An acute hazard quotient for speciated TOG was estimated by multiplying the modeled TOG concentration by the EMFAC speciated TOG percent, and dividing it by the speciated TOG acute inhalation REL.

DPM = diesel particulate matter  
MEI = maximally exposed individual  
µg/m<sup>3</sup> = micrograms per cubic meter  
PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter  
REL = reference exposure level  
TOG = total organic gas

available for DPM. TAC exposure from the project's construction emissions would result in an acute HI of 4.6E-7 at the San Bruno South site (see Table 5.8-7), which is well below the threshold of 1.0. The maximum acute HI at the Colma, South San Francisco, San Bruno North, and Millbrae sites were 2.28E-7, 2.28E-7, 0.00, and 2.28E-8, respectively; therefore, acute noncancer health impacts at existing receptors would be *less than significant*.

#### **Construction-Related Ambient PM<sub>2.5</sub> Increase**

The PM<sub>2.5</sub> increase was modeled in ISCST3, based on the unit concentration of PM<sub>2.5</sub>. Results of the analysis also indicate that the incremental increase in annual average PM<sub>2.5</sub> concentration would be 0.072 µg/m<sup>3</sup> near the San Bruno South site, which is below the significance threshold of 0.3 µg/m<sup>3</sup> (see Table 5.8-7). The Colma, South San Francisco, San Bruno North, and Millbrae sites would also be below the threshold. Therefore, PM<sub>2.5</sub> concentrations from construction-related emissions would be *less than significant*. No mitigation would be required.

#### ***Impact AQ-3: Project construction would not create objectionable odors affecting a substantial number of people. (Less than Significant)***

Combustion emissions from the use of diesel fuel in construction equipment could generate localized objectionable odors. Construction equipment used at the South San Francisco, Millbrae, and San Bruno sites could result in objectionable odors for nearby residents. The proposed project would be subject to Title 13, CCR, Section 2485, which limits idling of diesel-fueled commercial motor vehicles, thereby reducing related odors. Odors from diesel equipment typically come from incomplete fuel combustion that occurs during idling. Because regulations, such as Title 13, CCR, Section 2485, limit idling of diesel engines, they would reduce diesel-related odors. This impact is considered *less than significant*. Although this impact is already less than significant and no mitigation is necessary, the Section 2485 requirements have been incorporated, with more stringent BAAQMD idling-time limitations, into **Mitigation Measure M-AQ-1: BAAQMD Basic Construction Measures** (see Impact AQ-1, above, for description), which would further limit diesel odors generated by construction vehicles.

#### ***Impact AQ-4: Project construction would not conflict with or obstruct implementation of the applicable air quality plan. (Less than Significant)***

The most recently adopted air quality plan for the SFBAAB is the BAAQMD's 2010 CAP, which is a comprehensive plan aimed at improving Bay Area air quality and protecting public health. The CAP defines a control strategy for implementation by the BAAQMD to reduce emissions and decrease ambient concentrations of harmful pollutants (ground-level ozone and its key precursors, ROG and NO<sub>x</sub>), as well as to safeguard public health by reducing exposure to the air pollutants that pose the greatest health risks (particulate matter, primarily PM<sub>2.5</sub> and precursors to secondary PM<sub>2.5</sub>).

As indicated above in Section 5.8.2.2, the CAP contains 55 control measures under the following categories: stationary-source measures, mobile-source measures, transportation control measures, land use and local impact measures, and energy and climate measures. The temporary air quality impacts associated with project construction would not hinder the long-term air quality planning goals of the 2010 CAP due to the short-term nature of the construction emissions. Thus, the



project would not conflict with or obstruct implementation of the applicable air quality plan, and this impact is considered *less than significant*.

### 5.8.3.5 Operational Impacts and Mitigation Measures

As summarized in Section 5.8.3.2, Approach to Analysis, under Consistency with Applicable Air Quality Plan, due to the nature of the project, which entails replacement of underground portions of an existing pipeline and restoration of the sites to pre-construction conditions, there are no operational impacts associated with this project (*no impact*).

### 5.8.3.6 Cumulative Impacts and Mitigation Measures

***Impact C-AQ: Construction of the proposed project could result in a cumulatively considerable contribution to cumulative air quality impacts associated with criteria pollutant emission and health risks. (Less than Significant with Mitigation)***

Regional air quality impacts are by their very nature cumulative impacts. Emissions from past, present and future projects contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts (BAAQMD, 2010b). As described above, the project-level thresholds for criteria air pollutants are based on levels 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. Therefore, if a project's emissions are below the project-level thresholds, the project would not be considered to result in a considerable contribution to cumulative regional air quality impacts.

With respect to localized health risks and hazards, as described above, the significance thresholds for new receptors represent a cumulative impact analysis, because this analysis considers all potential sources that may result in adverse health impacts within a receptor's zone of influence. Similarly, new sources that contribute to health risks and hazards at nearby sensitive receptors that exceed these cumulative thresholds would result in a significant health risk and hazards impact to existing sensitive receptors.

#### **Construction-Related Criteria Pollutant and Fugitive Dust Emissions**

To address cumulative impacts on regional air quality, the BAAQMD has established thresholds of significance for construction-related criteria pollutants and precursor emissions. These thresholds represent the levels at which a project's individual emissions of criteria pollutants and precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality violations. If average daily or annual emissions exceed these thresholds, the PPSU project would result in a cumulatively significant impact. As indicated in Table 5.8-6 above, construction-related criteria pollutant and precursor emissions associated with the PPSU project would not exceed the significance threshold for any criteria pollutant, and the PPSU project's contribution to this cumulative impact would not be cumulatively considerable.

The cumulative impact of fugitive dust emissions from construction cannot be precisely quantified, and so is considered potentially significant. However, implementation of **Mitigation**

**Measure M-AQ-1: BAAQMD Basic Construction Measures** would reduce project-level emissions by requiring construction contractors to implement BMPs to limit dust. Therefore, the PPSU project would not have a cumulatively considerable contribution to cumulative air quality impacts related to fugitive dust emissions during construction (*less than significant with mitigation*).

### **Construction-Related Health Risks**

To address cumulative impacts on local air quality conditions due to TAC emissions during project construction, the BAAQMD recommends assessing impacts within 1,000 feet of the proposed project, taking into account both project-specific and cumulative sources (i.e., the proposed project plus existing and foreseeable future projects). The BAAQMD has established the following cumulative thresholds of significance that should be applied at the PPSU project's MEI: 100 excess cancer cases in a million; an HI of 10 for chronic and acute noncancer risk; and 0.8  $\mu\text{g}/\text{m}^3$  of  $\text{PM}_{2.5}$  (annual average) from all local sources.

As discussed above under Impact AQ-2, the PPSU project would result in an increase in  $\text{PM}_{2.5}$  emissions from haul and delivery trucks during construction. While the project-related excess cancer risk, chronic noncancer HI, and average daily  $\text{PM}_{2.5}$  emissions at the MEI would not exceed the BAAQMD CEQA significance thresholds (see Table 5.8-7), it is possible that significant cumulative increases in  $\text{PM}_{2.5}$  emissions could occur due to simultaneous construction of other projects in the vicinity in addition to any existing identified risk sources within the project vicinity (listed in Table 5.8-2). Cumulative risk and hazard impacts at the MEI from cumulative construction projects in the PPSU project area are shown in Table 5.8-8. Based on the results shown in Table 5.8-8, the project plus other nearby construction projects and stationary sources would not result in a significant cumulative health risk impact. Therefore, the cumulative health risk impact would be *less than significant*.

**Table 5.8-8  
Construction Period Cumulative Health Risk Assessment Results**

Project Site <sup>1</sup>	Nearby Sources <sup>2</sup>				Nearby Construction Projects <sup>3</sup>				Cumulative Analysis		
	Plant Number/Plant Name	Annual Average PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Cancer Risk (per million)	Chronic Hazard	Project Name	Annual Average PM <sub>2.5</sub> (µg/m <sup>3</sup> ) <sup>4</sup>	Cancer Risk (per million)	Chronic Hazard	Annual Average PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Cancer Risk (per million)	Chronic Hazard
Colma Site	G11198: Lexus of Serramonte	N/A	8.722	0.012	Regional Groundwater Storage and Recovery Project <sup>5</sup>	0.010	1.1	0.18	0.163	16	0.257
	8758: Serramonte Ford Body Shop	0.018	0.000	0.000							
	12251: G & M Auto Body	0.000	0.040	0.000							
	12368: Honda of Serramonte	0.000	0.000	0.000							
	G8650: Home of Peace Cemetery	N/A	0.222	0.000							
	El Camino Real <sup>6</sup>	0.077	2.571	0.030							
	Serramonte Boulevard <sup>6</sup>	0.034	1.161	0.030							
South San Francisco Site (including common staging area)	G11428 <sup>7</sup> : Westborough Chevron	N/A	0.331	0.001	Regional Groundwater Storage and Recovery Project <sup>5</sup>	0.070	7.9	0.46	0.423	84	0.599
	19316 <sup>8</sup> : Access Properties LLC	0.000	0.008	0.000							
	El Camino Real <sup>6</sup>	0.020	0.804	0.030							
	Westborough Boulevard <sup>6</sup>	0.204	5.903	0.030							
	5611: Daland Body Shop	0.000	0.000	0.000							
	14240: SFPUC Water Supply and Treatment Division	0.104	58.80	0.021							
	19842: Chestnut Cleaners	0.000	7.490	0.020							
	G11391 <sup>7</sup> : Camino Petroleum	N/A	0.214	0.019							
G12394 <sup>7</sup> : Orange Avenue Shell	N/A	0.149	0.013								
San Bruno North Site <sup>9</sup>	G3134 <sup>7</sup> : Shelter Creek Chevron	N/A	0.618	0.001	N/A	N/A	N/A	N/A	0.123	8	0.011
	I-280 <sup>10</sup>	0.118	6.843	0.009							
San Bruno South Site	16280: Verizon Wireless Highway 35/280	0.003	11.140	0.004	N/A	N/A	N/A	N/A	0.109	20	0.022
	I-280 <sup>10</sup>	0.034	2.008	0.002							
Millbrae Site	G7549: Green Hills Country Club	N/A	0.635	0.001	N/A	N/A	N/A	N/A	0.033	4	0.008
<b>Thresholds<sup>11</sup></b>									<b>0.8</b>	<b>100</b>	<b>10</b>

Sources: BAAQMD, 2012b; Illingworth and Rodkins, Inc., 2012; URS (Appendix E).

## Notes:

<sup>1</sup> PM<sub>2.5</sub> and DPM concentrations were modeled using ISCST3 only for the San Bruno South site. The remaining sites' PM<sub>2.5</sub> and DPM concentrations were calculated by using the ratio of each site's total emissions to the San Bruno South site's total emissions. The nearest sensitive receptor to the San Bruno South site was adjacent to the construction area; therefore, these results present a worst case scenario at each of the other sites. Meteorological conditions are similar at all sites.

<sup>2</sup> Some nearby sources emit PM<sub>2.5</sub>, but in quantities below the significant figures reported to the BAAQMD. These are represented by zero. Sources that do not emit PM<sub>2.5</sub> (e.g., gas stations) have N/A for PM<sub>2.5</sub> concentrations. In addition, for cancer risk and chronic hazard, some sites register values below the significant figures used by the BAAQMD.

<sup>3</sup> All nearby construction projects (within 1,000 feet of the construction area) were assumed to comply with the BAAQMD thresholds for project construction.

<sup>4</sup> While the BAAQMD threshold for project construction PM<sub>2.5</sub> concentrations is 0.3 µg/m<sup>3</sup>, in order to meet a cancer risk value of 10 in a million, PM<sub>2.5</sub> concentrations from diesel exhaust cannot exceed 0.101 µg/m<sup>3</sup>. Therefore, the worst possible impact from PM<sub>2.5</sub> concentrations at any receptor must be equal to or less than 0.101 µg/m<sup>3</sup> to comply with BAAQMD new source thresholds.

<sup>5</sup> GSR wells 8 and 17 (alternate) are in the vicinity of the Colma site, and GSR wells 11, 12, and 19 (alternate) are in the vicinity of the South San Francisco site.

<sup>6</sup> Roadway annual average PM<sub>2.5</sub> and cancer risk for surface streets >10,000 AADT were estimated from screening tables provided by BAAQMD (BAAQMD, 2012b) and traffic data from the California Environmental Health Tracking Program traffic tool (CEHTP, 2012). The maximum acute and chronic HI for roadways will be less than 0.03.

<sup>7</sup> The BAAQMD gas station cancer risk and chronic hazard distance multipliers were used where appropriate using the distance between the gas station and the nearest sensitive receptor.

<sup>8</sup> For Source #19316, URS was provided average daily emissions, and not annual average PM<sub>2.5</sub>, cancer risk, or chronic hazard. Consequently, the annual PM<sub>2.5</sub> concentration, cancer risk, and chronic hazard were estimated by assuming this source was located at the construction site, and the same ratio methodology described in footnote 4 was used to calculate a worst case impact.

<sup>9</sup> Acute hazard for the San Bruno North site is zero because no gasoline-operated equipment would be used during construction. DPM does not impact acute hazard.

<sup>10</sup> Interstate annual average PM<sub>2.5</sub>, cancer risk, and chronic hazard values were estimated from the BAAQMD highway screening analysis tool for San Mateo County (BAAQMD, 2012b).

<sup>11</sup> The BAAQMD has acute hazard significance thresholds for individual projects, but not for cumulative impacts. Because there are no acute hazard cumulative thresholds, it is not possible to determine the significance of impacts. Therefore, cumulative acute hazards were not estimated.

AADT = annual average daily traffic

I-280 = Interstate 280

SFPUC = San Francisco Public Utilities Commission

BAAQMD = Bay Area Air Quality Management District

µg/m<sup>3</sup> = micrograms per cubic meter

DPM = diesel particulate matter

PM<sub>2.5</sub> = particulate matter less than or equal to 2.5 microns in diameter

## 5.8.4 References

BAAQMD (Bay Area Air Quality Management District), 2009a. Toxic Air Contaminant Air Monitoring Data for 2009 [Excel Spreadsheet]. December 31.

BAAQMD (Bay Area Air Quality Management District), 2009b. BAAQMD, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance. October 2009.

BAAQMD (Bay Area Air Quality Management District (BAAQMD)), 2010a. Bay Area 2010 Clean Air Plan. Adopted September 15, 2010.

BAAQMD (Bay Area Air Quality Management District), 2010b. California Environmental Quality Act (CEQA) Air Quality Guidelines and adopted Thresholds of Significance. June. Available online at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Updated-CEQA-Guidelines.aspx>.

BAAQMD (Bay Area Air Quality Management District), 2011a. California Environmental Quality Act Air Quality Guidelines. Updated May.

BAAQMD (Bay Area Air Quality Management District), 2011b. Recommended Methods for Screening and Modeling Local Risks and Hazards. May.

BAAQMD (Bay Area Air Quality Management District), 2012a. Ambient Air Quality Standards and Attainment Status. Available online at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/Emission-Inventory-and-Air-Quality-Related/Air-Quality-Standards.aspx>. Accessed June 18, 2012.

BAAQMD (Bay Area Air Quality Management District), 2012b. Stationary Source and Highways Screening Analysis Tool. Available online at <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>. Accessed March 2012.

CEHTP (California Environmental Health Tracking Program), 2012. Traffic Tool Available at: [http://www.ehib.org/traffic\\_tool.jsp](http://www.ehib.org/traffic_tool.jsp). Accessed March 2012.

CARB (California Air Resources Board), 1998. California Air Resources Board, Fact Sheet, "The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines." October. Available online at: <http://www.arb.ca.gov/toxics/dieseltac/factsht1.pdf>, accessed February 27, 2012.

CARB (California Air Resources Board), 2009 to 2011. ADAM Air Quality Data Statistics. Available online at: <http://www.arb.ca.gov/adam/>. Accessed June 18, 2012.

Illingworth and Rodkins, Inc., 2012. Final Air Quality Technical Report Regional Groundwater Storage and Recovery Project. Prepared for GHD. July 25.

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. May.

SCAQMD (South Coast Air Quality Management District), 2006. Updated CEIDARS Table with PM<sub>2.5</sub> Fractions. September.

SCAQMD, 2010. Supplemental Instructions, Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory, Annual Emissions Reporting Program. January.

U.S. EPA (U.S. Environmental Protection Agency), 2002. Industrial Source Complex Short Term Dispersion Model (ISCST3) Computer Model. Available at: [http://www.epa.gov/scram001/dispersion\\_alt.htm](http://www.epa.gov/scram001/dispersion_alt.htm).

U.S. EPA (U.S. Environmental Protection Agency), 2009 to 2011. AirData Monitor Values Report. Available online at: [http://www.epa.gov/airdata/ad\\_rep\\_mon.html](http://www.epa.gov/airdata/ad_rep_mon.html). Accessed June 18, 2012.

Western Regional Air Partnership, 2006. WRAP Fugitive Dust Handbook. September 7. Available online at: [http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook\\_Rev\\_06.pdf](http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf), accessed February 16, 2012.

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## 5.9 Greenhouse Gas Emissions

This section addresses greenhouse gas (GHG) emissions that could result from implementation of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project. Construction-related GHG emissions are evaluated quantitatively and then compared to applicable significance thresholds. GHGs and their contribution to climate change are a global issue, and this analysis qualitatively assesses the PPSU project's consistency with local and statewide GHG-reduction policies.

### 5.9.1 Setting

#### 5.9.1.1 Greenhouse Gases and Climate Change

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs in the atmosphere has been noted as the driving force for global climate change. The primary GHGs are carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, ozone, and water vapor.

While the presence of the primary GHGs in the atmosphere is naturally occurring, CO<sub>2</sub>, methane, and nitrous oxide are largely emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs are generated in certain industrial processes and include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Greenhouse gases are typically reported in carbon dioxide-equivalent (CO<sub>2</sub>e) measures.<sup>1</sup>

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea-level rise, more extreme-heat days per year, more high-ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity (United States Global Change Research Program, 2009).

#### 5.9.1.2 Greenhouse Gas Emissions Summary

The California Air Resources Board (CARB) estimated that in 2009 California produced about 457 million gross metric tons of CO<sub>2</sub>e (MMTCO<sub>2</sub>e) (CARB, 2011a). CARB found that transportation is the source of 38 percent of the state's GHG emissions, followed by electricity generation (both in-state generation and imported electricity) at 23 percent and industrial sources at 18 percent. Commercial and residential fuel use (primarily for heating) accounted for 9 percent of GHG emissions (CARB, 2011a). In the San Francisco Bay Area, fossil fuel consumption in the

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<sup>1</sup> Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial and commercial sectors are the two largest sources of GHG emissions, each accounting for approximately 36 percent of the San Francisco Bay Area's 95.8 MMTCO<sub>2e</sub> emitted in 2007. Electricity generation accounts for approximately 16 percent of the Bay Area's GHG emissions followed by residential fuel usage at 7 percent, off-road equipment at 3 percent and agriculture at 1 percent (BAAQMD, 2010a).

## 5.9.2 Regulatory Framework

### 5.9.2.1 Federal Regulations

There are no federal regulations or requirements pertaining to GHG emissions that apply to the PPSU project.

### 5.9.2.2 State Regulations

#### *Global Warming Solutions Act (Assembly Bill 32)*

In 2006, the California legislature passed Assembly Bill (AB) 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq.), also known as the Global Warming Solutions Act. AB 32 requires CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020, representing a 25 percent reduction in emissions.

#### *California Climate Change Scoping Plan*

Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, outlining measures to meet the 2020 GHG-reduction limits. In order to meet these goals, it was originally estimated that California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels, or about 15 percent from today's levels (CARB, 2010). Recently, however, CARB updated the 2020 business-as-usual emissions levels and projected that a 16 percent reduction from 2020 business-as-usual emissions would enable the State to reach the scoping plan goal (CARB, 2011b). The AB 32 Scoping Plan estimates a reduction of 174 MMTCO<sub>2e</sub> (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and high-global-warming-potential sectors, as shown in Table 5.9-1. CARB has identified an implementation timeline for the GHG reduction strategies in the Scoping Plan (CARB, 2011b). Some measures may require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reductions strategies may require their own environmental review under the California Environmental Quality Act (CEQA) or the National Environmental Policy Act.

AB 32 also anticipates that local government actions will result in reduced GHG emissions. CARB has identified a GHG reduction target of 15 percent from current levels for local governments and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions, because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.



**Table 5.9-1  
GHG Reductions from the Assembly Bill 32 Scoping Plan Sectors**

Sector	Estimated GHG Reduction by 2020 (MMTCO <sub>2e</sub> )
Transportation	62.3
Electricity and Natural Gas	49.7
Industry	1.4
Landfill Methane Control Measure (Discrete Early Action)	1
Forestry	5
High-Climate-Change-Potential GHGs	20.2
Additional Reductions Needed to Achieve the GHG Cap	34.4
<b>Total Reductions Counted Towards 2020 Target</b>	<b>174</b>
<b>Other Recommended Measures</b>	
Government Operations	1-2
Water	4.8
Green Buildings	26
High Recycling/Zero Waste	9
• Commercial Recycling	
• Composting	
• Anaerobic Digestion	
• Extended Producer Responsibility	
• Environmentally Preferable Purchasing	
<b>Total Reductions Counted Towards 2020 Target</b>	<b>40.8-41.8</b>
Source: CARB, 2011b.	
Notes:	
GHG = greenhouse gas	
MMTCO <sub>2e</sub> = million metric tons of carbon dioxide-equivalent	

The AB 32 Scoping Plan relies on the requirements of Senate Bill (SB) 375 to implement the carbon emission reductions anticipated from land use decisions. SB 375 was enacted to align local land use and transportation planning sectors to better achieve the State's GHG-reduction goals. SB 375 requires Metropolitan Planning Organizations to develop regional transportation plans which incorporate a "sustainable communities strategy" that would achieve GHG emission reduction targets set by CARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. SB 375 would be implemented over the next several years and the Metropolitan Transportation Commission's 2013 Regional Transportation Plan would be the commission's first plan subject to SB 375.

SB 97 required the California Governor's Office of Planning and Research (OPR) to amend the State CEQA Guidelines to address the feasible mitigation of GHG emissions and effects. In response, OPR amended the CEQA Guidelines to provide guidance for analyzing GHG emissions. Among other changes to the CEQA Guidelines, the amendments add a new section to the CEQA Checklist (CEQA Guidelines, Appendix G) to address questions regarding a proposed project's potential to emit GHGs.

### **5.9.2.3 Local Regulations**

#### ***Bay Area Air Quality Management District CEQA Guidelines***

The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for air quality regulation in the nine-county San Francisco Bay Area Air Basin (SFBAAB). BAAQMD prepared the CEQA air quality guidelines to assist lead agencies in evaluating the air quality impacts of projects and plans proposed in the SFBAAB. The guidelines provide procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements. On June 2, 2010, the BAAQMD adopted new and revised CEQA air quality thresholds of significance and issued revised guidelines that supersede the 1999 air quality guidelines. GHG operational thresholds for land use projects are: compliance with a Qualified GHG Reduction Strategy; or 1,100 metric tons (MT) of CO<sub>2e</sub> per year; or 4.6 MT CO<sub>2e</sub> per service population (residents plus employees) per year. No construction thresholds for GHG emissions are provided. The BAAQMD recommends the significance of GHG construction-related emission impacts be determined in relation to meeting AB 32 GHG reduction targets. As noted previously, BAAQMD's adoption of thresholds for CEQA analysis was the subject of judicial action, and the adoption of the thresholds has been set aside. However, the SF Planning has determined that Appendix D of the BAAQMD CEQA Air Quality Guidelines, in combination with BAAQMD's Revised Draft Options and Justification Report (BAAQMD, 2009), provide substantial evidence to support the BAAQMD recommended thresholds. Therefore, the Planning Department has determined that they are appropriate for use in this analysis as standards of significance.

#### ***San Francisco Greenhouse Gas Reduction Ordinance***

In May 2008, the City and County of San Francisco (CCSF) adopted an ordinance amending the San Francisco Environment Code to establish GHG emissions targets and departmental action plans; to authorize the San Francisco Department of the Environment to coordinate efforts to meet these targets; and to make environmental findings. The Greenhouse Gas Reduction Ordinance establishes the following GHG emissions reduction limits and target dates by which to achieve them:

- Reduce GHG emissions by 25 percent below 1990 levels by 2017.
- Reduce GHG emissions by 40 percent below 1990 levels by 2025.
- Reduce GHG emissions by 80 percent below 1990 levels by 2050.

The ordinance also directs CCSF departments to prepare climate action plans that assess GHG emissions associated with their activities and with the activities they regulate, and to report the results of those assessments to the San Francisco Department of the Environment.

### **San Francisco Public Utilities Commission Climate Action Plan**

In 2009, pursuant to San Francisco's Greenhouse Gas Reduction Ordinance, the San Francisco Public Utilities Commission (SFPUC) presented a departmental climate action plan focused on energy efficiency and renewable energy programs that would help reduce GHG emissions. The total energy savings potential for all SFPUC facilities is estimated to be 11.8 million kilowatt-hours of electricity. A number of SFPUC energy-efficiency and renewable energy generation projects have already been implemented, and many more are in the planning, design, or construction phases (SF Planning, 2010).

The SFPUC manages and implements energy-efficiency projects in municipal buildings and facilities and provides energy-efficiency services such as energy audits and design and construction management. Energy-efficiency technologies are commonly applied to lighting; heating, ventilation, and air conditioning; facility pumps and motors; and electrical controls. The SFPUC estimated that the energy-efficiency improvement projects had resulted in a CO<sub>2</sub> emissions reduction of approximately 11,000 MT per year since 2007 (SF Planning, 2010).

The SFPUC currently operates over 2 megawatts of solar electric photovoltaic projects throughout San Francisco that collectively generate over 2 million kilowatt-hours of clean renewable electricity annually. A large-scale solar electric photovoltaic project planned for Sunset Reservoir is expected to produce an additional 5 megawatts of solar energy. Other potential opportunities for large-scale solar projects are being considered for the SFPUC Tesla Portal facility in San Joaquin County and for SFPUC water supply facilities in the Sunol Valley. In addition, the SFPUC has installed wind-monitoring equipment at sites in and around the San Francisco Bay Area and the Sierra Nevada mountains to evaluate the potential for wind power development (SF Planning, 2010). SFPUC projects that reduce electrical energy consumption and/or generate renewable energy help reduce GHG emissions associated with SFPUC facility operations.

### **San Francisco's Electricity Resource Plan**

The 2011 Updated Electricity Resource Plan presents the citywide plan to help San Francisco achieve its goal of generating all of its energy needs from renewable and zero-GHG, electric energy sources by 2030 (SFPUC, 2011a). See Section 5.18.2.3 in Section 5.18, Energy and Mineral Resources, for additional information regarding this plan.

## **5.9.3 Impacts and Mitigation Measures**

### **5.9.3.1 Significance Criteria**

The CCSF has not formally adopted significance standards for impacts related to GHG emissions, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

### 5.9.3.2 Approach to Analysis

This analysis of GHG emissions considers construction-related impacts associated with the proposed project. Pursuant to Section 15064.4 of the CEQA Guidelines, the significance of the PPSU project's GHG emissions has been determined based on the BAAQMD's adopted thresholds of significance, and on whether the PPSU project's emissions would exceed levels outlined in any applicable GHG-reduction plans, policies, or regulations.

The BAAQMD thresholds of significance include a threshold for operational GHG emissions but none for construction-related GHG emissions (BAAQMD, 2010b). BAAQMD recommends that the significance of GHG construction-related emission impacts be determined in relation to meeting AB 32 GHG reduction targets. BAAQMD further recommends, and encourages lead agencies to incorporate, best management practices (BMPs) to reduce GHG emissions during construction, when it is feasible and applicable (BAAQMD, 2011). BMPs could include, but are not limited to: ensuring that at least 15 percent of the construction fleet is comprised of alternatively fueled (e.g., biodiesel, electric) vehicles and equipment, using at least 10 percent local building materials, and recycling or reusing at least 50 percent of construction waste or demolition materials.

The impact analysis in this section estimates the annual GHGs that would be emitted during project construction activities, and then compares these estimates to total annual GHG emissions in the San Francisco Bay Area and in the state (there are no applicable construction-related thresholds). The impact analysis also compares the total GHG emissions that would be generated during project construction (averaged over the lifespan of the project) to BAAQMD operational significance thresholds. The BAAQMD's operational GHG thresholds of significance that apply to the PPSU project are 10,000 MT of CO<sub>2</sub>e per year for stationary sources, or 1,100 MT of CO<sub>2</sub>e per year for indirect sources

This analysis evaluates the proposed project's potential effects on GHG emissions during project construction. Construction-related effects on GHG emissions relate strictly to direct and indirect impacts that could occur during construction activities, including site preparation and cleaning, excavation, dewatering, construction of improvements, and demobilization and site restoration. Due to the nature of the project, which entails replacement of underground portions of an existing pipeline and restoration of the sites to pre-construction conditions, there are no operational impacts associated with the project. There would be no new emission sources added, and no substantial changes to current operation; therefore, operation-related effects on air quality are not analyzed further.

### 5.9.3.3 Summary of Impacts

The proposed project's greenhouse gas impacts and the resulting significance determinations are summarized in Table 5.9-2.

**Table 5.9-2  
 Summary of Impacts – Greenhouse Gas Emissions**

Impacts	Significance Determination
<b>Impact GG-1:</b> Project construction would generate greenhouse gas emissions, but not at levels that would result in a significant impact on the environment, or that would conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.	LS
<b>Impact C-GG:</b> Project construction would not result in a cumulatively considerable contribution to GHG emissions.	LS
Notes: LS = Less than Significant impact, no mitigation required	

**5.9.3.4 Construction Impacts and Mitigation Measures**

*Impact GG-1: Project construction would generate GHG emissions, but not at levels that would result in a significant impact on the environment, or that would conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. (Less than Significant)*

Project construction activities are estimated to occur over approximately 12 months (between October 2014 and September 2015), and the resulting exhaust emissions from off-road equipment, on-road trucking, and construction worker commute traffic during this period are expected to contribute minimally to long-term regional increases in GHGs. Table 5.9-3 presents the PPSU project’s estimated total construction-related emissions for 2014 and 2015. As indicated in the

**Table 5.9-3  
 Estimated Greenhouse Gas Emissions During Construction**

Years: 2014-2015	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub>
Construction Equipment	0.080	0.036	524
Haul Trucks	0.00012	0.00011	64.5
Worker Commute	0.017	0.030	205
Total (Tons)	0.098	0.066	793
GWP	21	310	1
Total CO <sub>2</sub> e (Tons)	2.05	20.4	793
<b>Total CO<sub>2</sub>e (Metric Tons)</b>	<b>740</b>		
Source: URS, 2012. Notes: MMTCO <sub>2</sub> e = million metric tons of carbon dioxide-equivalent			

table, construction activities associated with the PPSU project would generate up to an estimated 740 MT of CO<sub>2</sub>e during the construction of the project (2014 to 2015). Emissions associated with project construction would represent approximately  $1.55 \times 10^{-4}$  (0.0002) percent of total annual GHG emissions for the state (CARB, 2011a), and approximately  $7.72 \times 10^{-4}$  (0.0008) percent of total annual GHG emissions for the entire San Francisco Bay Area (BAAQMD, 2010a).<sup>2</sup> The contribution of GHG emissions from the project would be extremely small in terms of both the statewide and San Francisco Bay Area annual GHG emissions.

Neither the State nor BAAQMD has adopted a methodology or quantitative threshold, such as those that exist for criteria pollutants, that can be applied to a construction project to evaluate the significance of an individual project's construction-related contribution to GHG emissions.

Therefore, because the project's construction emissions are short-term, they can be amortized over the project lifetime, to estimate the annual amortized emissions. These amortized emissions can be compared to the BAAQMD threshold of 1,100 metric tons of CO<sub>2</sub>e.<sup>3</sup> When averaged over a conservatively estimated 20-year lifespan for the PPSU project, the annual amortized GHG emissions associated with all project construction activities would equate to approximately 37 MT of CO<sub>2</sub>e emissions per year. The annual amortized emissions are below the BAAQMD threshold, so the impacts would be *less than significant*.

Although BAAQMD's CEQA Guidelines do not specify thresholds of significance for construction-related GHG emissions, they do encourage incorporation of BMPs to reduce GHG emissions during construction, as applicable, such as ensuring that at least 15 percent of the construction fleet is comprised of alternatively fueled (e.g., biodiesel, electric) construction vehicles/equipment; using at least 10 percent local building materials; and recycling or reusing at least 50 percent of construction waste or demolition materials.

A relatively small amount of GHGs would be generated during project construction activities in comparison to statewide and Bay Area GHG emissions. As discussed above, the project's GHG emissions during construction would not exceed the BAAQMD GHG operational thresholds when conservatively averaged over a 20-year project lifespan. (As noted previously, no operational GHG emissions will be emitted as a result of the proposed project.) Therefore, the proposed project would not conflict with the State's AB 32 goal and associated scoping plan estimates of reducing GHG emissions to 1990 levels by 2020, or SFPUC's Climate Action Plan's goal of reducing GHG emissions by 25 percent below 1990 levels by 2017 and by 80 percent by 2050. Therefore, the project would not result in a conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and this impact would be *less than significant*.

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<sup>2</sup> BAAQMD reported regional Bay Area GHG emissions in 2007 at approximately 95.8 MMTCO<sub>2</sub>e (88.7 MMTCO<sub>2</sub>e were emitted within the San Francisco Bay Area Air District and 7.1 MMTCO<sub>2</sub>e were indirect emissions from imported electricity).

<sup>3</sup> This is the BAAQMD operational threshold. Although there are no operational emissions for this project, the project's amortized annual GHG emissions can be compared with the GHG operational threshold to determine impact conclusions.

Although no mitigation is necessary, implementation of BAAQMD Basic Construction Measures (see Impact AQ-1 in Section 5.8, Air Quality, for description), which includes idling restrictions specified in Title 13 of the California Code of Regulations, Section 2485, would limit criteria pollutant emissions and, in turn, reduce construction-related GHG emissions.

### 5.9.3.5 Operational Impacts and Mitigation Measures

As summarized in Section 5.9.3.2, due to the nature of the project, which entails replacement of underground portions of an existing pipeline and restoration of the sites to pre-construction conditions, there are no operational GHG impacts associated with the project, and there would be *no impact*.

### 5.9.3.6 Cumulative Impacts and Mitigation Measures

***Impact C-GG: Project construction would not result in a cumulatively considerable contribution to GHG emissions. (Less than Significant)***

Because GHG emissions affect global climate change, the evaluation of GHG emissions is inherently a cumulative impact issue. Since it is not feasible to evaluate GHG emissions impacts based on the sum of all past, present, and reasonably foreseeable future projects on a global scale, the geographic scope for cumulative GHG emission impacts is the SFBAAB, as well as in the state as a whole.

As discussed above under Impact GG-1, BAAQMD has not established a threshold of significance for construction-related GHG emissions. It is estimated that construction activities associated with the PPSU project would generate up to 740 MT of CO<sub>2</sub>e over the entire 12-month construction period. Construction emissions of 740 MT of CO<sub>2</sub>e would represent approximately  $1.55 \times 10^{-4}$  (0.0002) percent of total annual GHG emissions for the state (CARB, 2011a),<sup>4</sup> and approximately  $7.72 \times 10^{-4}$  (0.0008) percent of total annual GHG emissions for the entire San Francisco Bay Area. Thus, while the cumulative impact of regional and statewide GHG emissions is potentially significant, the contribution of GHG emissions from the project would be extremely small in terms of both the statewide and San Francisco Bay Area annual GHG emissions. In addition, construction-related GHG emissions would be temporary in nature and limited to the approximately 12-month construction period. Therefore, the PPSU project would not have a cumulatively considerable contribution to GHG emissions during construction (*less than significant*).

There would be no change in GHG emissions during project operation; therefore, the PPSU project would not have a cumulatively considerable contribution) to GHG emissions during operation, and there would be *no impact*.

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<sup>4</sup> CARB reported statewide GHG emissions in 2008 at approximately 478 MMTCO<sub>2</sub>e.

## 5.9.4 References

BAAQMD (Bay Area Air Quality Management District), 2009. Revised Draft Options and Justification Report. October 2009.

BAAQMD (Bay Area Air Quality Management District), 2010a. Source Inventory of Bay Area Greenhouse Gas Emissions. February 2010.

BAAQMD (Bay Area Air Quality Management District), 2010b. Adopted Air Quality CEQA Thresholds of Significance. June 2, 2010b.

BAAQMD (Bay Area Air Quality Management District), 2011. California Environmental Quality Act Air Quality Guidelines. Updated May 2011.

CARB (California Air Resources Board), 2010. California's Climate Plan: Fact Sheet. Available online at: [http://www.arb.ca.gov/cc/facts/scoping\\_plan\\_fs.pdf](http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf). Accessed March 4, 2010.

CARB (California Air Resources Board), 2011a. California Greenhouse Gas Inventory for 2000-2009 by Category as Defined in the Scoping Plan. Available online at: [http://www.arb.ca.gov/cc/inventory/data/tables/ghg\\_inventory\\_scopingplan\\_00-09\\_2011-10-26.pdf](http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-09_2011-10-26.pdf). October 26.

CARB (California Air Resources Board), 2011b. Status of Scoping Plan Recommended Measures. Available online at: [http://www.arb.ca.gov/cc/scopingplan/status\\_of\\_scoping\\_plan\\_measures.pdf](http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf).

SF Planning (City of County of San Francisco, San Francisco Planning Department), 2010. City and County of San Francisco Strategies to Address Greenhouse Gas Emissions in San Francisco. November 2010.

SFPUC (San Francisco Public Utilities Commission), 2011. San Francisco's 2011 Updated Electricity Resource Plan, Achieving San Francisco's Vision for Greenhouse Gas Free Electricity. March 2011.

United States Global Change Research Program, 2009. Global Climate Change Impacts in the U.S. Available online at: <http://www.globalchange.gov/what-we-do/assessment/previous-assessments/global-climate-change-impacts-in-the-us-2009>.

URS (URS Corporation), 2012. PPSU Final Greenhouse Gas Emissions Memorandum. June 29.



## 5.10 Wind and Shadow

This section evaluates the potential impacts on existing wind and shadow patterns related to the proposed Peninsula Pipelines Seismic Upgrade (PPSU). Mitigation measures to avoid or reduce adverse project impacts are identified, as appropriate.

### 5.10.1 Setting

The PPSU project sites are located in urban developed areas and are generally surrounded by commercial, residential, recreation, and open space uses. The development in the project vicinity is characteristically suburban in style, and structures are generally one to four-story buildings such as single-family residences, multi-story apartments, and “box” commercial buildings. The majority of the project sites are located within the San Francisco Public Utilities Commission right-of-way, and are open areas typically vegetated with grasses and/or trees.

Outdoor recreation areas in the project vicinity include the California Golf Club of San Francisco adjacent to the South San Francisco site (a private facility); the Peninsula High School Athletic Fields adjacent to the proposed staging area at San Bruno South Site; and the City of Millbrae open space area (park) and Green Hills Country Club (a private facility), through which the Millbrae site extends. See Section 5.11, Recreation, for additional details regarding recreation facilities in the project area.

Other outdoor facilities in the project vicinity include Cypress Lawn Memorial Cemetery, a private cemetery adjacent to the Colma site.

Because of the limited height of structures in the project vicinity and the amount of open areas, wind and shadow patterns in the project area are largely unaffected by development.

### 5.10.2 Regulatory Framework

There are no federal, State, or local regulations governing wind or shadow that apply to the PPSU project. Although the City and County of San Francisco (CCSF) regulations govern wind and shadow effects within the boundaries of San Francisco, these local regulations do not apply to the PPSU project because the project is not located in San Francisco. Nevertheless, an overview of CCSF wind and shadow regulations is provided for informational purposes.

#### 5.10.2.1 Wind

The San Francisco Planning Code establishes wind comfort and wind hazard criteria for use in evaluating new development in four areas of the city: the C3 Downtown Commercial Districts (Section 148); the Van Ness Avenue Special Use District (Section 243[c][9]); the Folsom–Main Residential/Commercial Special Use District (Section 249.1); and the Downtown Residential District (Section 825). Because the proposed project would not be located in any of these areas, the wind comfort and wind hazard criteria established in the Planning Code do not apply to the project.

### 5.10.2.2 Shadow

#### *San Francisco General Plan*

The Recreation and Open Space Element of the San Francisco General Plan (SF Planning, 1996) includes Policy 2.3, related to potential solar access or shading impacts, which states that solar access to public open space should be protected. The policy promotes solar access and avoidance of shade to maintain the usability of public open spaces. It states that the requirements of Planning Code Section 295 apply to the review of projects that could shade San Francisco Recreation and Park Department property. Policy 2.3 further states:

“A number of other open spaces designated in this Element or elsewhere in the General Plan are under the jurisdiction of other public agencies, or are privately owned and therefore not protected by the Planning Code amendments. These spaces should be given other forms of protection to assure they are not shaded during the hours of their most intensive use. Any new shading should be remedied to the extent feasible by expanding opportunities for public assembly and recreation in indoor and outdoor settings.”

The proposed project would not be located on San Francisco Recreation and Park Department property, and would not affect areas addressed in Policy 2.3. Therefore, these policies do not apply to the proposed project.

#### *San Francisco Planning Code*

Planning Code Section 295, adopted in 1984 pursuant to voter approval of Proposition K (also known as the Sunlight Ordinance), prohibits the issuance of building permits for structures more than 40 feet in height that would cast shade or shadow on property under the jurisdiction of, or designated to be acquired by, the Recreation and Park Commission. The statute applies to the time of day beginning 1 hour after sunrise and ending 1 hour before sunset at any time of year, unless the Planning Commission determines that the shade or shadow would have an insignificant adverse impact on the use of such property. The proposed PPSU project would be located outside of San Francisco, and there are no parks or open spaces within the project area or vicinity that are under the jurisdiction of the San Francisco Recreation and Park Department. Therefore, the PPSU project would not be subject to review under Planning Code Section 295.

## 5.10.3 Impacts and Mitigation Measures

### 5.10.3.1 Significance Criteria

The CCSF has not formally adopted significance standards for impacts related to wind and shadow, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- Alter wind in a manner that substantially affects public areas; or
- Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas.

### 5.10.3.2 Approach to Analysis

Due to the nature of the proposed project, there would be no construction or operational impacts related to the significance criteria for wind and shadow for the reasons described below:

- **Alter wind in a manner that substantially affects public areas.** The proposed PPSU project would result in upgrades to existing pipelines, which are located below ground in the vicinity of the sites. While some manholes and customer service connections extend above ground in several locations, they are generally not more than several feet in height. The proposed construction activities and equipment could include cranes and noise barriers/walls. These structures would be temporary (short-term) and would not alter wind patterns. Project operations would be similar to existing conditions and would not change wind patterns. The closest public areas to the project sites, the athletic fields adjacent to the Peninsula High School and City of Millbrae open space area, would not experience substantial changes in wind due to the project. Therefore, the significance criterion related to altering wind in a manner that substantially affects public areas is not applicable.
- **Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas.** The PPSU project does not propose any features that would substantially affect shadow patterns. The existing pipelines are located below ground in the vicinity of the sites, and would remain below ground after project implementation. Therefore, the significance criterion related to creating new shadow impacts is not applicable.

### 5.10.3.3 Construction and Operational Impacts and Mitigation Measures

As described above, implementation of the proposed project would not result in impacts related to wind and shadow. Therefore, no mitigation measures related to this resource topic are necessary, and there would be *no impact*.

### 5.10.3.4 Cumulative Impacts and Mitigation Measures

Implementation of the proposed project would not result in cumulative impacts related to wind and shadow because the project would not cause any project-specific impacts related to this resource topic, and there would be *no impact*.

## 5.10.4 References

CCSF (City and County of San Francisco), 2012. San Francisco Planning Code. June.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 1996. San Francisco General Plan, Recreation and Open Space Element.

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## 5.11 Recreation

This section evaluates the potential impacts on recreation resources that would result from implementation of the Peninsula Pipelines Seismic Upgrade (PPSU) project. Recreational resources and potential project-related impacts are described for each of the proposed PPSU project sites. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.11.1 Setting

#### 5.11.1.1 Colma Site

As shown on Figure 3-2, the Colma site is generally surrounded by commercial uses, with no parks or recreational facilities in the area, although a substantial amount of open space is provided by the numerous cemeteries in the vicinity.

#### 5.11.1.2 South San Francisco Site

As shown on Figure 3-3, the South San Francisco site is within the San Francisco Public Utilities Commission (SFPUC) right-of-way (ROW) that extends through the northern edge of the California Golf Club of San Francisco. This private golf club was incorporated in 1918, and moved to the South San Francisco location (a carefully selected portion of the large former Baden farms property) in 1924. The golf course was developed in 1924 to 1925, and it opened for play in 1926, after the clubhouse was completed. A number of famous golf designers and architects worked on this course from the 1920s and into the twenty-first century, including Scott Willie Locke, A. Vernon Macan, Alister MacKenzie, Robert Trent Jones, and Kyle Phillips. Golf Club Atlas considers the California Golf Club of San Francisco to be one of the five best golf courses in the state (Golf Club Atlas, 2012).

Most of the other surrounding land uses at the South San Francisco site are residential or commercial, but two small playgrounds with ball diamonds, Buri Buri Park and Southwood Playground, are each approximately  $\frac{1}{3}$  mile from the proposed project site.

#### 5.11.1.3 San Bruno North Site

There are no parks or recreational facilities in the immediate vicinity of the San Bruno North site. Surrounding uses are the Interstate 280 off-ramp, single-family homes and Bayhill Shopping Center, as shown on Figure 3-4.

#### 5.11.1.4 San Bruno South Site

In the vicinity of the San Bruno South site, the SFPUC ROW south of Whitman Way is an undeveloped open area that is used for casual strolling and dog walking by residents of the adjacent community. The main recreational resources in the project vicinity include basketball courts and a complex of athletic fields originally built to serve the former Crestmoor High School campus, which is located west of Courtland Drive (refer to Figure 3-5). These fields currently

serve multiple recreational uses, including weekday physical education programs associated with the small, approximately 275-student, Peninsula High School, as well as soccer games for many of the more than 100 youth soccer teams associated with the active San Bruno American Youth Soccer Organization (AYSO). AYSO uses the soccer fields most Saturdays and Sundays for games, and also holds practices during the week and soccer training for younger children some weekday evenings, as well as summer soccer camp programs. As many as 14 teams may use the soccer fields at any one time, with the heaviest use occurring from August through November. The athletic fields are owned by the San Mateo Union High School District, but the City of San Bruno leases and maintains these fields and rents them to other users. The facilities are also used year-round as an exercise area for residents of the adjacent residential neighborhood (Carlisle, 2011; San Bruno AYSO, 2011; McManus, 2011).

A playground located immediately to the west of the high school is used by Crayon College (daycare), which is co-located within the Peninsula High School facilities.

One of the proposed staging areas at the San Bruno South site is a fenced portion of the northern school parking lot, currently used as a maintenance/storage area and located immediately adjacent to the outdoor basketball courts. The remaining portion of the parking lot is immediately adjacent to the athletic fields; this area is available for parking, and is heavily used during sports events (City of San Bruno, 2011b).

The city-owned seven-acre Buckeye Park is located approximately ½ mile west of the proposed staging areas adjacent to the athletic fields. This park, which has a picnic area with a barbeque pit and a children's play area with a slide and climbing equipment, is used primarily by residents of the surrounding neighborhood (Carlisle, 2011; City of San Bruno, 2011a).

#### **5.11.1.5 Millbrae Site**

As shown on Figure 3-6, in the vicinity of the Millbrae site, the SFPUC ROW extends adjacent to and through a portion of the Green Hills Country Club, a private-membership club whose facilities include an 18-hole golf course, swimming pool, tennis courts, and a club house with a pro shop, fully equipped exercise room, and restaurant facilities. The golf course, constructed in 1930, was designed by Dr. Alister MacKenzie, a world-renowned golf course designer who designed more than 30 golf courses in Europe and America, including the famous Augusta National Golf Club in Atlanta, Georgia, and Cypress Point Club in Monterey, California. A driving range was added around 1992. This golf course is open year-round, with relatively heavy use. Its full membership of approximately 400 members had declined to approximately 325 members in mid-2012 (Green Hills Country Club, 2010; worldgolf.com, 2011; Halligan, 2011; Barrett, 2012).

A City of Millbrae open space area is located north of the golf course and the SFPUC ROW. This area is used by local residents for dog walking and other passive recreation activities. An unpaved trail extends from Lomita Avenue through the open space to a grassy area behind residences on Ridgewood Drive (City of Millbrae, 1998). This trail would be used as an access route to the project site.

Millbrae Meadows Park, located at the terminus of Lynnewood Drive, consists of about 4 acres of open space, surrounded by trees. There are no developed amenities, but residents of the adjacent

community use it as a sports practice field, as well as a place to walk, relax, or walk dogs (City of Millbrae, 2011). Portions of this park lie approximately 300 feet west of Ridgewood Drive and 300 feet north of Larkspur Drive, both of which are proposed access routes.

The 106-acre Junipero Serra County Park lies north of Lomita Avenue, close to the proposed access route that would run through the city-owned open space property. The park is situated along a ridge top, providing views of San Francisco Bay and the surrounding communities. Park facilities include hiking trails, picnic areas, playgrounds, a volleyball court, and youth camp area (San Mateo County Parks, 2009).

There are also sports fields and playgrounds associated with the Meadows Elementary School and the Montessori School campuses.

#### **5.11.1.6 Common Staging Area**

There are no parks or recreation facilities in the vicinity of the common staging area on SFPUC's Baden Valve Lot.

### **5.11.2 Regulatory Framework**

There are no federal, State, or local regulations or requirements pertaining to recreational resources or facilities that are directly applicable to the proposed PPSU project.

### **5.11.3 Impacts and Mitigation Measures**

#### **5.11.3.1 Significance Criteria**

CCSF has not formally adopted significance standards for impacts related to recreation, but generally considers that implementation of the proposed project would have a significant impact on recreation if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated;
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment; or
- Physically degrade existing recreational resources.

#### **5.11.3.2 Approach to Analysis**

Due to the nature of the proposed project, there would be no impacts related to the following significance criteria. Therefore, an impact discussion is not provided for these topics for the reasons described below.

PPSU project operations would have no impacts related to the following significance criterion:

- **Physically degrade existing recreational resources.** Existing recreational resources would not be affected or physically degraded during project operations. Therefore, this significance criterion is not applicable to project operations and is analyzed below under Impact RE-1 only as it applies to project construction.

Both PPSU project construction and operations would have no impacts related to the following significance criteria:

- **Increase the use of existing neighborhood and regional parks or other recreational facilities resulting in a substantial physical deterioration of the facility.** As described in Section 5.4, Population and Housing, the PPSU project would not result in any changes in population or housing resources. Therefore, implementation of the project would not result in an increase in demand for or use of parks or other recreational facilities in the area. Therefore, this significance criterion is not applicable to the proposed project and is not discussed further.
- **Include recreational facilities or require construction or expansion of recreational facilities that might adversely affect the environment.** The PPSU project does not propose to construct recreational facilities and would not cause an increase in local population that could result in the need for new or expanded recreational facilities. Thus, this significance criterion is not applicable to the proposed project and is not discussed further.

To evaluate the PPSU project's potential to physically degrade recreational resources, this analysis considers whether the project would remove or damage existing recreational resources directly; disrupt access to recreational resources; or indirectly affect the quality of the recreational experience through physical environmental effects such as increased noise or traffic, or changes in air quality or aesthetics.

The analysis focuses on the potential for construction activities to directly or indirectly affect recreation resources in the project vicinity. Pipelines that would be replaced are underground, and after project construction, the surface would generally be restored to pre-project conditions. Therefore, project operations would not affect access to, or use, of recreation resources; recreation impacts during project operation are not discussed further.

### 5.11.3.3 Summary of Impacts

Table 5.11-1 lists the proposed project's impacts to recreation resources, along with determinations of significance.

### 5.11.3.4 Construction Impacts and Mitigation Measures

***Impact RE-1: The proposed project could temporarily degrade existing recreational uses during construction. (Less than Significant with Mitigation)***

Temporary, direct impacts on established recreation resources could result if construction activities overlap geographically with existing recreational facilities or disrupt access to such facilities. Construction could indirectly degrade recreation resources as a result of temporary impacts to visual aesthetics or air quality, or increases in noise and traffic.



**Table 5.11-1  
Summary of Impacts – Recreation Resources**

Impacts	Significance Determination					
	Colma	South San Francisco	San Bruno North	San Bruno South	Millbrae	Common Staging Area
<b>Impact RE-1:</b> The proposed project could temporarily degrade existing recreational uses during construction.	NI	LS	NI	LS	LSM	NI
<b>Impact C-RE:</b> Construction of the project would not result in a cumulatively considerable contribution to cumulative impacts on recreational resources or uses.	NI	LS	NI	LS	LS	NI
Notes: LSM = Less than Significant with Mitigation LS = Less than Significant NI – No Impact						

Because there are no recreation resources in the vicinity of the Colma site, the San Bruno North site, and the common staging area, activities at these sites would not affect any recreation resources directly or indirectly, and they are not discussed further, and there would be *no impact*.

#### **South San Francisco Site (Less than Significant)**

The proposed construction zone would be located within the SFPUC ROW that extends along the northern edge of the California Golf Club of San Francisco, approximately 50 feet north of an active play area. The green would be separated from the proposed construction zone by a fence, a strip of trees, and mature vegetation. Construction activities would not directly affect any greens, fairways, or other developed facilities at the golf course. Instead, construction would mainly affect the ROW where it lies within a landscaped strip of land at the intersection of Westborough Boulevard and West Orange Avenue that is not used for any active recreational purpose. As described in Section 5.16, Hydrology and Water Quality, an irrigation water supply well used by the golf club, located approximately 150 feet southwest of the South San Francisco site, would not be affected by the PPSU project. Indirect impacts associated with project-related noise, dust, or traffic could result in a slight reduction in enjoyment of the recreational experience in the vicinity of the construction zone; however, golfers would not linger in that area for long in the course of playing a game. Thus, the impact to recreation resources at this site would be *less than significant*.

### San Bruno South Site (Less than Significant)

The portion of the project construction zone located south of Whitman Way would be located on privately owned undeveloped open land (within the SFPUC ROW) that is not a formal park but is currently used for dog walking and passive recreation use. However, because no developed or heavily used recreation facilities would be removed or disrupted, and because construction activity would be temporary, this impact would be less than significant. The proposed staging area within the unpaved SFPUC ROW directly east of Courtland Drive and adjacent to the San Bruno Chinese Church is unofficially used for parking during soccer practices and/or games; it is immediately across from the athletic fields. Although parking is not permitted at this location, vehicles frequently are driven over the curb along Courtland Drive, and parked perpendicular to the roadway. The proposed staging area is shown on Figure 3-5. As described in Section 5.6, Transportation and Circulation, there is adequate parking supply at the Peninsula High School to accommodate the demand associated with use of the athletic fields. The athletic fields, basketball courts, and associated parking resources adjacent to the Peninsula High School would not be directly impacted by the project.

Construction-related noise and traffic could indirectly affect the recreational experience at the athletic fields and basketball courts. However, such impacts would be temporary in duration and relatively minor. As described above, there is adequate parking to accommodate demand for these facilities and the project would not directly impact these facilities. Additionally, indirect impacts to recreational facilities from construction noise, dust, and traffic would be temporary and minor. Therefore, the project impacts to recreation resources at the San Bruno South site would be *less than significant*, and no mitigation would be required.

Although the impact would not be significant, implementation of **Mitigation Measure M-TR-3: Traffic Control Plan** (see Section 5.6, Transportation and Circulation) would reduce any indirect adverse impacts related to traffic and circulation.

### Millbrae Site (Less than Significant with Mitigation)

PPSU project activities include tree removal and pipeline upgrades at the Millbrae site. Tree removal would occur in the fall of 2014 for about 1.5 months. Construction activities are scheduled to occur between mid-April to mid-July 2015, for a duration of about 3 months.

The trail that extends from Lomita Avenue through the City of Millbrae open space area is proposed to be used as an access road for the PPSU project; this would disrupt its recreational use. To the extent feasible and as determined by the City of Millbrae, the trail would be open to the public for use when it is not required for construction access. The disruption in access along the trail would be temporary (approximately 4.5 months), and during this time it would remain open to the public to the extent feasible. Additionally, there are several other open spaces/parks in the neighborhood (including the nearby Millbrae Meadows Park and Junipero Serra County Park) that can be used for dog walking and other passive recreation activities. Therefore, the temporary loss of this open space would be a *less-than-significant impact*.

Construction activities (pipeline replacement and truck turnaround/staging) would displace a portion (a strip measuring approximately 50 feet by 150 feet) of the active fairway in the vicinity of the fifth hole of the Green Hills Country Club golf course for a period of approximately

4.5 months. In addition, staging areas are proposed along the eastern and southern edges of the construction zone, including a portion of the driving range, as shown on Figure 3-6, in Chapter 3, Project Description. During tree removal and pipeline construction, the SFPUC proposes to use the driving range at Green Hills Country Club as an access route, requiring complete temporary closure of the driving range for the safety of construction workers. The driving range was not part of the original Green Hills Country Club golf course; it was constructed circa 1992 (Barrett, 2012). Closure of the driving range would temporarily (approximately 4.5 months) make this amenity at the golf club unavailable, and would diminish the use of this well-used facility; but alternative driving ranges are available in the site vicinity.<sup>1</sup> Temporary closure of the driving range would not affect the ability to complete a round of golf on the Green Hills course. However, the obstruction of the use of the fifth hole from PPSU project construction would be a significant impact to this recreational resource.

This impact would be reduced with implementation of **Mitigation Measure M-RE-1: Coordination with Green Hills Country Club Facility Managers**, which requires coordination of project activities with the golf course to reduce schedule conflicts and minimize the project's use of the golf course fairways and other facilities. With appropriate notice, golf course managers could make temporary arrangements to enable continued course play (e.g. rearranging course features to allow continued play at the fifth hole; constructing a temporary hole; or playing one hole twice should the fifth hole be closed temporarily). These arrangements would minimize the inconvenience to the club's members, and allow continued use of the golf course. With implementation of this mitigation measure, temporary construction impacts to the golf course would be *less than significant with mitigation*.

#### **Mitigation Measure M-RE-1: Coordination with Green Hills Country Club Facility Managers**

This mitigation measure applies to the Millbrae site. The SFPUC shall work with the Green Hills Country Club prior to initiation of project activities on the golf course property, and shall coordinate with the club to implement measures that will facilitate maximum continued use of golf course facilities during project construction. Staging areas and access routes should be located to avoid use of fairways, where practicable. Continued play of the fifth hole (adjacent to the construction zone and staging area) should be allowed, to the extent feasible. The access road through the driving range should be aligned to the maximum extent practicable to avoid sensitive, highly developed and expensive features such as the chipping green and unique bunkers, such as deep sand traps with steep slopes. In addition, alternatives to allow the continued use of the fifth hole should be considered.

### **5.11.3.5 Operational Impacts and Mitigation Measures**

Because PPSU facilities would be constructed underground within the existing SFPUC ROW, project operation would not affect long-term access to or use of existing recreation resources or

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<sup>1</sup> Burlingame Golf Center in Burlingame, San Bruno Golf Center in San Bruno, Mariner's Point Golf Course in Foster City, Crystal Springs Golf Course in Burlingame, and Ocean View Driving Range in Half Moon Bay offer more than 250 practice tees combined (CBS, 2012; Golf Link, 2013).

facilities. Also, future project operations would not cause physical environmental impacts resulting in indirect effects on recreational uses. Vehicle traffic would not increase as a result of project operations; there would be no increase in emissions or noise; and lands would be generally restored to the previous condition, or to conditions specified in or in accordance with existing easements or agreements. Therefore, the proposed project would not have an effect on recreation resources as a result of project operations, and there would be *no impact*.

### 5.11.3.6 Cumulative Impacts and Mitigation Measures

***Impact C-RE: Construction of the proposed project would not result in a cumulatively considerable contribution to cumulative impacts on recreational resources and uses. (Less than Significant)***

The geographic scope for potential cumulative recreation impacts encompasses recreational facilities in the vicinity of the PPSU project sites, including the access roads.

Cumulative impacts related to degradation of existing recreational resources could be significant if the construction of the PPSU project and other cumulative projects overlapped, and degradation of existing recreational resources were to occur. Of the projects identified for the cumulative impact analysis, only one—599 Cedar Avenue—would result in a slight increase in demand for recreation facilities in the study region, as a result of constructing 14 new single family homes in San Bruno. The other projects, like PPSU, are facility or infrastructure replacement or improvement facilities that would not increase population, and therefore would not result in increased demand for recreation resources. The construction of 14 new homes could result in a significant impact if recreation resources in the region are being used to capacity so that the demand associated with these additional households could not be met. However, numerous other recreational resources are available in the region and are likely to be able to accommodate this small additional increase in demand without deterioration in quality.

None of the cumulative projects listed in Table 5.1-1 are located close enough to the recreational facilities impacted by the PPSU project to generate additional construction-related noise, fugitive dust, diesel emissions, and traffic that could affect the use of or access to these recreational resources. The Harry Tracy Water Treatment Plant (HTWTP) project would affect a swim club and regional equestrian facilities, while PPSU does not affect any of these types of recreation facilities. Noise associated with HTWTP construction would indirectly affect the recreation experience at Junipero Serra County Park and the San Andreas Trail. However, the PPSU project would not contribute to impacts on these resources.

As discussed above under Impact RE-1, construction of the PPSU project could cause temporary adverse effects on several specific recreation resources located in the project vicinity, including use of the athletic fields near the San Bruno South site, the City of Millbrae open space area, and the Green Hills Country Club golf course at the Millbrae site. The City of Millbrae open space area is used by neighbors for walking/dog walking, and the park is not considered a regional recreation resource. For the most part, the project-related impacts are both temporary and minor. Therefore, the PPSU project would not contribute cumulatively to degradation of major regional recreational resources. To the extent that there may be some shift in recreational resource demand during project construction due to temporary closure or restrictions to walking trails or golf facilities in the vicinity of the construction, such effects would be temporary and unlikely to

impact any particular resource greatly. Therefore, the project would not be expected to have any substantial adverse impact on other available recreation resources.

The cumulative projects, combined with the PPSU project, could result in a minor temporary inconvenience to recreation users, but would not increase recreation demand or result in long-term degradation of existing facilities. Therefore, cumulative impacts to regional recreation resources would be *less than significant*.

### 5.11.4 References

Barrett, Walter, Golf Course Superintendent, Green Hills Country Club, 2012. Interview with Mara Feeney of Mara Feeney & Associates. July 9.

Carlisle, Jackie, City of San Bruno Community Services Department, Parks and Recreation Division, 2011. Telephone conversation with Mara Feeney of Mara Feeney & Associates. May 20.

CBS, 2012. Best Driving Ranges in the Peninsula. Available online at: <http://sanfrancisco.cbslocal.com/top-lists/best-driving-ranges-in-the-peninsula/>. Accessed February 12, 2013.

City of Millbrae, 1998. City of Millbrae General Plan, 1998-2015. Adopted November 24, 1998.

City of Millbrae, 2011. City of Millbrae Parks Division, Meadows Park Webpage. Available online at: <http://www.ci.millbrae.ca.us/index.aspx?page=273>. Accessed May 12, 2011.

City of San Bruno, 2011a. City of San Bruno Community Services Department, Parks Corporation Yard Webpage. Available online at: [http://www.sanbruno.ca.gov/parks\\_locations.html](http://www.sanbruno.ca.gov/parks_locations.html). Accessed May 19, 2010.

City of San Bruno, 2011b. City of San Bruno Planning Commission Staff Report, Item No. 5.A, (Request for Conditional Use Permit, 300 Piedmont Avenue). September 2011.

Golf Club Atlas, 2012. California Golf Club of San Francisco Webpage. Available online at: <http://www.golfclubatlas.com/courses-by-country/usa/california-golf-club-of-san-francisco/>. Accessed May 29, 2012.

Golf Link, 2013. Burlingame Golf Driving Ranges and Practice Facilities, and San Bruno Golf Driving Ranges and Practice Facilities. Available online at: <http://www.golfink.com/golf-driving-ranges/state.aspx?state=CA>. Accessed February 12, 2013.

Green Hills Country Club, 2010. Green Hills Country Club, About the Club Webpage. Available online at: <http://www.greenhillsc.com/club/scripts/public/public.asp?GRP=15905&NS=PUBLIC>. Accessed December 6, 2010.

Halligan, General Manager, Green Hills Country Club, 2001. E-mail correspondence with Mara Feeney of Mara Feeney & Associates. May 17.

McManus, Elizabeth, Deputy Superintendent, San Mateo Union High School District, 2011. Telephone conversation with Mara Feeney of Mara Feeney & Associates. May 20.

San Bruno AYSO (San Bruno American Youth Soccer Organization), 2011. San Bruno AYSO Spring Newsletter 2011. Available online at: [http://www.sanbrunoayso.org/Documents/2011\\_newsletter\\_spring.pdf](http://www.sanbrunoayso.org/Documents/2011_newsletter_spring.pdf). Accessed May 20, 2011.

San Mateo County Parks, 2009. Junipero Serra: A San Mateo County Park. July, 2009. Available online at: <http://www.co.sanmateo.ca.us/Attachments/parks/Files/Brochures/JuniperoSerraBrochure.web.pdf>. Accessed May 20, 2011.

worldgolf.com, 2011. Alister MacKenzie Courses Built Webpage. Available online at: <http://www.worldgolf.com/golf-architects/alister-mackenzie.html>. Accessed May 20, 2011.

## 5.12 Utilities and Service Systems

This section describes existing utilities and service systems in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project, and evaluates the potential utilities and service systems impacts of the proposed project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.12.1 Setting

The proposed project, including a common staging area, would entail upgrades to six pipeline segments located at five different sites within the San Francisco Public Utilities Commission (SFPUC) right-of-way (ROW). These sites are located in the Town of Colma, the cities of South San Francisco, San Bruno, and Millbrae, and unincorporated San Mateo County.

This section includes a description of utility lines and infrastructure within the project vicinity, as well as solid waste disposal facilities within the greater San Francisco Bay Area that could be used to dispose of construction-related wastes.

#### 5.12.1.1 Utilities

##### *Natural Gas*

The Pacific Gas and Electric Company (PG&E) provides natural gas to the study area. PG&E is regulated by the California Public Utilities Commission (CPUC). There are three regional gas lines that extend from Milpitas to San Francisco (City of San Bruno, 2009). Table 5.12-1 shows the distances from the project sites to the nearest natural gas line.

**Table 5.12-1  
Distance to PG&E Natural Gas Lines**

Project Site	Approximate Distance to Nearest Gas Line
Colma	0.85 mile
South San Francisco	0.15 mile (800 feet) <sup>1</sup>
Common Staging Area in South San Francisco	0.08 mile (400 feet) <sup>1</sup>
San Bruno North	0.07 mile (385 feet) <sup>1</sup>
San Bruno South	0.32 mile
Millbrae	0.66 mile
Source: PG&E, 2012.	
Note:	
<sup>1</sup> Distance provided in feet as well as miles for distances less than ¼ mile.	

### ***Electricity***

PG&E is the primary provider of electrical power to the Town of Colma (Town of Colma, 1999) and the cities of South San Francisco (City of South San Francisco, 2011), San Bruno, (City of San Bruno, 2009), and Millbrae (City of Millbrae, 1998).

Electrical power lines are located at the project sites as follows:

- There are no overhead or underground power lines at the Colma site.
- Overhead distribution lines cross the South San Francisco site. Electrical power is provided to the City of San Bruno from eight different distribution feeders, four of them from the Sneath Lane substation in San Bruno (City of San Bruno, 2009).
- The common staging area in South San Francisco is located on the SFPUC's Baden Valve Lot. The valve lot contains several underground power lines (SF Planning, 2008); no overhead power lines are located on the site. Overhead distribution lines are located west of the SFPUC ROW in the back yards of the residences on Fairway Drive.
- Underground PG&E electrical cables are located at the San Bruno North site. There are no overhead power lines in the San Bruno North site.
- Overhead distribution lines are located west of the SFPUC ROW at the San Bruno South site. Underground electric lines cross through the site.
- Overhead distribution lines cross through the Millbrae site adjacent to Ridgeway Drive and at the end of the trail that extends through the City of Millbrae open space area from Lomita Avenue to the SFPUC ROW.

### ***Telecommunications***

AT&T (formerly Pacific Bell and SBC) provides telephone service (land line) to the Town of Colma (Town of Colma, 1999) and the cities of South San Francisco (City of South San Francisco, 2011) and Millbrae (City of Millbrae, 2011a). The City of San Bruno General Plan does not identify a specific service provider.

Within the project sites, telecommunications infrastructure includes overhead and underground lines. There are overhead telecommunications lines at the South San Francisco and Millbrae sites. There are no overhead lines at the Colma or San Bruno North sites. At the San Bruno South site, there are underground telecommunication lines in the staging and spoils area and overhead telecommunication lines west of the SFPUC ROW.

### ***Stormwater Drainage***

#### **Town of Colma**

Stormwater runoff from the Town of Colma flows by gravity through open channels and culverts to Colma Creek. The creek exits Colma as an open channel through South San Francisco, and flows into San Francisco Bay (Town of Colma, 1999).



Stormwater at the Colma site is conveyed via an underground culvert, which is a tributary to Colma Creek, and via a concrete-lined v-ditch, which conveys runoff to nearby storm drains.

### **City of South San Francisco**

The sewer system in South San Francisco includes gravity lines and force mains that combine both wastewater and stormwater runoff (Cal Water, 2011).

A culverted section of Twelve Mile Creek, which is a tributary to Colma Creek, extends through the South San Francisco site, and an underground storm drain conveys water from a portion of the site north of Westborough Drive.

### **City of San Bruno**

At the San Bruno South site, a concrete-lined v-ditch conveys water near the site to a storm drain in Whitman Way.

### **City of Millbrae**

Storm sewers in Millbrae collect and channel runoff into the Lomita Creek, Green Hills Creek, and Millbrae Creek channels, where it is eventually transported to San Francisco Bay (City of Millbrae, 1998).

At the Millbrae site, stormwater is primarily conveyed through concrete-lined v-ditches. Stormwater drains to Bertocchi Lane in a concrete-lined ditch, installed as a catchment to carry runoff from the slope to an underground storm drain system at the end of the lane. Behind residences on Ridgewood Drive near the Millbrae site, a concrete-lined horizontal ditch drains the slope. At the eastern end of Larkspur Drive, a concrete-lined ditch receives water from two culverts from the residential area. The ditch flows into an unnamed creek tributary, and eventually goes underground. Additionally, an underground storm drain crosses the project site in the Green Hills Country Club area.

### ***Water Supply***

By contractual agreement, the SFPUC provides water delivery services via the existing Crystal Springs/San Andreas Transmission System to wholesale customers in San Mateo County and the San Francisco Peninsula region. The wholesale customers consist of 24 cities and water districts, plus two private utilities in San Mateo, Santa Clara, and Alameda counties, all of which are represented by the Bay Area Water Supply and Conservation Agency (BAWSCA). The California Water Service Company (Cal Water) (which provides water to the Town of Colma) is a member of BAWSCA, as are the cities of San Bruno and Millbrae.

Cal Water provides the Town of Colma with water purchased from SFPUC, and with local groundwater (Town of Colma, 1999).

In the City of South San Francisco, the Westborough Water District provides water to the area west of Interstate 280 (I-280), and Cal Water provides water to the portion of the city located east of I-280 (City of South San Francisco, 2011). The South San Francisco site is east of I-280, and Cal Water is therefore the provider in the project area.

The City of San Bruno provides water to San Bruno, including the area around the San Bruno North and San Bruno South sites. San Bruno owns, operates, and maintains the potable water distribution system that serves drinking water within the city limits. Water supplied through San Bruno's distribution system is a combination of groundwater pumped at San Bruno's four groundwater supply wells, and water purchased from the SFPUC and the North Coast County Water District. San Bruno has four connections to the SFPUC water supply system, and one connection to the North Coast County Water District water supply system (Erler & Kalinowski, Inc., 2011). Underground City of San Bruno water pipelines cross through the San Bruno South site.

The City of Millbrae provides water to Millbrae, including the area surrounding the Millbrae site. Underground City of Millbrae water pipelines cross through the Millbrae site. An 8-inch cast iron water main extends through the Millbrae site, from Banbury Lane to Hacienda Way (Riddell, 2012).

Within the project sites, segments of drinking water transmission pipelines would be seismically upgraded. These pipelines are the SFPUC's San Andreas Pipeline No. 2 (SAPL2), San Andreas Pipeline No. 3 (SAPL3), and Sunset Supply Branch Pipeline (SSBPL).

### *Wastewater*

#### **Town of Colma**

The Town of Colma, through joint powers agreements, uses the South San Francisco/San Bruno Sewage Treatment Plant, described below, and the North San Mateo County Sanitation District Treatment Plant. The Colma site is located in the portion of Colma served by 10-inch, 8-inch, and 6-inch lines connecting to a 10-inch force main along the unincorporated portion of A Street. A sewer pump station is located at F Street. The flow is then sent to the North San Mateo County Sanitation District Treatment Plant, which is located near John Daly and Lake Merced boulevards. An agreement with the North San Mateo County Sanitation District allows for treatment of 490,000 gallons per day of wastewater, with annual growth increments. The plant has a design capacity of 10.3 million gallons per day (mgd).

#### **City of South San Francisco**

The South San Francisco/San Bruno Sewage Treatment Plant was constructed in the early 1970s, and is jointly operated by the cities of South San Francisco and San Bruno. The plant was last upgraded in 1997 to provide capacity for projected wastewater flows from South San Francisco, San Bruno, and parts of Colma and Daly City through the year 2015 (Erler & Kalinowski, Inc., 2011). The plant's design capacity allows for 13 mgd of dry-weather flow and 61.8 mgd of peak wet-weather flow (Erler & Kalinowski, Inc., 2011). Treated wastewater is discharged from a 60-inch outfall pipeline 2 miles out into San Francisco Bay, via a joint outfall pipe shared by Colma, South San Francisco, San Bruno, Millbrae, Burlingame, and the San Francisco International Airport (City of San Bruno, 2009).

As mentioned above, the sewer system in South San Francisco includes gravity lines and force mains that combine both wastewater and stormwater runoff (Cal Water, 2011).

### **City of San Bruno**

The City of San Bruno is responsible for the wastewater collection system, and ensures compliance with all permit requirements in the city (City of San Bruno, 2009). The sanitary sewer system consists of approximately 150 miles of pipeline, and seven lift stations. San Bruno operates and maintains the wastewater collection system, which includes gravity pipelines, lift stations, and force mains (Erlor & Kalinowski, Inc., 2011). Wastewater is sent to the South San Francisco/San Bruno Sewage Treatment Plant.

### **City of Millbrae**

The City of Millbrae's Public Works department is responsible for 56 miles of sewer lines, 21 miles of storm drains, and 3 miles of open creeks and ditches (City of Millbrae, 2011a). The City of Millbrae provides wastewater collection and treatment services throughout its jurisdiction, and for Capuchino High School in San Bruno. Wastewater is collected in gravity flow lines, assisted by lift stations and connected to force mains where necessary, and then conveyed to the Millbrae Wastewater Treatment Plant, located at 400 Millbrae Avenue, just west of El Camino Real (City of Millbrae, 2011a).

### ***Solid Waste Disposal***

In the Town of Colma, solid waste is collected by Browning Ferris Industries. The main solid waste disposal site for San Mateo County is the Ox Mountain Landfill, located north of Highway 92 (Town of Colma, 1999). Ox Mountain Landfill has a remaining capacity of approximately 44.6 million cubic yards, and is projected to close January 1, 2018 (CalRecycle, 2011).

Solid waste is collected from South San Francisco homes and businesses, and then processed at the South San Francisco Scavenger Company's materials recovery facility and transfer station. Materials that cannot be recycled or composted are transferred to the Ox Mountain Sanitary Landfill (City of South San Francisco, 1999).

In the City of San Bruno, garbage collection is provided by San Bruno Garbage Company. San Bruno Garbage Company is part of Recology Peninsula Services. Recology Peninsula Services provides debris box, compactor, and commercial recycling services throughout San Mateo County (Recology, 2011). Materials that cannot be recycled or composted are transferred to the Ox Mountain Sanitary Landfill.

South San Francisco Scavenger Company is franchised by the City of Millbrae to collect and dispose of refuse in Millbrae (City of Millbrae, 2011c). Materials that cannot be recycled or composted are transferred to the Ox Mountain Sanitary Landfill.

## **5.12.2 Regulatory Framework**

The section below describes applicable regulations pertaining to utilities and services within the project area. For a list of specific permits required for implementation of the proposed project, refer to Section 3.10, Required Permits.

### **5.12.2.1 Federal**

No federal regulations related to utilities and service systems are applicable to the proposed project.

### **5.12.2.2 State**

#### *California Public Utilities Commission*

The CPUC has exclusive power and sole authority to regulate privately owned and investor-owned utilities. The CPUC does not regulate publicly owned utilities, such as the SFPUC. The CPUC regulates the electricity provider, PG&E. This exclusive power extends to all aspects of the location, design, construction, maintenance, and operation of regulated utility facilities. The CPUC requires regulated utilities to work closely with local governments and to give due consideration to their concerns.

#### *California Integrated Waste Management Act of 1989*

The California Integrated Waste Management Act of 1989 (Public Resources Code [PRC], Division 30), enacted through Assembly Bill (AB) 939 and modified by subsequent legislation, required all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of wastes by the year 2000 (PRC Section 41780). The State determines compliance with this mandate to divert 50 percent of generated waste (which includes both disposed and diverted waste) through a complex formula. This formula requires cities and counties to conduct empirical studies to establish a “base year” waste generation rate against which future diversion is measured. The actual determination of the diversion rate in subsequent years is arrived at through deduction, not direct measurement: instead of counting the amount of material recycled and composted, the city or county tracks the amount of material disposed at landfills, and then subtracts the disposed amount from the base-year amount. The difference is assumed to be diverted (PRC Section 41780.2).

#### *Utility Notification Requirements*

Title 8, Section 1541, of the California Code of Regulations requires excavators to determine the approximate locations of subsurface installations such as sewer, telephone, fuel, electric, and water lines prior to excavation. Contractors working in the vicinity of utilities, both below- and aboveground, are required by Article 2 of the California Code of Regulations 4216 to contact a regional notification center at least 2 days prior to excavation of any subsurface installations. The center for northern California is the Underground Service Alert. After receiving notification, the Underground Service Alert notifies utilities that may have buried lines within 1,000 feet of an excavation. The excavator is required to probe and expose underground facilities by hand prior to using power equipment for trenching and excavation. The California Government Code (Sections 4216 et seq.) requires owners and operators of underground utilities to become members of and participate in a regional notification center.

### **5.12.2.3 Local**

The Town of Colma adopted Ordinance No. 569 to comply with the Integrated Waste Management Act. The ordinance requires that at least 50 percent of the waste tonnage from any

demolition project where the waste includes concrete and asphalt, (or 15 percent where there is no concrete and/or asphalt) be recycled and/or reused to meet the terms and conditions of the ordinance. In addition to demolition, new construction, remodeling, and re-roofing of homes requires 50 percent recycling of waste tonnage (Town of Colma, n.d.).

The South San Francisco General Plan (1999) includes a goal to reduce the generation of solid waste to slow the filling of local and regional landfills, in accordance with the California Integrated Waste Management Act of 1989. Additionally, the City of South San Francisco Municipal Code, Chapter 15.60 requires the diversion of 100 percent of inert solids<sup>1</sup> from landfills, and a minimum of 50 percent of the remaining construction and demolition debris (City of South San Francisco, n.d.).

The City of San Bruno Municipal Code, Chapter 10.23, Recycling and Diversion of Debris from Construction and Demolition, identifies salvage, diversion, and reporting requirements for waste disposal (City of San Bruno, n.d.). The code contains salvage requirements to recover the maximum feasible amount of salvageable designated recyclable and reusable materials prior to demolition. The code also requires a 50 percent diversion rate for construction and demolition debris from commercial and residential buildings. The salvage requirement is applicable to the PPSU project, but the diversion rates are not.

The City of Millbrae operates a Recycling and Waste Prevention Program. The program was formed in 1994 to help meet the State-mandated goal to reduce the amount of garbage placed in landfills by 50 percent by the end of the 2000. Since 1999, Millbrae has achieved the 50 percent requirement, and has a 67 percent waste reduction and recycling rate as of 2011 (City of Millbrae, 2011b). The Public Works Department, as part of its conditions of approval, requires 50 percent recycling of all waste generated for a project by weight, with at least 25 percent achieved through reuse and recycling of materials other than source-separated dirt, concrete, and asphalt (City of Millbrae, 2012).

San Mateo County adopted Ordinance No. 04099 on February 26, 2002, to reduce construction and demolition debris (San Mateo County, 2002). The ordinance requires 100 percent of inert solids, and at least 50 percent of the remaining construction and demolition debris tonnage, to be diverted from local landfills. It also requires the project proponent to develop and submit a Waste Management Plan. This ordinance applies to unincorporated areas of the county.

## 5.12.3 Impacts and Mitigation Measures

### 5.12.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to utilities and service systems, but generally considers that implementation of the proposed project would have a significant impact if it were to:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

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<sup>1</sup> The City of South San Francisco Municipal Code Chapter 15.60.010 defines inert solids as “asphalt, concrete, rock, stone, brick, sand, soil and fines.”

- 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;
- Require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have insufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements;
- 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;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Be out of compliance with federal, State, and local statutes and regulations related to solid waste.

Due to the nature of the proposed project, this Environmental Impact Report applies the following additional criterion (in addition to those described above), and considers that the project would have a significant effect on utilities and service systems if it were to:

- Disrupt operation of or require relocation of regional or local utilities.

### 5.12.3.2 Approach to Analysis

Because of the nature of the proposed project, several of the significance criteria noted above are not applicable. Therefore, an impact discussion is not provided for these topics for the reasons described below.

PPSU project operations would have no impacts related to the following significance criteria:

- **Have insufficient water supply available to serve the project.** The proposed project would not require additional water supply or require new or expanded water supply resources or entitlements. Therefore, the significance criterion related to sufficient water supply is not applicable to operation of the proposed project and this significance criterion is discussed below under Impact UT-3 only as it applies to project construction activities.
- **Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs or be out of compliance with statutes and regulations related to solid waste.** Upon completion of project construction, the proposed project would not generate solid waste requiring disposal. Therefore, the significance criteria related to solid waste and landfill capacity are not applicable to project operations, and are discussed below under Impact UT-4 and Impact UT-5 only as they relate to project construction.
- **Disrupt operation of or require relocation of regional or local utilities.** Once project construction is complete, the sites would be restored to pre-construction conditions, and

relocation of utilities would not be required. Therefore, impacts on disruption or relocation of utilities due to project operations are not discussed further. This significance criterion is discussed below under Impact UT-1 and Impact UT-2 only as it applies to project construction activities.

Both PPSU project construction and operations would have no impacts related to the following significance criteria:

- **Exceed wastewater treatment requirements, result in the construction or expansion of new water or wastewater treatment facilities, or result in a determination by the wastewater treatment provider that there is insufficient capacity to serve the project.** The project does not include the construction of new water or wastewater treatment facilities or stormwater drainage facilities; therefore, the significance criteria associated with construction of these facilities are not applicable. During construction, dewatering may be required for groundwater, rainwater, or other water that enters trenches and pits. This water would be pumped out of the trench or pit; stored, tested, and treated to meet required standards; and then discharged to a nearby sanitary sewer, stormwater culvert, creek, or overland, similar to the initial pipeline shutdown performed by the SFPUC. Discharge rates would not exceed 3,500 gallons per minute per pipeline, and permits would be requested from the appropriate wastewater agency prior to discharge to the sanitary sewer. As described in Section 5.16, Hydrology and Water Quality, discharges would be conducted in compliance with the effluent limitations, monitoring requirements, the SFPUC's Erosion Control Standard Operating Procedure, and the SFPUC's Policies and Procedures for Transmission System Discharges. Discharge of water from pipeline dewatering activities, hydrostatic testing, and pipeline disinfection would be performed in accordance with the requirements of the Statewide General Construction Permit for Stormwater Discharges Associated with Construction Activity issued by the State Water Resources Control Board (SWRCB); the SWRCB's National Pollutant Discharge Elimination System (NPDES) General Permit (Order 2003-0003-DWQ) for low-threat water quality discharges to land; and municipal stormwater permits. For these reasons, the significance criteria related to wastewater treatment and capacity are not applicable to construction or operation of the proposed project and are not discussed further.
- **Require or result in the construction or expansion of stormwater drainage facilities.** The project does not propose to construct or expand stormwater drainage facilities. As discussed under Impact HY-3 and Impact HY-4 in Section 5.16, Hydrology and Water Quality, the construction contractor would be responsible for requesting a permit from the appropriate wastewater agency prior to discharge to the sanitary sewer. Discharge of water from dewatering activities must be performed in accordance with the requirements of the Statewide General Construction Permit for Stormwater Discharges Associated with Construction Activity issued by the SWRCB; the SWRCB's NPDES General Permit (Order 2003-0003-DWQ) for low-threat water quality discharges to land; and municipal stormwater permits. Thus, project implementation would not cause an exceedance of existing stormwater drainage capacity that would necessitate the construction or expansion of infrastructure. Therefore, the significance criterion related to the construction or expansion of stormwater drainage facilities is not applicable to the construction or operation of the proposed project

and is not discussed further. For additional discussion of the proposed project’s effects on stormwater drainage facilities, see Section 5.16, Hydrology and Water Quality.

The analysis of project effects related to utilities and service systems below addresses temporary construction-related impacts. During construction, short-term temporary disruption of service could occur if existing utilities were accidentally damaged during utility relocation or other project-related construction activities.

The analysis below also identifies potential impacts related to landfill capacity resulting from the disposal of construction waste, as well as the ability of local jurisdictions to comply with federal, State, and local landfill statutes. The largest potential source of solid waste would be excavated soil and rock material.

### 5.12.3.3 Summary of Impacts

Table 5.12-2 lists the proposed project’s utility and service system impacts and significance determinations.

**Table 5.12-2  
 Summary of Impacts – Utilities and Service Systems**

<b>Impacts</b>	<b>Significance Determination</b>
<b>Impact UT-1:</b> Project construction could result in a substantial adverse effect related to disruption of utility operations or accidental damage to existing utilities.	LSM
<b>Impact UT-2:</b> Project construction could result in a substantial adverse effect related to the relocation of regional or local utilities.	LSM
<b>Impact UT-3:</b> Project construction would not result in a substantial adverse effect related to water supply availability.	LS
<b>Impact UT-4:</b> Project construction would not result in a substantial adverse effect related to landfill capacity.	LS
<b>Impact UT-5:</b> Project construction could result in a substantial adverse effect related to compliance with federal, State, and local statutes and regulations pertaining to solid waste.	LSM
<b>Impact C-UT:</b> Construction of the proposed project could result in a cumulatively considerable contribution to cumulative impacts related to disruption or relocation of utilities.	LSM
Notes: LS = Less-than-Significant impact, no mitigation required LSM = Less than Significant with Mitigation	



### 5.12.3.4 Construction Impacts and Mitigation Measures

***Impact UT-1: Project construction could result in a substantial adverse effect related to disruption of utility operations or accidental damage to existing utilities. (Less than Significant with Mitigation)***

Excavation activities, and removal and installation of the proposed pipelines could result in accidental damage to existing regional or local utility lines or disruption of utility services. Pipeline replacement would result in excavation of approximately 4,540 lineal feet (2,590 feet of SAPL2, 1,050 feet of SAPL3, and 900 feet of SSBPL). Excavated trenches would range between 9 feet and 32 feet deep.

The use of cranes and other construction equipment to remove pipeline segments could result in accidental damage to existing overhead utility lines. In addition, overhead utility poles and underground utility lines along area roadways could be susceptible to accidental damage from the movement of large construction equipment and vehicles throughout the project sites.

As described in Section 5.12.1, above, a number of underground utility lines cross the project sites, including electrical and telecommunication lines, and several water supply pipelines. As indicated in the engineering design drawings associated with the proposed project (G&E Engineering Systems, Inc., 2012; Meridian Surveying Engineering, Inc., 2011; and Chaudhary & Associates, Inc., 2011) and as shown by field reconnaissance, existing utilities in the project sites with the potential to conflict with the proposed project include:

#### **Colma Site**

- An unspecified utility line
- SAPL2 and SAPL3

#### **South San Francisco Site**

- Overhead electric distribution lines
- Overhead telecommunications lines
- SAPL2 and SAPL3

#### **San Bruno North Site**

- Underground electric power lines
- SAPL2 and SAPL3

#### **San Bruno South Site**

- Underground electric power lines
- Overhead distribution lines located west of the SFPUC ROW
- Underground telecommunication lines in the staging and spoils area
- Underground City of San Bruno water pipelines
- SAPL2 and SAPL3

### Millbrae Site

- Overhead electric distribution lines
- Underground City of Millbrae water pipelines
- SSBPL

### Common Staging Area

- Underground power lines
- Overhead distribution lines west of the SFPUC ROW in the back yards of the residences on Fairway Drive
- SAPL2, SAPL3, and SSBPL

As described above, the closest natural gas line is approximately 385 feet from the San Bruno North site. Therefore, there are no natural gas transmission lines in the immediate vicinity of the project sites, and the PPSU project would not affect natural gas transmission lines.

To accommodate the height of trucks and equipment that would be accessing the trail from Lomita Avenue, the overhead telephone lines that extend across the trailhead in the Millbrae site would be raised by the installation of temporary telephone poles along the existing telephone line alignment. In addition, SFPUC water customer service connections would be replaced at the Colma and South San Francisco sites; these replacements would not result in disruptions to water supply. Replacement of these connections is required to achieve the PPSU project objective of minimizing interruptions of water delivery to customers in Colma and South San Francisco during and following a seismic event. Accidental rupture of or damage to these utility lines during project construction could temporarily disrupt utility services and, in the case of the PG&E electrical cables located at the San Bruno North site, could result in significant safety hazards for construction workers. For these reasons, impacts on existing utilities and utility services during project construction would be potentially significant.

Implementation of **Mitigation Measures M-UT-1a** through **M-UT-1f** would reduce impacts related to the potential disruption of utility operations or accidental damage to existing utilities by requiring that SFPUC engineers and/or the construction contractor confirm the location of existing utilities and mark the confirmed locations accurately on the final construction drawings; work with utility service providers to minimize the risk of damage to existing utility lines, and ensure prompt reconnection of service in the event of a service disruption; clearly outline the procedures to follow in the event of a leak or explosion; take special precautions when working near high-priority utility lines; and immediately notify local fire departments of any damage to high-priority utility lines during project construction. Therefore, impacts to the potential disruption of utility operations or accidental damage to existing utilities would be *less than significant with mitigation*.

#### **Mitigation Measure M-UT-1a: Confirm Utility Line Information**

This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall locate overhead and underground utility lines that may be encountered during excavation work prior to opening an excavation. Information regarding the size, color, and location of existing utilities shall be confirmed before

excavation activities commence. These utilities shall be highlighted on all construction drawings.

**Mitigation Measure M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities**

This mitigation measure applies to all project sites, as well as the common staging area. While any excavation is open, the SFPUC or its contractors shall protect, support, or remove underground utilities as necessary to safeguard employees. As part of contractor specifications, the contractor(s) shall be required to provide updates on planned excavations for the upcoming week, and to specify when construction will occur near a high-priority utility. SFPUC construction managers shall attend tailgate meetings with contractor staff, as required by the California Occupational Safety and Health Administration, to record all protective and avoidance measures regarding such excavations.

**Mitigation Measure M-UT-1c: Notify Local Fire Departments**

This mitigation measure applies to all project sites, as well as the common staging area. In the event that construction activities result in damage to high-priority utility lines, including leaks or suspected leaks, the SFPUC or its contractors shall immediately notify local fire departments to protect worker and public safety.

**Mitigation Measure M-UT-1d: Emergency Response Plan**

This mitigation measure applies to all project sites, as well as the common staging area. Prior to commencing construction activities, the SFPUC shall develop an emergency response plan that outlines procedures to follow in the event of a leak or explosion. The emergency response plan shall identify the names and phone numbers of PG&E staff who would be available 24 hours per day in the event of damage or rupture of the high-pressure PG&E natural gas pipelines. The plan shall also detail emergency response protocols including notification, inspection, and evacuation procedures; any equipment and vendors necessary to respond to an emergency, such as an alarm system; and routine inspection guidelines.

**Mitigation Measure M-UT-1e: Ensure Prompt Reconnection of Utilities**

This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall promptly notify utility providers to reconnect any disconnected utility lines as soon as it is safe to do so.

**Mitigation Measure M-UT-1f: Coordinate Final Construction Plans with Affected Utilities**

This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall coordinate final construction plans and specifications with affected utilities.

***Impact UT-2: Project construction could result in a substantial adverse effect related to the relocation of regional or local utilities. (Less than Significant with Mitigation)***

The proposed alignments for the SAPL2, SAPL3, and SSBPL would cross beneath or above existing utilities at several locations, as mentioned under Impact UT-1. Although the PPSU project does not propose to relocate such utilities owned and operated by other utility companies, relocation may become necessary once the locations and characteristics of conflicting utilities are confirmed. Removal, replacement, or stabilization of the pipelines could require temporary or permanent relocation of utility lines that are owned and operated by other utility companies. Therefore, because such relocation could cause health hazards to workers associated with relocation work, or disruptions to the service area during relocation, impacts related to utility relocation are considered potentially significant.

Adverse effects related to the potential need to relocate regional or local utilities would be minimized through implementation of **Mitigation Measure M-UT-1a: Confirm Utility Line Information, Mitigation Measure M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities, Mitigation Measure M-UT-1c: Notify Local Fire Departments, Mitigation Measure M-UT-1d: Emergency Response Plan, Mitigation Measure M-UT-1e: Ensure Prompt Reconnection of Utilities, and Mitigation Measure M-UT-1f: Coordinate Final Construction Plans with Affected Utilities.** These measures would require advanced planning and coordination with other utility providers, so that the nature and location of other utilities may be identified and provided to construction contractors, allowing them to avoid these utilities to the extent feasible and prevent or minimize service interruptions to customers. In addition, these measures would ensure that appropriate safety measures are implemented, and that emergency responders are notified of the project prior to construction. Should relocation become necessary, the mitigation would reduce potential human hazard and utility supply impacts associated with accidents and/or interruption of utilities. Therefore, impacts related to the relocation of regional or local utilities would be *less than significant with mitigation*.

***Impact UT-3: Project construction would not result in a substantial adverse effect related to water supply availability. (Less than Significant)***

As part of pipeline shutdown activities, dewatering of the pipelines would be required to empty the section of pipe that would be replaced. As shown in Table 3-3 in Chapter 3, Project Description, dewatering of the SAPL2, SAPL3, and SSBPL segments would eliminate approximately 5.41 million gallons (MG) of water from the SFPUC water transmission system. Subsequently, prior to pipeline startup, hydrostatic testing would be completed to verify the structural integrity of the pipeline. An estimated total of 0.6 MG of water would be needed for hydrostatic testing. Dewatering activities after pipeline disinfection and during the pipeline startup would require 13.5 MG of water. The water would be supplied by the SFPUC system and represents a minor, one-time demand. During construction, water would also be required for dust control and for other construction activities including preparation of cement. Water for dust control and for cement would likely be provided from municipal supplies. These water uses would be short term and minor in total demand. Therefore, impacts related to water supply availability during construction would be *less than significant*.

***Impact UT-4: Project construction would not result in a substantial adverse effect related to landfill capacity. (Less than Significant)***

Construction debris would include tree debris, soils, pavement, and the old pipelines that would be removed and trucked to Ox Mountain Sanitary Landfill in Half Moon Bay for recycling or disposal. While each site would have a minimal amount of vegetation debris associated with preparing the sites for construction, the South San Francisco and Millbrae sites would have an estimated 50 cubic yards and 205 cubic yards of tree debris, respectively, associated with the removal of the dense groves that are established above the pipelines. An approximate total of 32,190 cubic yards of construction and demolition debris materials would be off-hauled from the five sites. This quantity represents approximately 0.07 percent of the estimated remaining landfill capacity at the Ox Mountain Landfill.

Because adequate landfill capacity exists to accept the project's construction waste, impacts related to exceeding permitted landfill capacity would be *less than significant*.

***Impact UT-5: Project construction could result in a substantial adverse effect related to compliance with federal, State, and local statutes and regulations pertaining to solid waste. (Less than Significant with Mitigation)***

To reduce the quantity of material to be sent to the landfill, as required by the California Integrated Waste Management Act, spoils excavated during construction would be reused as backfill, if they are of a suitable quality. Excess soil or soil that is inadequate for backfill (i.e., rocky) would be hauled off site for recycling, if possible, or disposal if no reasonable alternative for reusing or recycling is possible. At the South San Francisco and Millbrae sites, trees would be removed from the SFPUC ROW, the debris would be chipped, and stumps would be ground to a specified depth below grade. Construction debris, including shoring materials, old pipe materials, and pavement, would be off-hauled as needed during construction and once construction is completed. As described above, up to approximately 32,190 cubic yards of materials would be off-hauled.

It is unknown whether this quantity of waste would affect the 50 percent solid waste diversion goal set by the California Integrated Waste Management Act. Therefore, impacts related to compliance with federal, State, and local regulations related to solid waste would be conservatively considered to be potentially significant.

With implementation of **Mitigation Measure M-UT-5: Prepare and Implement a Construction Solid Waste Recycling Plan** the proposed project would comply with federal, State, and local statutes and regulations pertaining to solid waste. Therefore, impacts would be *less than significant with mitigation*.

**Mitigation Measure M-UT-5 Prepare and Implement a Construction Solid Waste Recycling Plan**

This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall prepare a construction solid waste recycling plan/waste management plan. The plan should identify the goal of salvaging the maximum amount of demolition debris at all projects sites. The plan should also include

identification of the types of debris generated by the project and of how waste streams will be handled; and identification of actions to reuse or recycle construction debris and clean excavated soil to the extent possible. The plan shall include actions to divert waste with disposal in a landfill in accordance with, at a minimum, the solid waste diversion goal set by the California Integrated Waste Management Act, and with local ordinance requirements as follows:

- At the Colma site – 50 percent recycling of the waste tonnage from any demolition project where the waste includes concrete and asphalt (or 15 percent where there is no concrete and/or asphalt); and 50 percent recycling of waste tonnage;
- At the South San Francisco site and Common Staging Area – 100 percent recycling of inert solids; and at least 50 percent recycling of the remaining construction and demolition debris tonnage; and
- At the Millbrae site – 50 percent recycling of all waste generated for the project by weight, with at least 25 percent achieved through reuse and recycling of materials other than source separated dirt, concrete and asphalt.

No local ordinances apply at the San Bruno North and South sites; therefore, diversion shall be consistent with State law (at least 50 percent recycling of solid wastes).

#### **5.12.3.5 Operational Impacts and Mitigation Measures**

As summarized in Section 5.12.3.2, the project entails replacement of underground portions of an existing pipeline and restoration of the sites generally to pre-construction conditions. Therefore, there are no operational utilities or service system impacts associated with the project. Project operations would not generate wastewater, substantially change existing drainage facilities on the sites, require water supply, or generate solid waste, and there would be *no impact*.

#### **5.12.3.6 Cumulative Impacts and Mitigation Measures**

*Impact C-UT: Construction of the proposed project could result in a cumulatively considerable contribution to cumulative impacts related to disruption or relocation of utilities. (Less than Significant with Mitigation)*

The geographic scope for potential cumulative utilities and service systems impacts consists of the project area, its immediate vicinity, and the service areas of regional service/utility providers. For landfill capacity, the geographic scope includes the service areas of San Mateo County, where disposal of construction-related waste could occur. For compliance with solid waste statutes and regulations, the geographic area encompasses San Mateo County.

#### **Damage to or Disruption of Existing Utilities and Relocation of Utilities**

Several of the cumulative projects listed in Table 5.1-1 could result in damage to existing utilities, disruption of utility services, or relocation of utilities. Construction activities for the cumulative projects could result in the temporary disruption of existing water, electrical, or natural gas

services, whether as part of a planned service shutdown or as the result of possible physical damage to utility lines during construction.

There would be an overlap in construction schedules for the PPSU and the Regional Groundwater Storage and Recovery (GSR) project at the Colma and South San Francisco sites, and an overlap in Harry Tracy Water Treatment Plant (HTWTP) Long-Term Improvements project with the tree removal at the Millbrae site. Because the construction schedules for the other cumulative projects are unknown, it cannot be determined whether the PPSU project would overlap with those construction schedules. Therefore, cumulative impacts related to disruption of utility operations or accidental damage to existing utilities and relocation of regional or local utilities could be significant if the construction of the PPSU project and other cumulative projects overlapped, and damage to or disruption of existing utilities and relocation of utilities were to occur. The PPSU project could have a cumulatively considerable contribution to this potentially significant impact because there could be multiple instances of disruption and relocation during construction. The proposed project would implement **Mitigation Measures M-UT-1a: Confirm Utility Line Information; M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities; M-UT-1c: Notify Local Fire Departments; M-UT-1d: Emergency Response Plan; M-UT-1e: Ensure Prompt Reconnection of Utilities; and M-UT-1f: Coordinate Final Construction Plans with Affected Utilities.** Implementation of these mitigation measures would serve to avoid or limit any impacts on existing utilities by confirming the location prior to any excavation work, and through coordination with the appropriate safety and utility providers. Therefore, the project's contribution to cumulative impacts would not be cumulatively considerable, and impacts would be *less than significant with mitigation*.

### Landfill Capacity

All of the cumulative projects would generate construction-related waste. If all of these wastes were disposed of in offsite disposal facilities, there could be a significant cumulative impact on landfill capacity. The HTWTP includes an adopted mitigation measure that requires the SFPUC or its contractor to develop and implement a Waste Management Plan and a Spoils Diversion Plan detailing how the diversion requirements will be met, and identifying two alternate landfills to which waste could be diverted; these plans would also ensure that the volume and rate of diverted or recycled construction and demolition debris tonnage does not exceed the capacity of onsite staging areas and local and nearby diversion and recycling facilities. The PPSU project also includes proposed mitigation measures to develop a Waste Management Plan. In addition, each of the cumulative projects would be required to implement source reduction, recycling, and composting measures—as mandated by AB 939 and implemented by the specific project site and San Mateo waste management ordinance—to divert wastes from landfills. For all of these reasons, the cumulative impact on landfill capacity would be *less than significant with mitigation*.

### Compliance with Solid Waste Statutes and Regulations

The proposed project and other cumulative projects would generate waste that requires offsite disposal. However, each of the cumulative projects would be required to implement source reduction, recycling, and composting measures—as mandated by AB 939 and implemented by the specific project site and San Mateo waste management ordinance—to divert wastes from landfills. Therefore, the potential cumulative impact related to compliance with solid waste statutes and regulations would be *less than significant*.

## 5.12.4 References

Cal Water (California Water Service Company), 2011. 2010 Urban Water Management Plan, South San Francisco District. Adopted June 2011. Available online at: [www.calwater.com/your\\_district/uwmp/bay/South\\_San\\_Francisco/2010\\_Urban\\_Water\\_Management\\_Plan\\_\(SSF\).pdf](http://www.calwater.com/your_district/uwmp/bay/South_San_Francisco/2010_Urban_Water_Management_Plan_(SSF).pdf).

CalRecycle, 2011. Facility/Site Summary Details: Ox Mountain Sanitary Landfill (41-AA-0002). Available online at: [www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/](http://www.calrecycle.ca.gov/SWFacilities/Directory/41-AA-0002/Detail/). Accessed November 15, 2011.

City of Millbrae, 1998. General Plan. Adopted November 24, 1998.

City of Millbrae, 2011a. City of Millbrae Budget, Economic Condition, and Major Initiatives. Available online at: [www.ci.millbrae.ca.us/index.aspx?page=57](http://www.ci.millbrae.ca.us/index.aspx?page=57). Accessed November 8, 2011.

City of Millbrae, 2011b. City of Millbrae Recycling & Waste Prevention Program. City Website. Available online at: [www.ci.millbrae.ca.us/index.aspx?page=232](http://www.ci.millbrae.ca.us/index.aspx?page=232). Accessed November 15, 2011.

City of Millbrae, 2011c. City of Millbrae Website, Garbage Service. Available online at: [www.ci.millbrae.ca.us/index.aspx?page=144](http://www.ci.millbrae.ca.us/index.aspx?page=144). Accessed November 10, 2011.

City of Millbrae, 2012. City of Millbrae Public Works Department General Conditions of Approval (Construction and/or Demolition Reuse and Recycling Requirements). May.

City of San Bruno, 2009. City of San Bruno General Plan. Adopted March 24.

City of San Bruno, n.d.. City of San Bruno Municipal Code, Chapter 10.23, Recycling and Diversion of Debris from Construction and Demolition. Available online at: [http://qcode.us/codes/sanbruno/view.php?topic=10-10\\_23&showAll=1&frames=on](http://qcode.us/codes/sanbruno/view.php?topic=10-10_23&showAll=1&frames=on).

City of South San Francisco, 1999. General Plan. October 13.

City of South San Francisco, 2011. City of South San Francisco Utility Service. Available online at: [www.ssf.net/index.aspx?nid=118](http://www.ssf.net/index.aspx?nid=118). Accessed November 8, 2011.

City of South San Francisco, n.d.. City of South San Francisco Municipal Code, Chapter 15.60, Recycling and Diversion of Debris from Construction and Demolition. Available online at: [http://qcode.us/codes/southsanfrancisco/view.php?topic=15-15\\_60-15\\_60\\_010&frames=on](http://qcode.us/codes/southsanfrancisco/view.php?topic=15-15_60-15_60_010&frames=on).

Chaudhary & Associates, Inc., 2011. Engineering drawings. April.

Erler & Kalinowski, Inc., 2011. City of San Bruno Urban Water Management Plan. June.

G&E Engineering Systems, Inc., 2012. CUW 36702 Peninsula Pipeline Seismic Upgrade Project, Final Conceptual Engineering Report. April.

Meridian Surveying Engineering, Inc., 2011. Strip Topography Drawings. July.



PG&E (Pacific Gas and Electric), 2012. Gas Transmission Pipeline System Map. Available online at: [www.pge.com/myhome/edusafety/systemworks/gas/transmissionpipelines](http://www.pge.com/myhome/edusafety/systemworks/gas/transmissionpipelines). Accessed March 1, 2012.

Recology, 2011. Recology Peninsula Services website. Available online at: [www.sanbruno.garbage.com/index.htm](http://www.sanbruno.garbage.com/index.htm). Accessed November 8, 2011.

Riddell, Anthony, 2012. Personal communication between Anthony Riddell, Engineering Technician, City of Millbrae Public Works Department and Daniel Jaimes, SFPUC Communications Liaison. August.

San Mateo County, 2002. County of San Mateo Ordinance No. 04099. Available online at: [http://recycleworks.org/con\\_dem/or\\_04099.html](http://recycleworks.org/con_dem/or_04099.html). Accessed: May 22, 2012. Adopted on February 26, 2002. Effective on March 26, 2002.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

Town of Colma, 1999. Town of Colma General Plan. Adopted June 1999.

Town of Colma, n.d. Construction and Demolition Recycling Criteria. Available online at: [www.recycleworks.org/pdf/colma.pdf](http://www.recycleworks.org/pdf/colma.pdf). Accessed March 1, 2012.

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## 5.13 Public Services

This section describes the existing conditions and regulatory setting for public services in the cities in which the project sites are located and analyzes potential impacts on public services that could result from the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project. Public services addressed in this section include law enforcement services and fire protection services. Because the PPSU project does not propose to construct new homes or businesses and, as such, would not increase the local population, the project would not affect schools or libraries; therefore, these public services are not addressed in this section. Potential impacts on parks and recreational facilities are analyzed in Section 5.11, Recreation.

### 5.13.1 Setting

The proposed project would be constructed at five separate sites, located along the San Francisco peninsula in San Mateo County. The five sites are located in the incorporated communities of the Town of Colma and the cities of South San Francisco, San Bruno (two sites), and Millbrae; and a small area of unincorporated San Mateo County surrounded by South San Francisco. As described in Section 5.2, Land Use and Land Use Planning, the setting in the project vicinity is urban with mixed land uses including commercial and residential uses, and facilities such as schools and churches, cemeteries, golf clubs, and open-space areas.

#### 5.13.1.1 Law Enforcement Services

Law enforcement services are provided by the local city police departments within the project area as described below.

- The Colma Police Department is located at 1199 El Camino Real and made up of 26 officers. Members often participate in county-wide efforts with other San Mateo County enforcement agencies (Town of Colma, 2012). The Colma Police Department serves approximately 1,800 residents. Average response time ranges between 3 to 4 minutes (Silva, 2012).
- The South San Francisco Police Department is located at 33 Arroyo Drive, and the department is allotted 79 sworn and 35 civilian positions divided into two divisions: operations and services. The Operations Division includes patrol, investigations, and traffic. The Services Division includes communications, records, and community relations. The South San Francisco Police Department serves a population of over 60,000 residents, and nearly 100,000 people who work in the city during the week. (City of South San Francisco, 2012a). The department is generally able to respond to high-priority calls within 2 to 3 minutes (City of South San Francisco, 2010b).
- The San Bruno Police Department is located at 1177 Huntington Avenue and consists of 48 sworn officers and over 70 employees. The department provides a range of law enforcement services and responds to over 25,000 calls for service each year (City of San Bruno, 2012a). The San Bruno Police Department serves approximately 40,000 people in the City of San Bruno (City of San Bruno, 2012a). The estimated response time for emergency medical response is 2 to 3 minutes (City of San Bruno, 2008).

- In March 2012, the San Mateo County Sheriff's Office began providing law enforcement service for the City of Millbrae, serving approximately 21,000 residents. The Sheriff's Office Millbrae Police Bureau is located at the existing Millbrae Police Department at 581 Magnolia Avenue, Millbrae (City of Millbrae, 2012a). The average response time is approximately 4 minutes (Barberini, 2012).

### 5.13.1.2 Fire Protection Services

As defined by the California Public Resources Code (Sections 4125–4127), there are State Responsibility Areas, lands for which the State has financial responsibility for fire prevention and suppression, and Local Responsibility Areas, areas for which local agencies have the financial responsibility for fire prevention and suppression. The five project sites are located in Local Responsibility Areas (CALFIRE FRAP, 2012). However, none of the project sites are located in areas designated as Very High Fire Severity Zones (CAL FIRE, 2008).

Fire protection services are listed below from north to south for the project sites.

- The Town of Colma Fire Protection District is supported by 36 on-call department members reporting from Station 85, located at 50 Reiner Street in Colma, approximately 2.7 miles from the Colma site (CFPD, 2012).
- The South San Francisco Fire Department has five stations. The closest station to the South San Francisco site is Station 63, located at 33 Arroyo Drive, approximately 0.2 mile from the project site. (City of South San Francisco, 2012b). Every day, the department staffs three engine companies, two quints (a combination fire engine and fire truck), a battalion chief, and two ambulances. The department has a minimum of 20 people on staff at any given time.
- The City of San Bruno Fire Department has 35 full-time fire fighters, 10 trained "paid call reserves," at two stations. Station 51, located at 555 El Camino Real, is approximately 1.5 miles from the San Bruno North site (City of San Bruno, 2008 and 2012b). Station No. 52, located at 1999 Earl Avenue, approximately 1.5 miles from the San Bruno South site, responds to emergency calls west of Interstate 280.
- The Millbrae Fire Department has two stations and 27 full-time employees, including 12 authorized paramedic positions. The closest station to the Millbrae site is located at 785 Crestview Drive, approximately 1.6 miles from the Millbrae site (City of Millbrae, 2012b).

## 5.13.2 Regulatory Framework

### 5.13.2.1 Federal

There are no federal regulations related to the provision of public services that pertain to the proposed project.

### 5.13.2.2 State

Requirements for fire protection services are legally bound to various requirements defined by the California Public Resources Code (Sections 700-745). These requirements primarily include

equipment and construction-area protocols to which contractors must adhere during construction activities. Law enforcement and fire protection services are also subject to various requirements contained in the California Health and Safety Code.

### **5.13.2.3 Local**

#### ***San Mateo County General Ordinance***

Within San Mateo County, administrative procedures related to law enforcement and fire protection services are outlined in the San Mateo County General Ordinance.

#### ***Town of Colma General Plan***

The Town of Colma General Plan Safety Element includes the following sections: Fire Hazards, Urban Fire Hazards, Wildland Fire Hazards, Fire Control Services, and Fire Safety Policies (Town of Colma, 1999). No codes specifically apply to the Colma site.

#### ***City of South San Francisco General Plan***

Section 8.4 of the South San Francisco General Plan, Fire Hazards, discusses fire risk factors, including both vegetation and infrastructure, throughout the city. The city is classified into low-, medium-, and high-management units. The South San Francisco site is in a low-priority area, and therefore does not require extra risk management (City of South San Francisco, 2010a).

#### ***City of San Bruno General Plan***

Chapter 8, Public Facilities and Services Element, of the San Bruno General Plan (City of San Bruno, 2009), includes the following policy:

Policy PFS-30 protection measures in high-risk and urban-interface areas, including but not limited to:

- Proper siting, road and building clearances, and access;
- Brush clearance (non-fire-resistant landscaping 50 feet from structures);
- Use of fire-resistive materials (pressure-impregnated, fire-resistive shingles or shakes);
- Landscaping with fire-resistive species; and
- Installation of early warning systems (alarms and sprinklers).

Both the San Bruno North and San Bruno South sites are within the area identified in the 2008 general plan as a Wildland/Urban Interface Hazard Area.

#### ***City of Millbrae General Plan***

Section 8.7 of the City of Millbrae General Plan Safety Element, Fire Hazards, identifies risks in undeveloped hill areas, lowland areas, and structural hazards (City of Millbrae, 1998).

## 5.13.3 Impacts and Mitigation Measures

### 5.13.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to public services, but generally considers that implementation of the proposed project would have a significant impact on public services if it were to:

- 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.

### 5.13.3.2 Approach to Analysis

Due to the nature of the proposed project, there would be no project construction or operational impacts related to the significance criterion. Therefore, an impact discussion is not provided for this topic for the reasons described below:

- **Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities.** Section 3.8.8, Project Workforce and Construction Vehicle Parking, describes the limited size of workforce requirements for the proposed PPSU project, which would be implemented over a period of approximately 12 months, from October 2014 to September 2015. During that time, work crews of up to 20 personnel each would be engaged in construction activities, with one crew per site. A maximum of four sites would be under construction simultaneously, as shown on Figure 3-12 in Chapter 3, Project Description, requiring a total of up to 80 personnel. As described in Section 5.4, Population and Housing, given the size and nature of the San Francisco Bay Area labor force and the anticipated availability of skilled construction workers in the area, it is expected that the existing regional labor force would readily meet the project's construction workforce requirements. Therefore, no population increase would be anticipated to result from construction workers outside the region moving to the region to fill these jobs.

Potential incidents requiring law enforcement, fire protection, or emergency services could occur during construction; however, any temporary increase in incidents would not exceed the capacity of local law enforcement, fire protection, and emergency facilities such that new or expanded facilities would be required, because any temporary increase in the local population during project construction would be negligible and could be accommodated by existing service providers. Therefore, construction of the proposed project would not result in impacts related to the need for new or physically altered governmental facilities in order to maintain existing levels of public services, and no construction-related public service impacts would occur.

Additionally, operation of the proposed project would not result in an increase in the local population. Operation and post-construction maintenance activities would be similar to existing maintenance activities and would not result in increases in the demand for public services,

including fire protection, police protection, libraries, schools, hospitals, or other services. Therefore, operational impacts related to public services are not applicable.

Because there would be no construction or operational impacts, the criterion related to the need for new or modified governmental facilities is not applicable to the project and is not discussed further.

### 5.13.3.3 Construction and Operational Impacts and Mitigation Measures

As described above, implementation of the proposed project would not result in impacts related to public services, no mitigation measures related to this resource topic are necessary, and there would be *no impact*.

### 5.13.3.4 Cumulative Impacts and Mitigation Measures

Implementation of the proposed project would not result in any cumulative impacts related to public services because the project would not result in any project-specific impacts related to this topic, and there would be *no impact*.

## 5.13.4 References

Barberini, Lieutenant Ed, 2012. Personal communication between Alissa Stillman, URS and Lieutenant Ed Barberini, Chief of Police Services, San Mateo County Sheriff's Office Millbrae Police Bureau. July 5.

CAL FIRE (California Department of Forestry and Fire Protection), 2008. San Mateo County Very High Fire Hazard Severity Zones in LRA. Available online at: [www.fire.ca.gov/fire\\_prevention/fhsz\\_maps/fhsz\\_maps\\_sanmateo.php](http://www.fire.ca.gov/fire_prevention/fhsz_maps/fhsz_maps_sanmateo.php). Accessed on June 5, 2012.

CAL FIRE FRAP (California Department of Forestry and Fire Protection Fire and Resource Assessment Program), 2012. State Responsibility Areas for Fire Protection San Mateo County. Available online at: [http://frap.cdf.ca.gov/webdata/maps/san\\_mateo/sramap.41.pdf](http://frap.cdf.ca.gov/webdata/maps/san_mateo/sramap.41.pdf). Accessed on June 26, 2012.

CFPD (Colma Fire Protection District), 2012. Available online at: <http://www.colmafd.org>. Accessed on June 5, 2012.

City of Millbrae, 1998. General Plan Safety Element. Section 8.7 Fire Hazards. November.

City of Millbrae, 2012a. Millbrae Police Bureau, Sheriff's Office. Available online at: <http://www.ci.millbrae.ca.us/index.aspx?page=68>. Accessed on June 5, 2012.

City of Millbrae, 2012b. Fire Department Facts. Available online at: <http://www.ci.millbrae.ca.us/index.aspx?page=62>. Accessed on June 5, 2012.

City of San Bruno, 2008. San Bruno 2025: General Plan Draft Environmental Impact Report. December.

City of San Bruno, 2009. General Plan Chapter 7 Public Facilities and Services Element. December.

City of San Bruno, 2012a. Police Department. Available online at: [http://sanbruno.ca.gov/police\\_main.html](http://sanbruno.ca.gov/police_main.html). Accessed on June 5, 2012.

City of San Bruno, 2012b. Fire Department Home Page. Available online at: [http://www.sanbruno.ca.gov/fire\\_contacts.html](http://www.sanbruno.ca.gov/fire_contacts.html). Accessed on June 5, 2012.

City of South San Francisco, 2010a. General Plan Health and Safety Element. Section 8.4 Fire Hazards. February.

City of South San Francisco, 2010b. General Plan Health and Safety Element. Section 8.5 Law Enforcement. February.

City of South San Francisco, 2012a. Police Home Page. Available online at: <http://www.ssf.net/index.aspx?NID=248>. Accessed on June 5, 2012.

City of South San Francisco, 2012b. Fire Home Page. Available online at: <http://ca-southsanfrancisco.civicplus.com/index.aspx?NID=416>. Accessed on June 5, 2012.

Silva, Karen, 2012. Personal communication between Alissa Stillman, URS and Karen Silva, Colma Police Department, Dispatch/Records Division. July 5.

Town of Colma, 1999. General Plan Safety Element. Section 5.07.320 Fire Hazards. June.

Town of Colma, 2012. Colma Police Department Home Page. Available online at: [http://www.colma.ca.gov/index.php?option=com\\_content&view=category&layout=blog&id=49&Itemid=61](http://www.colma.ca.gov/index.php?option=com_content&view=category&layout=blog&id=49&Itemid=61). Accessed on June 5, 2012.



## 5.14 Biological Resources

This section describes the biological resources present in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project and evaluates the project's impacts on sensitive biological resources, including wetlands and aquatic species, fisheries, sensitive habitats, special-status plant and animal species, and protected trees. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.14.1 Setting

Biological studies for PPSU were designed to identify habitats and vegetation communities in the project study area,<sup>1</sup> determine the presence or absence of wetlands or other waters subject to the jurisdiction of State or federal agencies, and determine if special-status plant or wildlife species or sensitive vegetation communities are likely to be present within the study area.

#### 5.14.1.1 Definitions

For the purposes of this analysis, the biological survey study area includes the five sites and the common staging area, as well as areas accessible immediately adjacent to the sites (generally within 25 feet of the site boundaries).

**Special-status biological resources** include special-status plants, animals, and natural communities, plus wetlands and other waters of the U.S. and state as defined by the U.S. Army Corps of Engineers (Corps), California Department of Fish and Wildlife (CDFW), and the State Water Resources Control Board.

**Special-status natural community** is a natural habitat community that receives regulatory recognition from municipal, county, state, and/or federal entities such as the CDFW because it is unique in its constituent components, restricted in distribution, supported by distinctive soil conditions, and/or considered locally rare.

**Special-status plant and animal species** are defined as:

- Species listed under the Federal Endangered Species Act, Marine Mammal Protection Act, California Endangered Species Act (CESA), CDFW Code, and the Native Plant Protection Act as endangered or threatened species, or that are candidates or proposed for listing; or species that are designated as rare or fully protected.
- Locally rare species defined by California Environmental Quality Act (CEQA) Guidelines Sections, which may include species that are designated as sensitive, declining, rare, locally endemic, or as having limited or restricted distribution by various federal, state, and local agencies, organizations, and watch lists. This includes species on lists 1B and 2 of the California Native Plant Society (CNPS, 2010).

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<sup>1</sup> For the purposes of the biological analysis, the study area includes the five sites and the common staging area, as well as areas accessible immediately adjacent to the sites (generally within 25 feet of the site boundaries).

### 5.14.1.2 Information Sources and Survey Methodology

This section describes the methodology used to characterize the existing biological conditions for the study area. In addition to the methods described below, pertinent information for the common staging area located on the San Francisco Public Utilities Commission's (SFPUC) Baden Valve Lot is incorporated by reference from the approved Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration (SF Planning, 2008), which was completed for improvements previously proposed by the SFPUC for the Baden Lot. Because the environmental conditions on the Baden Valve Lot remain substantially as described in the 2008 mitigated negative declaration, and because no new information is available that would change the findings of the mitigated negative declaration, the findings and the studies referenced therein are applicable to the common staging area for the PPSU project.

#### *Vegetation Communities*

Information about vegetation communities within the study area was obtained from the following resources, where appropriate:

- List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFG, 2003);
- Hierarchical List of Natural Communities with Holland Types (CDFG, 2010);
- California Natural Diversity Database (CNDDDB, 2011);
- California Wildlife Habitat Relationships (CWHR, 2011), a comprehensive information system for terrestrial vertebrates and their habitats in California; Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland, 1986);
- California Vegetation (Holland and Keil, 1995); and
- A Manual of California Vegetation (Sawyer and Keeler-Wolf, 1995) and A Manual of California Vegetation, second edition (Sawyer et al., 2009).

Vegetation communities are described based on the resources listed above and on reconnaissance-level surveys that were conducted within the study area between December 2010 and September 2011 by a qualified botanist and a qualified wildlife biologist. Classification of vegetation communities is based on the CDFW's CWHR. Vegetation community descriptions were then refined based on plant species detected during the reconnaissance surveys, as well as protocol-level surveys for special-status plants, described below. An evaluation of the potential occurrence of sensitive vegetation communities was also conducted, based on the List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFG, 2003) and the Hierarchical List of Natural Communities with Holland Types (CDFG, 2010).

Sensitive vegetation communities include those described in the List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database (CDFG, 2003) as communities that are either known or believed to be of high priority for inventory in the CNDDDB. CDFW's earlier attempt at cataloging vegetation communities recognized certain special

vegetation communities as having the “highest inventory priorities” (Holland, 1986). More recently, the CNDDDB developed an updated, online classification system for vegetation communities under its Vegetation Classification and Mapping Program (VegCAMP). The VegCAMP program is intended to develop and maintain California’s expression of the National Vegetation Classification System. VegCAMP is a synthesis of the Natural Communities Program within the CNDDDB and the Significant Natural Areas Program. This enables a more focused effort on developing and maintaining maps and the classification of all vegetation and habitats in the state, to support conservation and management decisions at the local, regional, and state levels (CDFG, 2011d).

The VegCAMP website provides three versions of the most recent Natural Communities List, including the Hierarchical List of Natural Communities with Holland Types (CDFG, 2010), which ranks vegetation alliances according to their degree of imperilment as measured by rarity, trends, and threats. Ranking follows NatureServe’s Heritage Methodology, in which all alliances are listed with a G (global) and S (state) rank. Natural vegetation communities with a state rank of S1-S3 are considered to be of special concern. For alliances given state ranks of S1-S3, all associations within them are also considered to be highly imperiled.

### *Special-Status Plant Species*

Special-status plants include those that are listed or proposed to be listed as endangered, threatened, or rare by the U.S. Fish and Wildlife Service (USFWS) (USFWS, 1996a), or are listed by the CDFG (CDFG, 2011a and 2011b), the CNDDDB (CNDDDB, 2011), or the CNPS (CNPS, 2001 and 2010). The CNPS Inventory listing is recognized by the CDFW, and CNPS List 1B and 2 species are considered especially eligible for State listing as endangered or threatened under the CDFW Code. CNPS List 3 and List 4 species are either plants about which more information is needed, or plants uncommon enough that their status should be closely monitored. As a general policy, both CDFW and CNPS advocate the consideration of all CNPS-listed species in the CEQA review process.

A list of special-status plant species occurring within the vicinity of the study area was compiled from databases available from the CNPS (CNPS, 2010) and the CNDDDB (CNDDDB, 2011) for the Montara Mountain and San Francisco South U.S. Geological Survey (USGS) 7.5-minute quadrangles and the immediately adjacent quadrangles, which include Half Moon Bay, Hunter’s Point, Oakland West, Point Bonita, San Francisco North, San Mateo, and Woodside (Appendix F, Table 1.1).

Reconnaissance-level surveys were conducted on December 6, 2010 and February 2, 2011 by a botanist, to assess the potential for available habitats to support special-status plant species, and to determine whether sensitive vegetation communities are present. Subsequently, protocol-level botanical surveys were conducted on March 21, April 18, and May 31, 2011, at the San Bruno South and Millbrae study areas as documented in the Rare Plant Survey Report (BioMaAS, Inc. and URS, 2012).<sup>2</sup> The timing of the seasonal surveys was generally based on the flowering period of special-status plants that could occur on habitats available on site, when the plants would be

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<sup>2</sup> Technical reports prepared for the project are on file and available for public review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2011.0123E.

most readily identifiable. Several late-flowering special-status annual plant species were considered for their potential to occur on site but were rejected based on an absence of suitable habitat, such as coastal salt marsh, stabilized sand dunes, or serpentine-derived soils. Several perennial plants considered to have a low potential to occur on onsite habitats would not have been flowering during the survey dates, but would have been identifiable at least to their genus, based on vegetative characteristics. Additional habitat reconnaissance and botanical surveys were conducted on August 4, 2011, at the Colma, South San Francisco, and San Bruno North sites, and an additional site visit was made on September 6, 2011, to the South San Francisco site for the assessment of wetlands potentially falling under the jurisdiction of CDFW. Based on the timing of the August reconnaissance and the highly disturbed nature of the added sites, further protocol-level botanical surveys for these areas were considered to be unwarranted.

Protocol-level botanical surveys were conducted within the project study areas at the San Bruno South and Millbrae sites, and in immediately adjacent areas (generally within 25 feet) where suitable habitat for special-status plant species was present and accessible. Surveys were conducted according to protocols set forth by the CDFW in their Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities (CDFG, 2009), and according to the USFWS Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS, 1996a). Botanical surveys were floristic in nature, meaning that during the surveys, all vascular plants<sup>3</sup> encountered were identified in the field where possible, and recorded. Plants not readily identifiable in the field were collected and identified subsequently in the lab. References used to aid in plant identification included The Jepson Manual: Higher Plants of California (Hickman, 1993), Illustrated Flora of the Pacific States (Abrams, 1923-1960), and Flora of the Santa Cruz Mountains of California (Thomas, 1961). Nomenclature for plants used throughout this report conforms to Hickman (Hickman, 1993). An inventory of all vascular plants detected within the study area is presented in Appendix F, Table 1.2. Only species considered to have the potential to occur or having suitable habitat present are discussed in the existing conditions section below.

### ***Wetlands and Other Waters***

The potential for the presence of wetlands or other aquatic features falling under the jurisdiction of federal or State agencies was assessed in the field during reconnaissance and botanical surveys. The initial assessment was based on the presence or absence of field characteristics of wetland hydrology and/or hydrophytic vegetation. Where warranted, subsurface soils were also examined in the field for characteristics of hydric soils.

A more detailed discussion of the roles of these agencies is presented in Regulatory Framework, below.

### ***Wildlife Habitats and Wildlife Movement Corridors***

The potential for the presence of wildlife habitats and migratory wildlife corridors in the study area was evaluated based on the reconnaissance-level surveys, a review of existing literature, and

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<sup>3</sup> Vascular plants include pteridophytes (ferns and ferns and fern-like plants), angiosperms (flowering plants), and gymnosperms, including conifers, but do not include plants such as mosses, liverworts, lichens, or algae.

A Checklist for Evaluation of Impacts to Wildlife Movement Corridors (Beier and Loe, 1992). A wildlife movement corridor is a linear habitat connecting two or more substantive areas of habitats, and is generally used to maintain connectivity among formerly contiguous wildlands as they existed prior to urbanization. Based on the work of Beier and Loe, the criteria for identifying a potential corridor as a functioning wildlife corridor include areas where: 1) wide-ranging animals can travel, migrate, and find mates; 2) plants can propagate; 3) genetic interchange can occur; 4) populations can move in response to environmental changes and natural disasters; and 5) individuals can re-colonize habitats from which populations have been locally extirpated (Beier and Loe, 1992).

Habitat and other site features were photographed and described for the project sites. The CWHR was consulted for wildlife classification. This classification scheme is based on the 59 wildlife habitats described in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988), which serves as a model to predict which wildlife species may inhabit specific plant communities. Habitat features with the potential to attract migratory wildlife species were also noted. Wildlife species observed were documented during reconnaissance-level surveys, and are listed in Appendix F, Table 2.2.

### *Special-Status Wildlife Species*

Special-status animal species include those listed as or candidates for listing as Endangered, Threatened, or Rare by the USFWS and/or the CDFW. Additional animal species receive special protection under the federal Migratory Bird Treaty Act. The Fish and Game Code of California provides protection for “fully protected birds,” “fully protected mammals,” “fully protected reptiles and amphibians,” and “fully protected fish.” A botanist reviewed existing literature and the CNDDDB, and completed reconnaissance-level surveys to determine the potential for special-status wildlife species to occur in the study area. Based on the types of vegetation present and the type of habitat provided by that vegetation, each special-status wildlife species considered in this report was evaluated for its potential to occur in the vicinity of the study area. Species with the potential to occur in the study area are briefly discussed in the following sections, and are listed in Appendix F, Table 2.1.

The CDFW’s California Bird Species of Special Concern list is composed of three priority categories derived through a scoring and ranking process, and two unranked categories derived by definition. Because the distribution and abundance of many taxa (a taxonomic category or group) in California vary seasonally, the “season of concern” corresponds to the season, or seasons, for which a specific taxon is ranked for conservation priority (Shuford and Gardali, 2008). Some of the birds listed are of special concern year round, while others are of concern only during the breeding season.

Appendix F, Table 2.1 provides a list of the 38 special-status wildlife species with the potential to occur within the study area. The appendix lists the common and scientific names of each species, its legal status, the habitat type in which it occurs, and its potential to occur on the project site based on habitat suitability. If the possibility of occurrence of some species was eliminated, the table includes a brief discussion of how this assessment was derived. Only species considered to have the potential to occur or having suitable habitat present are discussed below.

### 5.14.1.3 Survey Results and Existing Conditions

Existing conditions for vegetation communities, including sensitive natural communities, special-status plant species, wetlands and other waters, wildlife habitats and migratory wildlife corridors, and special-status wildlife species, are described below.

#### *Vegetation Communities*

The following subsection describes the vegetation communities and urban areas observed in the study area. Vegetation communities present include annual grassland, Central Coast riparian scrub, coast live oak woodland, eucalyptus grove, and ruderal vegetation. Urban landscapes, including ornamental plantings, are also described. A single sensitive vegetation community, Central Coast riparian scrub as originally described by Holland (Holland, 1986), was identified within the study area at the South San Francisco site. It is discussed in more detail below. Figures 5.14-1 through 5.14-5 show the vegetation communities identified at each site, and Table 5.14-1 below identifies the acreage of each vegetation community at each site where it occurs.

**Table 5.14-1  
 Vegetation Communities**

Study Area	Vegetation Community					
	Annual Grassland	Central Coast Riparian Scrub	Coast Live Oak Woodland	Eucalyptus Grove	Ruderal Vegetation	Urban Landscape
Colma	–	–	–	–	1.99	–
South San Francisco	–	0.17	–	–	0.36	0.48
San Bruno North	–	–	–	–	–	0.85
San Bruno South	–	–	–	–	2.04	0.15
Millbrae <sup>1</sup>	1.36	–	2.83	1.23	0.34	2.45
Common Staging Area <sup>2</sup>	–	–	–	–	0.32	–
<b>Total Acres</b>	<b>1.36</b>	<b>0.17</b>	<b>2.83</b>	<b>1.23</b>	<b>5.05</b>	<b>3.93</b>

Source: PPSU project analysis, BioMaAS and URS.

Notes:

– = Not present

<sup>1</sup> Millbrae study area includes the access routes requiring upgrades.

<sup>2</sup> Information for the common staging area interpreted from Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration Case No. 2006.1314E (SF Planning, 2008).



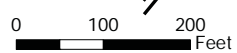
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<b>Project Components</b>		SFPUC Water Transmission Line
Construction Zone	SFPUC Water Transmission Line to be Replaced	
Staging and Spoils Area	<b>Vegetation</b>	
<b>Water Features</b>		Ruderal vegetation
Waters of the U.S. and State		
Waters of the State (RWQCB)		

**VEGETATION COMMUNITIES AND WATER FEATURES  
COLMA SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.14-1**



Source: SFPUC, 2011



- |                                      |  |
|--------------------------------------|--|
| <b>Project Components</b>            | SFPUC Water Transmission Line                |
| Construction Zone                    | SFPUC Water Transmission Line to be Replaced |
| Staging and Spoils Area              |  |
| Boring Pit                           |  |
| <b>Water Features</b>                | <b>Vegetation</b>                            |
| Waters of the U.S. and State         | Central Coast riparian scrub                 |
| Potential Waters of the State (CDFW) | Ruderal vegetation                           |
|                                      | Urban landscape                              |

**VEGETATION COMMUNITIES AND WATER FEATURES  
SOUTH SAN FRANCISCO SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.14-2**

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Source: SFPUC, 2011





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<b>Project Components</b>	<b>Vegetation</b>
Construction Zone	Urban landscape
Staging and Spoils Area	
Access Portal	
SFPUC Water Transmission Line	

Note: No water features were observed on site.

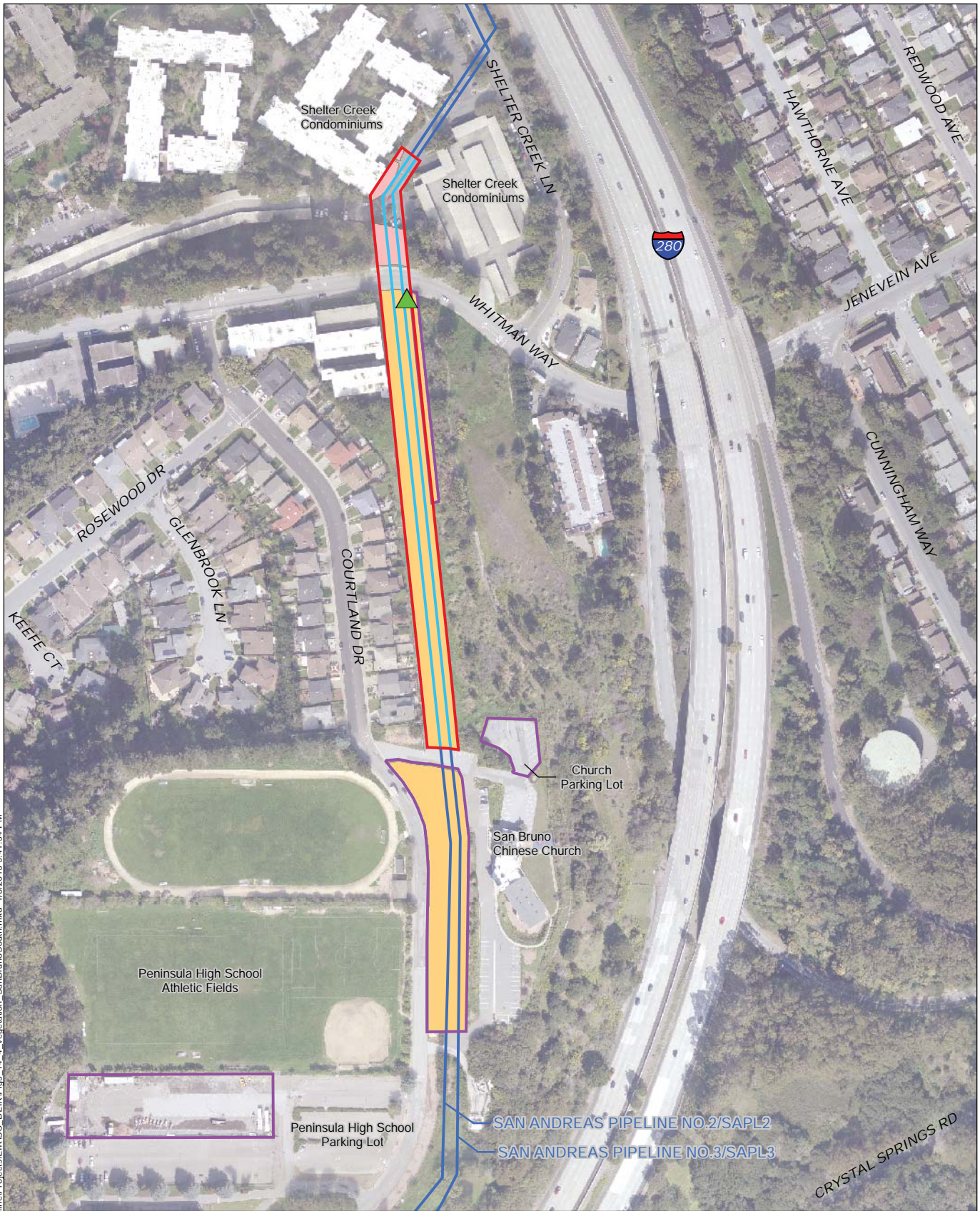
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**VEGETATION COMMUNITIES AND WATER FEATURES  
SAN BRUNO NORTH SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California


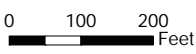
**FIGURE 5.14-3**

Source: SFPUC, 2011



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 Source: SFPUC, 2011

<b>Project Components</b>		<b>Vegetation</b>	
<span style="border: 2px solid red; display: inline-block; width: 15px; height: 10px;"></span> Construction Zone	<span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Ruderal vegetation	<span style="background-color: lightcoral; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Urban landscape	
<b>Water Features</b>			
<span style="color: green;">▲</span> Waters of the State (RWOCB)			
<span style="color: blue;">—</span> SFPUC Water Transmission Line			
<span style="color: cyan;">—</span> SFPUC Water Transmission Line to be Replaced			

**VEGETATION COMMUNITIES AND WATER FEATURES**  
**SAN BRUNO SOUTH SITE**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California  
**FIGURE 5.14-4**



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|---|---|
| <p><b>Project Components</b></p> <ul style="list-style-type: none"> <li><span style="border: 2px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Construction Zone</li> <li><span style="border: 2px solid purple; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Staging and Spoils Area</li> <li><span style="border-bottom: 2px dashed black; display: inline-block; width: 15px; margin-right: 5px;"></span> Access Route Requiring Upgrade</li> <li><span style="border-bottom: 2px solid blue; display: inline-block; width: 15px; margin-right: 5px;"></span> SFPUC Water Transmission Line</li> <li><span style="border-bottom: 2px solid cyan; display: inline-block; width: 15px; margin-right: 5px;"></span> SFPUC Water Transmission Line to be Replaced</li> </ul> | <p><b>Water Features</b></p> <ul style="list-style-type: none"> <li><span style="color: green;">▲</span> Waters of the U.S. and State</li> <li><span style="color: green;">▲</span> Waters of the State (RWQCB)</li> </ul> <p><b>Vegetation</b></p> <ul style="list-style-type: none"> <li><span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Annual grassland</li> <li><span style="background-color: lightgreen; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Coast live oak woodland</li> <li><span style="background-color: lightblue; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Eucalyptus grove</li> <li><span style="background-color: orange; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Ruderal vegetation</li> <li><span style="background-color: pink; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Urban landscape</li> </ul> |
|---|---|

**VEGETATION COMMUNITIES AND WATER FEATURES  
MILLBRAE SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

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Feet

**FIGURE 5.14-5**

Sources: NAIP Imagery Summer 2010; SFPUC 2011

Representative plant species observed in each community during the surveys conducted between December 2010 and September 2011 are included in the descriptions below.

### **Annual Grassland**

Annual grassland communities are composed primarily of annual plant species, and are largely influenced by a combination of weather patterns, edaphic (or soil-related) conditions, and environmental conditions such as topographic position—and, to a lesser degree, land use practices and other anthropogenic disturbance. Introduced annual grasses are the dominant plant species in this habitat. Native plant species may sparsely persist in annual grasslands, but nonnative plant species typically prevent them from reestablishing (Kie, 2005).

Annual grassland was observed at the San Bruno South and Millbrae sites. However, the patches of annual grassland at the San Bruno South site intergrade with ruderal vegetation, and were too small and scattered to be mapped. At the Millbrae site, annual grassland forms small stands along the margins or in openings of coast live oak woodland near the northern end of the trail, as shown on Figure 5.14-5. Annual grassland is also established on the staging and spoils area, north of the SFPUC right-of-way (ROW), and along the access route at the eastern end of Larkspur Drive. Approximately 1.36 acres of annual grassland are located in the study area.

Plant species observed in the annual grasslands of the study area include nonnative species such as wild oats (*Avena fatua*), Italian ryegrass (*Lolium multiflorum*), ripgut brome (*Bromus diandrus*), wild radish (*Raphanus sativus*), bur clover (*Medicago polymorpha*), cranesbill (*Geranium dissectum*), rose clover (*Trifolium hirtum*), and narrow-leaved flax (*Linum bienne*), as well as occasional natives including blue-eyed grass (*Sisyrinchium bellum*), dove lupine (*Lupinus bicolor*), and Spanish clover (*Lotus purshianus*), among others.

### **Central Coast Riparian Scrub**

Of the vegetation communities found in the study area, the Central Coast riparian scrub is the only community considered to be a sensitive natural community. Based on the Hierarchical List of Natural Communities with Holland Types (CDFG, 2010), which ranks vegetation alliances according to their degree of imperilment as measured by rarity, trends, and threats, Central Coast riparian scrub is ranked S3, which indicates it is considered to be of special concern, and may be highly imperiled.

Central Coast riparian scrub typically consists of scrubby streamside, open to impenetrable thickets composed of several species of willows (*Salix* spp.). This plant community often occurs close to river channels and near the coast on fine-grained sand and gravel bars with a high water table. It is distributed along and at the mouths of most perennial and many intermittent streams of the South Coast ranges, from the Bay Area to near Point Conception (Holland, 1986). Central Coast riparian scrub is generally regarded as early seral, meaning that it typically precedes the development of other riparian woodland or forest communities in the absence of severe flooding. However, outside of riparian environments, such as on slopes near the coast subject to moist marine influence and summer fog, or near groundwater seeps, willow-dominated scrub represents a relatively stable plant community.

Central Coast riparian scrub in association with an offsite riparian system is located at the South San Francisco site, and is not established at any of the other sites within the study area. Isolated,

nonriparian willows are not considered to be sensitive natural communities. The individual or isolated stands of arroyo willow observed at the San Bruno North, San Bruno South, and Millbrae sites are supported by artificial irrigation and are not considered to be riparian because of their isolation from natural streams or other waterways.

At the South San Francisco site, Central Coast riparian scrub occurs in a single dense, mature stand of willows immediately northwest of Westborough Boulevard, as shown on Figure 5.14-2, and occupies approximately 0.17 acre. Characteristic plant species occurring at this site include a dominant overstory of mature arroyo willow (*Salix lasiolepis*), with native California blackberry (*Rubus ursinus*) in the understory. The Central Coast riparian scrub conforms to the arroyo willow series, as described in Sawyer and Keeler-Wolf (Sawyer and Keeler-Wolf, 1995), and would represent the Arroyo willow thickets Alliance, following CDFW (CDFG, 2010). Very sparse poison hemlock (*Conium maculatum*), and patches of English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus discolor*), all nonnative species, are also present. The willow thicket is nearly impenetrable in most of the site, and the canopy is continuous outside of the study area to the west. The canopy extends offsite to a small natural drainage that connects to a concrete culvert and flows underground toward Westborough Boulevard.

### Coast Live Oak Woodland

In California, oak woodlands of several types occur at elevations ranging from about 30 to 5,000 feet, where summers are warm and dry and winters are mild and wet. Coast live oak woodland is typically found on north-facing slopes and shaded ravines in the southern and inland portions of the state, and on more exposed, mesic (or moderately moist) sites in the north. This community is dominated by coast live oak (*Quercus agrifolia*), which frequently occurs in pure, dense stands with a closed canopy. Coast live oak woodland is restricted primarily to the coast side of the state, and is distributed from Sonoma County to Baja California. It occurs throughout the outer South Coast ranges and coastal slopes of the Transverse and Peninsular ranges, usually below 4,000 feet in elevation (Holland, 1986).

Coast live oak woodland is only present at the Millbrae study area. Based on the field survey of the project study area and on aerial photographs, the primary vegetation community in the approximately 16.3-acre City of Millbrae open space area in the vicinity of the Millbrae site is considered to consist principally of oak woodlands, which are protected under the Oak Woodlands Conservation Act (where the canopy comprises greater than 10 percent coast live oak).

In total, there are approximately 2.83 acres of coast live oak woodland in the study area; they are located along the trail from Lomita Avenue, and within a portion of the SFPUC ROW as it extends across the Green Hills Country Club. A mature stand of coast live oak woodland, dominated by coast live oak, is present along most of the trail through the City of Millbrae open space area, north of the golf course at the Green Hills Country Club, as shown on Figure 5.14-5. The oak woodland portion of the study area through which the trail (temporary access route) would extend is approximately 2.47 acres. Typical native plants associated with oak woodland at the Millbrae site include toyon (*Heteromeles arbutifolia*), snowberry (*Symphoricarpos albus* var. *laevigatus*), Pacific sanicle (*Sanicula crassicaulis*), poison oak (*Toxicodendron diversilobum*), and California blackberry, among others. In portions of coast live oak woodland along the trail, English ivy (*Hedera helix*) forms a nearly continuous understory. Further south, along the SFPUC

ROW, a stand of coast live oak woodland intergrades or intersperses at its western margin, immediately west of a golf course fairway, with a well-developed eucalyptus grove. The oak woodland occupies approximately 0.36 acre within the construction zone. In this portion of the ROW, the oak woodland canopy is composed of greater than 10 percent of coast live oak. Nonnative or naturalized tree species in the oak woodland include blue gum (*Eucalyptus globulus*), Monterey pine (*Pinus radiata*), and Monterey cypress (*Cupressus macrocarpus*).

### **Eucalyptus Grove**

There are more than 150 species of eucalyptus, and none of them are native to the United States. Eucalyptus trees were extensively planted throughout California in the mid-nineteenth century (Pearson, 1988) and continue to be popular introductions in both rural and urban landscapes as hedgerows and shade trees. They were also planted in dense groves to provide wind breaks or for hardwood production and harvesting due to their rapid growth. Eucalyptus species are highly successful seeders, producing abundant natural regeneration. Eucalyptus habitat for wildlife can consist of single trees or large stands of one or a few different eucalyptus species. Understory vegetation in eucalyptus groves are rare due to their ability to rapidly shed leaf litter, stringy bark, branches, and seeds, which block the ability of other plants to propagate. In addition, eucalyptuses produce allelopathic chemicals that inhibit the growth of other species. Eucalyptus trees commonly establish along creeks and streams, growing rapidly, crowding out native riparian vegetation, and competing for water and soil nutrients (Pearson, 1988).

Eucalyptus grove was only observed at the Millbrae study area and comprises approximately 1.23 acres in the study area. As shown on Figure 5.14-5, eucalyptus grove was observed along portions of the trail, within the staging area north of the SFPUC ROW, and within the SFPUC ROW as it extends across the golf course. The dense stand of mature trees approaches 60 to 80 feet in height and has a nearly closed canopy. The understory supports an abundance of young blue gum saplings, with a very sparse herbaceous understory consisting of only a few scattered individuals of California honeysuckle (*Lonicera hispidula* var. *vacillans*) and wood strawberry (*Fragaria vesca*).

### **Ruderal Vegetation**

Ruderal plant communities are assemblages of plants that thrive in disused or abandoned lots, roadsides, and similar disturbed sites in urban areas and along rural roadways. Heavily compacted soils found on roadsides, parking lots, and footpaths typically support ruderal communities (Holland and Keil, 1995).

Ruderal vegetation was observed at the Colma, South San Francisco, San Bruno South, and Millbrae sites, and was not observed at the San Bruno North site. The common staging area also supports ruderal vegetation (SF Planning, 2008).

As shown on Figure 5.14-1, ruderal vegetation occurs throughout the Colma site, and covers approximately 1.99 acres. Ruderal vegetation is also present in the northwestern portion of the South San Francisco site (approximately 0.36 acre) and in the common staging area (approximately 0.36 acre), as shown on Figure 5.14-2. The majority of the San Bruno South site is ruderal vegetation (approximately 2.04 acres), as shown on Figure 5.14-4, and it intergrades with a few small patches of annual grassland. At the Millbrae site, ruderal vegetation is primarily located within the SFPUC ROW, behind residences on Ridgewood Drive (approximately

0.34 acre), as shown on Figure 5.14-5. Although not mapped, it intergrades with annual grassland at the north end of trail as well.

Typical plants of ruderal vegetation within the study area include Bermuda buttercup (*Oxalis pes-caprae*), creeping wood-sorrel, English plantain (*Plantago lanceolata*), bristly ox-tongue (*Picris echinoides*), wild teasel (*Dipsacus fullonum*), sweet fennel (*Foeniculum vulgare*), Italian thistle (*Carduus pycnocephalus*), and Himalayan blackberry, among many others. Several dense stands of perennial grasses are also present, including Harding grass (*Phalaris aquatica*), meadow fescue (*Festuca pratensis*), and pampas grass (*Cortaderia jubata*). Scattered individuals of the native coyote brush (*Baccharis pilularis*) are also occasional within ruderal vegetation.

### Urban Landscapes

The CWHR describes urban landscapes as urban areas with vegetation classified into five definitions: tree grove, street strip, shade tree/lawn, lawn, and shrub cover. Residential landscapes, parks, golf courses, and school grounds are included in this classification. In urban areas, productivity of plant biomass, consisting of the living or dead vegetative material generated by plant growth, is often greater than in natural grasslands because of irrigation and fertilization (McBride and Reid, 1988). The variable planting design and local climate produce complex mosaics, offering wildlife a good source of additional food such as fruits and berries. Urban landscaped areas can frequently overlap with ruderal vegetation and other vegetation types along their margins.

Urban landscape was observed at all the project sites, with the exception of the Colma site. Although urban areas are not mapped for the Colma site, occasional, scattered ornamental trees and shrubs are present along its margins.

The southeastern portion of the South San Francisco site supports an urban landscape of approximately 0.48 acre, which gently slopes upward from Westborough Boulevard to West Orange Avenue, as shown on Figure 5.14-2. Vegetation is largely composed of a planted and maintained lawn area dominated by red fescue (*Festuca rubra*), but also includes winter vetch (*Vicia villosa*), common vetch (*Vicia sativa*), white clover (*Trifolium repens*), bull thistle (*Cirsium vulgare*), cut-leaved plantain (*Plantago coronopus*), and rough cat's-ear (*Hypochaeris radicata*), among others. The lawn area is bordered on both margins by various planted ornamental shrubs associated with individuals or small patches of arroyo willow, which appear to be naturalized in areas regularly irrigated for the benefit of the cultivated landscape. Monterey cypress is also present. The irrigation system evident at this site suggests that the willows are supported by artificial means, and are therefore not considered to be natural wetland vegetation.

The San Bruno North site consists primarily of planted ornamental species and conforms to the urban areas classification, as shown on Figure 5.14-3. Approximately 0.85 acre of urban landscape is located at this site. Disturbance of the site also includes past activities associated with the installation and maintenance of the existing pipelines. Ornamental plantings on site include Lombardy poplar (*Populus nigra*), rose (*Rosa* sp.), capeweed (*Arctotheca calendula*), French broom (*Genista monspessulana*), Monterey pine, and Monterey cypress. Naturalized nonnative plants noted include herbaceous species such as prickly lettuce (*Lactuca serriola*), Hottentot fig (*Carpobrotus edulis*), wild radish, English ivy, bird's-foot trefoil (*Lotus corniculatus*), sweet fennel, bristly ox-tongue, and wild oats, among others. Shrubs including Himalayan blackberry and

cotoneaster are also present. In addition, several native plants are present at the San Bruno North site, including a mature coast live oak and a few small coast live oak seedlings. This tree may represent relict native vegetation, but is isolated by the surrounding urban landscape. Native toyon and coyote brush are also present, and may have become established naturally or may have been planted. Hooker's evening primrose (*Oenothera elata* ssp. *hookeri*), which is also present, commonly establishes itself on roadsides on the San Francisco Peninsula, especially where there is irrigation. Several coast redwoods (*Sequoia sempervirens*) on the site were probably planted. A small cluster of arroyo willow is also present, and as described for the South San Francisco site above, appears to be supported by artificial irrigation.

At the San Bruno South site, urban landscape is located between Whitman Way and Shelter Creek Lane, as shown on Figure 5.14-4. Approximately 0.15 acre is located at this site, consisting of Monterey pines and other common ornamental trees and shrubs.

Approximately 2.45 acres of urban landscape are located at the Millbrae site along the residences in the SFPUC ROW and portions of the golf course, as shown on Figure 5.14-5. At this site, the urban landscape primarily consists of turf grass and scattered lawn weeds such as English daisy (*Bellis perennis*), creeping wood-sorrel, common dandelion (*Taraxacum officinale*), and white clover, among others.

### ***Special-Status Plant Species***

A total of 160 species of plants were observed within the study area (Appendix F, Table 1.2). Of these, 49 are native. The remaining 111 species are nonnative plants. None of the plant species observed during focused botanical surveys are considered to be special-status species. Additionally, based on available habitats and conditions at each of the sites, no special-status plant species are expected to be found. Plant species observed within the study area are described above under Vegetation Communities.

No suitable habitat for special-status plant species is known to be present at the common staging area on the SFPUC's Baden Valve Lot (SF Planning, 2008).

### ***Wetlands and Other Waters***

Within the study area, various constructed water conveyance features exhibiting evidence of periodic surface flow, as well as several individuals or small stands of arroyo willow, were assessed for their potential to be subject to State or federal jurisdiction. As described below, three are considered to fall under the jurisdiction of the Corps. These features are also protected by the Regional Water Quality Control Board (RWQCB), subject to regulation under the Porter-Cologne Water Quality Control Act and the Water Quality Control Plan for the San Francisco Bay Region (Basin Plan). Four additional features, which would not fall under the jurisdiction of the Corps, would be under the jurisdiction of the RWQCB as waters of the State of California, subject to the Porter-Cologne Water Quality Control Act.

The three water conveyance features under U.S. jurisdiction are located at the Colma, South San Francisco, and Millbrae sites (one feature at each site). At the Colma site, a portion of an underground culvert, which is a tributary to Colma Creek, extends across the site (Figure 5.14-1). At the South San Francisco site, an underground culvert associated with Twelve Mile Creek, also a



tributary of Colma Creek, extends through the site (Figure 5.14-2). At the Millbrae site, the concrete v-ditch at the eastern end of Larkspur Drive adjacent to the Green Hills Country Club flows approximately 600 feet downslope to the southeast, where it empties into Green Hills Creek. These features convey waters of natural creek systems that have been re-routed in underground culverts or manmade ditches. As described above, they would also be considered waters of the state.

Four other water conveyance features fall under the jurisdiction of the RWQCB as waters of the State. These features are concrete-lined v-ditches designed for slope stability or to carry runoff away from the vicinities of the sites during precipitation events. There is one feature at the Colma site, one at the San Bruno South site, and two at the Millbrae site (Figures 5.14-1, 5.14-4, and 5.14-5). These are man-made ditches excavated in uplands, and are therefore not expected to fall under the jurisdiction of the Corps. Waters from the ditches eventually flow through underground culverts and storm drain systems into San Francisco Bay. For this reason, they would fall under the jurisdiction of the RWQCB as waters of the State.

Arroyo willow stands are the only conspicuous and widespread hydrophytic vegetation found in the study area. Arroyo willow is listed as a facultative wetland species in the National List of Plant Species that Occur in Wetlands (Reed, 1988), and as such is a plant species usually occurring in wetlands. However, it is occasionally found in nonwetland areas. Arroyo willow stands supported by artificial irrigation, or otherwise isolated from riparian features such as natural drainages, are not considered to be wetland vegetation according to the methodology used for this study. Isolated stands of willow are located on several sites in the study area; however, as described under Central Coast Riparian Scrub above, they are not considered to fall under the jurisdiction of the U.S. or the State.

At the South San Francisco site, a small stand of arroyo willow is characterized as Central Coast riparian scrub based on its association with a natural tributary drainage immediately to the west of the site (Figure 5.14-2). The willow thicket is nearly impenetrable in most of the site, and the canopy is continuous outside of the study area to the west, where a small natural drainage, approximately 80 feet from the project site, provides a riparian context to the willow stand before it enters a concrete culvert and flows underground toward Westborough Boulevard.

Due to an absence of both hydric soils and wetland hydrology, this feature would not fall under Corps jurisdiction; however, CDFW may assert jurisdiction over the stand due to the contiguous tree canopy connection with the willows along the natural drainage to the west of the project site (the drainage has a distinct bed, bank, and channel).

There is no riparian habitat or jurisdictional wetlands within the vicinity of the common staging area near South San Francisco (SF Planning, 2008).

### ***Wildlife Habitats and Migratory Wildlife Corridors***

Urban landscapes and ruderal vegetative communities are dominated by generalist scavenger wildlife species such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), western scrub-jay (*Aphelocoma californica*), and various rodents. Generalist species prey upon a variety of wildlife, decreasing the likelihood that special-status wildlife species would be found in urban areas. As with urban areas, special-status wildlife species are not likely to use ruderal vegetation for foraging, breeding, or shelter (Fahrig, 2002, Goodrich and Buskirk, 1995). Wildlife

species observed in the study area during surveys completed on December 2, 2011, and April 18, 2011, are listed in Appendix F, Table 2.2.

Oak woodland provides valuable habitat for a variety of bird and mammals species. The oak woodlands within the study area provide nesting habitat for special-status birds, including white-tailed kite (*Elanus leucurus*) and numerous other raptors and migratory bird species. In oak woodlands, mature trees and dead trees with hollows provide daytime roosting site for special-status bats such as western red bat (*Lasiurus blossevillei*) and pallid bat (*Antrozous pallidus*). A single nest of San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) was observed about 50 feet west of the pedestrian path in the study area.

Eucalyptus trees provide roost, nest, and perch sites for birds of prey such as red-tailed hawks, great-horned owls, barn owls, and kestrels. Songbirds also use eucalyptus in the same capacity but to a lesser degree. The leaf litter and bark shed by eucalyptus provide micro habitats for small vertebrate species such as alligator lizard, gopher snake, and woodrat (Pearson, 1988). Special-status birds that could nest in the eucalyptus include the white-tailed kite. The eucalyptus grove also provides nesting and foraging habitat for other raptors and numerous migratory birds. The monarch butterfly (*Danaus plexippus*) often uses eucalyptus groves for winter roosting (Shapiro and Manolis, 2007). No monarch butterflies were observed roosting in the eucalyptus trees during the December 2, 2010, surveys (as described below under Monarch Butterfly), and no known winter roosting sites are recorded for the any of the sites.

The Mission blue butterfly (*Plebejus icarioides missionensis*) could occur in the annual grassland at the Millbrae site due to the presence of a few larval host plants for this species. It is unlikely that any other special-status wildlife species would occur in association with annual grasslands in the study area, because the project site is surrounded by urban development, has experienced fragmentation of habitat (Fahrig, 2002), and there is a lack of suitable habitat features used for foraging, cover, and breeding by sensitive wildlife species (Fischer and Lindenmayer, 2007). The presence of generalist species also reduces the likelihood that special-status wildlife species would be present due to the competition for resources (Goodrich and Buskirk, 1995).

The sites are not considered to provide migratory wildlife corridors under the Beier-Loe classification scheme because they are entirely surrounded by urban development that does not allow animals that range widely to safely travel through the area. California red-legged frog (*Rana draytonii*) could disperse through the drainage adjacent to the South San Francisco site while water is present during the winter months; however, there is no connectivity to documented breeding habitat. Therefore, the site cannot be classified as a migratory wildlife corridor under the Beier-Loe classification scheme. If this species did disperse through the drainage it would be a rare event. Wildlife dependent upon migratory corridors cannot recolonize the study areas due to lack of suitable habitat and competition with wildlife species habituated to urbanized environments. In addition, the study area does not provide substantive areas of habitat.

### ***Special-Status Wildlife Species***

Thirty-eight special-status animal species were considered to have a potential to occur in certain types of habitats in the study area. Based upon the habitat preferences and CNDDDB records for each listed species and the reconnaissance-level surveys (December 2, 2010, April 18, 2011, August 4, 2011, and September 6, 2011), each wildlife species was evaluated for its potential to occur in the vicinity of the study area. Of these species, seven are considered to have at least some

potential to occur at the sites due to the presence of suitable habitat and CNDDDB occurrences within the study area region, including Mission blue butterfly, monarch butterfly, white-tailed kite (nesting), western red bat, pallid bat, and San Francisco dusky-footed woodrat, as described below and shown in Table 5.14-2. The study area does not provide suitable breeding habitat for the seventh species, the California red-legged frog; however, suitable dispersal habitat is present on the South San Francisco site, due to proximity to a natural drainage west of the site. California red-legged frog could shelter in rodent burrows in the upland areas adjacent to the drainage. Monarch butterfly has no federal or state special-status listing, but has been included because it is generally recognized as a sensitive species and could be listed for protection in the future.

**Table 5.14-2  
Special-Status Wildlife Species Potentially Occurring at the Sites**

<b>Wildlife Species</b>	<b>Status Federal/ State</b>	<b>Potential Occurrence (Project Site)</b>	<b>Potential Wildlife Use</b>
<i>Plebejus icarioides missionensis</i> Mission blue butterfly	FE/-	Millbrae	Low – Potential breeding habitat in grasslands.
<i>Danaus plexippus</i> monarch butterfly	-/S3	Millbrae	Low – Potential wintering habitat in eucalyptus grove.
<i>Rana draytonii</i> California red-legged frog	FT/SC	South San Francisco	Low – Potential dispersal habitat is present.
<i>Elanus leucurus</i> white-tailed kite	-/FP	Millbrae	Moderate – Potential nesting habitat present.
<i>Lasiurus blossevillii</i> western red bat	-/SC	Millbrae	Low – Potential breeding habitat present.
<i>Antrozous pallidus</i> pallid bat	-/SC	Millbrae	Low – Potential breeding habitat present.
<i>Neotoma fuscipes annectens</i> San Francisco dusky-footed woodrat	-/SC	South San Francisco and Millbrae	Present – Nest midden observed.
<p>Source: PPSU project analysis, BioMaAS and URS.</p> <p>Notes:</p> <p>-- = No status</p> <p><b>Federal:</b></p> <p>FE = Listed as endangered under the Federal Endangered Species Act</p> <p>FT = Listed as threatened under the Federal Endangered Species Act</p> <p><b>State:</b></p> <p>SE = Listed as endangered under the California Endangered Species Act</p> <p>ST = Listed as threatened under the California Endangered Species Act</p> <p>SC = Species of special concern under the California Endangered Species Act</p> <p>S3 = State Rank 21-100 Element Occurrences (3,000 to 10,000 individuals for range of 10,000-50,000 acres)</p> <p>FP = Fully Protected under the California Endangered Species Act</p> <p><b>Potential Level:</b></p> <p>Low = Suitable habitat present; not likely to occur due to environmental constraints, but cannot be ruled as absent</p> <p>Moderate = Potential to occur based on habitat suitability</p> <p>Present = Species or evidence thereof observed on site</p>			

No sensitive natural communities are present at the common staging area on the SFPUC's Baden Valve Lot, and no suitable habitat for special-status animal species is known to be present (SF Planning, 2008).

### **Mission Blue Butterfly**

The Mission blue butterfly is a federally listed endangered species with no State special status. No critical habitat has been designated for this species. This species is included in the USFWS's Recovery Plan for San Bruno Elfin and Mission Blue Butterflies (USFWS, 1984). The range of the Mission blue butterfly was once widespread on the hills of San Francisco and San Mateo County (USFWS, 1976) where contiguous native grasslands existed. Current populations are known to occur from southern Marin, San Francisco, and San Mateo counties (USFWS, 2010). Habitat for this species is found where larval host plants are present in coastal prairie grasslands, between elevations of 690 and 1,180 feet.

Mission blue butterflies rely on three species of lupine for reproductive purposes (larval host plant): silver lupine (*Lupinus albifrons*), many colored lupine (*Lupinus varicolor*) and summer lupine (*Lupinus formosus*). Adult butterflies emerge from the dormant caterpillar phase between early March and early July while the lupines are blooming. Males fly near and often perch on the preferred lupines, attempting to initiate contact with receptive females. Females lay several dozen eggs at a time throughout the breeding season on the lupines. The eggs hatch in about 4 to 10 days (USFWS, 2010). Larvae hatch from the eggs after 4 to 7 days and begin to feed on the soft tissue inside leaf foliage for about 3 weeks. They then become caterpillars and shelter under the leaf litter below the host plant, where they go into a dormant state until emerging the following spring as reproductive adult butterflies (Arnold, 1983). They have a brief lifespan of 7 to 8 days (USFWS, 2010).

During botanical surveys of the study area, three individuals of summer lupine, possibly withered from herbicide application, were found in one location near the top of the trail at the Millbrae site. Due to the management practices used to prevent vegetation from growing and becoming a fire hazard, it is unlikely that Mission blue butterfly would occur at the site; however, their presence cannot be ruled out entirely. The Mission blue butterfly occurrence nearest to the Millbrae study area (CNDDDB record 11) is for butterflies observed in 1985 in the hills adjacent to the San Andreas Dam approximately 1.6 miles to the south.

### **Monarch Butterfly**

Monarch butterflies have no federal protection under the Federal Endangered Species Act (FESA), or State protection under the CESA; however, they are classified by the State as S3. This means that it is a species that is experiencing some threat to its overall survival (CNDDDB, 2011). Eucalyptus groves along the California coastline have been identified as potential winter roosting habitat for migratory monarch butterflies between late October to late February (Shapiro and Manolis, 2007). The Millbrae site has a large, dense grove of eucalyptus that could provide winter roosting for monarchs. No monarchs were observed during the December 2, 2010, survey. The nearest winter roosting sites are several miles to the west along the coast near Half Moon Bay and Montara Mountain (CNDDDB, 2011). The presence of wintering monarch butterflies cannot be ruled out entirely because they could roost in the eucalyptus grove in subsequent years.

### California Red-Legged Frog

The California red-legged frog is a federally listed threatened species and a State species of special concern (SSC). This frog is the subject of the USFWS Recovery Plan for the California Red-Legged Frog (USFWS, 2002). This frog historically occurred in coastal habitats from the vicinity of Point Reyes National Seashore, inland to the vicinity of Redding; and southward to northwestern Baja California, Mexico. The species has been extirpated from 70 percent of its historic range; its current distribution has been reduced to isolated localities in the Sierra Nevada, northern Coast Range, and northern Transverse Range (USFWS, 1996b).

The California red-legged frog inhabits a variety of aquatic, upland, and riparian environments, including ephemeral (intermittent) and permanent ponds, seasonal wetlands, perennial creeks, intermittent streams, man-made aquatic features (e.g., stock ponds), riparian corridors, blackberry thickets, nonnative annual grasslands, and oak savannahs (USFWS, 1996b). The preferred habitat consists of deep-water pools with dense stands of overhanging willows, and an intermixed fringe of cattails. Well vegetated upland habitats in proximity of a riparian corridor may provide sheltering habitat during the winter (USFWS, 2005). Breeding occurs during winter and early spring (late November through April). Adults have a highly variable diet, including invertebrates, Pacific tree frogs, and occasionally mice. During the dry summer months these frogs estivate (overwinter) in small mammal burrows and moist leaf litter. California red-legged frogs have been recorded to cover distances from ¼ mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (USFWS, 2005).

The known California red-legged frog population nearest to the northern PPSU sites is the Milagra Ridge (near Pacifica), approximately 2.2 miles southwest of the South San Francisco study area. The known populations of California red-legged frog nearest to the southern PPSU sites are at Crystal Springs Reservoir, which is approximately 1 mile west of the Millbrae study area (the closest PPSU site to this population). Critical habitat has been designated by the USFWS for the habitat from west of Interstate 280 (I-280) to the San Andreas Reservoir shoreline. Critical habitat does not extend to the east side of I-280 where the five sites are situated. California red-legged frog would not be likely to cross the heavily trafficked I-280 corridor to disperse to the PPSU study area, which is devoid of suitable breeding habitat.

Although there is no suitable breeding habitat for the California red-legged frog within the PPSU study area, it is possible that suitable breeding habitat occurs in the vicinity, consisting of a reservoir on a golf course approximately 3,900 feet southwest of the South San Francisco site, across Westborough Boulevard. The lack of vegetation in and around the reservoir renders it as poor quality breeding habitat for California red-legged frog; however, the presence of this species cannot be ruled out entirely. The South San Francisco site is adjacent to an underground storm drain system that was once a natural creek, known as Twelve Mile Creek—which was, over time, buried or drained and water was rerouted into lengthy networks of culverts to conduct flows through urban areas (BioMaAS and URS, 2013).<sup>4</sup> A short remnant segment of creek lies in close proximity to the South San Francisco site (see Wetlands and Other Waters, above). The drainage contained no water during the wetland delineation conducted in September 2011. It is not likely

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<sup>4</sup> Technical reports prepared for the project are on file and available for public review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2011.0123E.

that California red-legged frog would breed here, due to the lack of suitable breeding pools. However, if there is a population present in the golf course ponds, it could aestivate<sup>5</sup> in small mammal burrows and disperse into the drainage during winter months. The desktop review of CNDDDB data did not reveal any California red-legged frog records in these ponds. This could either indicate a lack of surveys in this area, or that frogs are not known to be present at this site. The CNDDDB record of California red-legged frog closest to the South San Francisco site (occurrence 865) is for egg masses observed in 2006, approximately 2.2 miles southeast, in a pond on Milagra Ridge east of Pacifica. Another population of California red-legged frog is known to occur approximately 2.4 miles southwest (CNDDDB record 1114) in a drainage that parallels the southbound lane of U.S. Highway 101 in Millbrae, just northwest of the airport.

### **White-Tailed Kite**

The white-tailed kite is a State fully protected species, and is also protected under the federal Migratory Bird Treaty Act. This raptor hunts in open grasslands, agricultural fields, and wetlands, foraging for rodents. In California, the white-tailed kite ranges from the coastline west to the Sierras, and is patchily distributed from Eureka to the southern border. They are mostly year-round residents but move in response to prey abundance.

White-tailed kites take cover and build nests in trees and tall shrubs with dense canopies. Their nests are situated near open foraging areas, and are constructed of loosely piled sticks and twigs in the fork near the top of a tree or bush. They breed between February and October, laying three to five eggs, which are incubated for about 1 month. The young fledge in 5 to 6 weeks (Polite, 2005).

There are no CNDDDB records for white-tailed kite nests within 12 miles of the study area; however, the eucalyptus grove and oak woodlands at the Millbrae site provide suitable nesting habitat for this species, as well as other raptors and migratory birds.

### **Western Red Bat**

The western red bat is a State SSC. It has a broad distribution throughout most of North America, but in California is found mostly in coastal areas from San Francisco Bay south, the Central Valley and surrounding foothills, and in limited numbers in Southern California (Pierson and Rainey, 1998a). Western red bats roost in the foliage of trees and shrubs, typically in edge habitats near streams and open fields where they forage for insects. They prefer trees with rigid, short-stemmed branches for protection from wind. Trees with open canopies and few low bare branches provide cover from perching predatory birds (Pierson and Rainey, 1998a). Maternity roosts are found in the same habitat as night roosts. Western bats mate in the late summer or early fall, with the female becoming pregnant in spring then giving birth to between one and five offspring in 80 to 90 days. The young begin to fly at 3 to 6 weeks of age (Pierson and Rainey, 1998a).

There are no CNDDDB records for western red bat maternity roost sites in or near the study area; however, the Millbrae site provides suitable roosting habitat for the western red bat.

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<sup>5</sup> Defined as existing in a dormant state.

### **Pallid Bat**

The pallid bat is an SSC. It occurs throughout most of California in lower elevations in a wide variety of habitats, including grasslands, shrublands, woodlands, and forests. Day roost and hibernation roost sites include caves, rock or bridge crevices, buildings, and hollow trees. At night they roost usually in the open near foliage or in open buildings. Pallid bats leave their day roost an hour after sunset, capturing their prey on foliage or on the ground. They hibernate in the winter near the summer day roost. Maternity colonies form in early April and may have between a dozen to 100 individuals (Harris, 2005). The young are born from April to July.

This species appears to be unable to habituate to urban and suburban environments. Even in areas with fragmented or remnant oak woodlands, where this species may have historically occurred, it is no longer found (Pierson and Rainey, 1998b). There are no CNDDDB records for pallid bat maternity roost sites in or near the study area. However, due to the presence of oak woodlands at the Millbrae site, which may contain hollow trees that provide suitable roosting habitat for the pallid bat, the bat's presence on the site cannot be ruled out entirely. Therefore, for the purposes of this analysis, the Millbrae site is considered to have potential breeding habitat for the pallid bat.

### **San Francisco Dusky-Footed Woodrat**

The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) is an SSC. The approximate range of this subspecies extends from San Francisco Bay south to Elkhorn Slough, and directly east of the Santa Cruz Mountain range (Hall, 1981). These nocturnal animals inhabit wooded environments that provide moderate canopy with an evergreen understory where they can feed on native vegetation, including live oak, coffeeberry, alder, and elderberry (Brylski, 2005). They pile sticks to build stick houses approximately 3 feet in diameter, with houses often clustered together. Nests are constructed inside the houses, and breeding occurs from December to September, with mid-spring being the peak of the season.

A San Francisco dusky-footed woodrat nest was observed in the oak woodland at the Millbrae site. Potential breeding habitat is also present in the vegetation in a natural drainage west of the South San Francisco site.

## **5.14.2 Regulatory Framework**

The section below describes applicable regulations pertaining to biological resources within the project area. For a list of specific permits required for implementation of the proposed project, refer to Section 3.10, Required Permits.

### **5.14.2.1 Federal**

#### ***Federal Endangered Species Act***

FESA protects fish and wildlife species that have been identified by USFWS or the National Marine Fisheries Service (NMFS) as threatened or endangered and their habitats. Endangered refers to species, subspecies, or distinct population segments that are in danger of extinction

through all or a significant portion of their range; threatened refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

FESA is administered by USFWS and NMFS. In general, NMFS is responsible for protection of FESA-listed marine species and anadromous fishes, while listed, proposed, and candidate wildlife and plant species and freshwater fish species are under USFWS jurisdiction. Under FESA, it is illegal to take federally listed species. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in such conduct." Take of listed species can be authorized through either the Section 7 consultation process for actions by federal agencies, or the Section 10 permit process for actions by nonfederal agencies. Federal agency actions include activities that are:

- On federal land;
- Conducted by a federal agency;
- Funded by a federal agency; or
- Authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action (the federal lead agency) must consult USFWS or NMFS, as appropriate, to ensure that the proposed action would not jeopardize endangered or threatened species, or destroy or adversely modify designated critical habitat. If a proposed project "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the expected effect. In response, USFWS or NMFS issues a biological opinion (BO), with a determination that the proposed action either:

- May jeopardize the continued existence of one or more listed species (jeopardy finding), or result in the destruction or adverse modification of critical habitat (adverse modification finding); or
- Will not jeopardize the continued existence of any listed species (no jeopardy finding), or result in adverse modification of critical habitat (no adverse modification finding).

The BO issued by USFWS or NMFS may stipulate discretionary "reasonable and prudent" conservation measures. If the project would not jeopardize a listed species, USFWS or NMFS issues an incidental take statement to authorize the proposed activity.

In cases where a nonfederal entity is undertaking an action that does not require federal authorization, the take of listed species must be permitted by USFWS or NMFS through the Section 10 process. If the proposed project would result in the incidental take of a listed species, the project proponent must first obtain a Section 10(a)(1)(B) incidental take permit. Incidental take under Section 10 is defined as take of federally listed fish and wildlife species "that is incidental to, but not the purposes of, otherwise lawful activities." To receive an incidental take permit, the nonfederal entity is required to prepare a Habitat Conservation Plan (HCP). The HCP must include conservation measures that avoid, minimize, and mitigate the project's impact on listed species and their habitat.

The FESA requires the federal government to designate "critical habitat" for any species it lists. Critical habitats are specific geographical areas occupied by the species for which the habitat has



been designated, and areas that contain physical or biological features essential to conservation. Those features may require special management considerations or protections. No critical habitat was identified for plants or wildlife in the study area.

### ***Migratory Bird Treaty Act***

The Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) enacts the provisions of treaties between the United States and Great Britain, Mexico, and Japan, and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species, and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CDFW Code 10, 21). Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA are the possession of a hunting license to pursue specific game birds, legitimate research activities, display in zoological gardens, bird-banding, and other similar activities. USFWS is responsible for overseeing compliance with the MBTA, and the U.S. Department of Agriculture's Animal Damage Control Office makes recommendations on related animal protection issues.

### ***U.S. Army Corps of Engineers***

The Corps has the authority to regulate activities in waters of the U.S. under §404 of the federal Clean Water Act (CWA). Waters of the U.S. include, among others, waters used in interstate or foreign commerce, waters subject to the ebb and flow of tide, wetlands, lakes, rivers, streams, mudflats, sandflats, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds. The outer extent of "waters" is generally defined by the limits of "ordinary high water." Evidence of ordinary high water includes clear and natural lines or impressions on opposite stream banks, scouring, sediment deposits, drift lines, exposed roots, shelving, destruction of terrestrial vegetation, and the presence of litter or debris.

Wetlands are defined by the Corps 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" (§404 CWA). Indicators of three wetland parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) must be present for a site to be classified as a wetland (Environmental Laboratory, 1987).

## **5.14.2.2 State**

### ***California Endangered Species Act***

CESA (CDFW Code Sections 2050 to 2097) is administered by CDFW, and prohibits the take of plant and animal species designated by the Fish and Game Commission as either threatened or endangered in the State of California. "Take" in the context of CESA means to hunt, pursue, kill, or capture a listed species, as well as any other actions that may result in adverse impacts when attempting to take individuals of a listed species.

Sections 2091 and 2081 of CESA allowed CDFW to authorize exceptions to the State's prohibition against take of a listed species. Section 2091 allows State lead agencies that have formally

consulted with CDFW to take a listed species, if the take is incidental to carrying out an otherwise lawful project that has been approved under CEQA. Section 2081 allows CDFW to authorize take of a listed species for educational, scientific, or management purposes. Private developers whose projects do not involve a State lead agency under CEQA may not take a listed species without formally consulting with CDFW and agreeing to strict measures and standards for managing the listed species.

Section 2080.1 allows CDFW to authorize take of listed species without issuing an incidental take permit (under Section 2081) if it concurs that a federal BO (issued by USFWS or NMFS) addresses affected State-listed species fully and provides for full compliance with CESA requirements. In this case, CDFW issues a Consistency Determination with the BO relative to State-listed species.

### ***California Fish and Game Code***

#### **Species of Special Concern**

An SSC is a species, subspecies, or distinct population of an animal native to California that falls into one or more of the following categories:

- The animal is extirpated from the state or, in the case of birds, in its primary seasonal or breeding role;
- The animal meets the State definition of threatened or endangered but has not been formally listed;
- The animal is or has experienced serious population or range declines which, if decreases continue, could qualify the animal for State threatened or endangered status; or
- The animal has naturally small populations and is highly susceptible to risk of any factor(s) that could lead to declines that would qualify it for State threatened or endangered status.

Impacts to SSC animals from a proposed project should be considered during the CEQA review process. Sections 15063 and 15065 of the CEQA Guidelines address how an impact is identified as relevant to SSCs (CDFG, 2011c).

#### **Fully Protected Species**

The CDFW Code provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists fully protected amphibians and reptiles. Section 3515 prohibits take of fully protected fish species. Fully protected birds are included under Section 3511, and fully protected mammals are listed under Section 4700. Except for take related to scientific research, all take of fully protected species is prohibited.

Fully protected species that have potential to occur in the Millbrae project areas include the white-tailed kite.

#### **Bird and Raptor Protections in the California Fish and Game Code**

Section 3503 of the CDFW Code prohibits take, possession, or destruction of eggs and nests of all birds. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests. Take or possession of any migratory nongame bird as designated in the MBTA is prohibited under Sections 3513 and 3800.

### **Wetlands and Riparian Resources Protection in the California Fish and Game Code**

The CDFW exercises jurisdiction over wetland and riparian resources associated with rivers, streams, and lakes under CDFW Codes §1600 through §1607. The CDFW has the authority to regulate work that will: 1) divert, obstruct, or change the natural flow of a river, stream, or lake; 2) change the bed, channel, or bank of a river, stream, or lake; or 3) use material from a streambed. CDFW's jurisdictional area along a river, stream, or lake is generally bounded by the top of bank or the outermost edges of riparian vegetation. Typical activities regulated by CDFW under the CDFW Code include installation of outfalls, bank stabilization, creek restoration, implementation of flood control projects, construction of river or stream crossings, water diversion, dam construction, gravel mining, logging operations, and jack-and-bore tunneling underneath rivers or streams.

### ***Oak Woodlands Conservation Act of 2001***

The State recognizes oak woodlands, in general, as habitats with high ecological value, and encourages their conservation (CRA, 2001). The Oak Woodlands Conservation Act requires a county to determine, through the CEQA process, whether a project in its jurisdiction may result in loss or conversion of an oak woodland to another habitat, which would have a significant effect on the environment (CEQA public resources code §21083.4). Oaks are defined as a native tree species in the genus *Quercus* that is 5 inches or more in diameter at breast height. Oak woodlands means an oak stand that has greater than 10 percent oak canopy cover, or that may have historically supported greater than 10 percent canopy cover (CRA, 2001). If a county determines that a project would result in a significant effect to oak woodlands, the county shall require one or more of the following mitigation alternatives:

1. Conserve oak woodlands by setting aside a conservation easement;
2. Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees, per the following:
  - a) The requirement to maintain trees terminates 7 years after the replacement trees were planted;
  - b) Mitigation tree replacement shall not fulfill more than one-half of the mitigation requirements for the project; and
  - c) Mitigation tree replacement may be fulfilled by enhancement plantings to restore former oak woodland;
3. Funds may be contributed to the Oak Woodlands Conservation Fund as established under Section 1363(a) of the Fish and Game Code; and
4. Other mitigation measures developed by the county.

### ***Regional Water Quality Control Board***

The RWQCB, under the auspices of the Porter-Cologne Water Quality Control Act (RWQCB, 2011) defines "waters of the State" as any surface water or groundwater, including saline waters, within the boundaries of the State of California. All waters of the U.S. that are within the borders of California are also waters of the state. However, not all waters of the state are waters of the U.S. and therefore, waters of the U.S. represent a subset of waters of the state. The State of

California, through the RWQCBs, retains authority to regulate discharges of waste to any waters of the state, regardless of whether the Corps has concurrent jurisdiction under CWA Section 404. The Porter-Cologne Water Quality Control Act defines “water quality control” as the regulation of any activity that may affect the quality of the waters of the State, and includes the prevention and correction of water pollution and nuisance. In their entirety, RWQCB statutes under the Porter-Cologne Water Quality Control Act include regulation of stormwater runoff associated with construction projects and other activities that could discharge soil, pollutants, or other materials into waters of the State. The RWQCB also issues water quality certifications under the CWA Section 401, as described in greater detail in Section 5.16, Hydrology and Water Quality.

The RWQCB’s Basin Plan (RWQCB, 2010) is applicable to the project area. The Basin Plan designates beneficial uses for specific surface water and groundwater resources, establishes water quality objectives to protect those uses, and sets forth policies to guide the implementation of programs to attain the objectives. While the Basin Plan does not specify beneficial uses for Colma Creek, San Bruno Creek, or Green Hills Creek, existing beneficial uses for San Francisco Bay (to which these creeks ultimately discharge) include industrial service supply, commercial fishing, shellfish harvesting, estuarine habitat, fish migration, navigation, rare and endangered species preservation, wildlife habitat, and limited water contact recreation. Fish spawning is identified as a potential beneficial use.

### **5.14.2.3 Local**

This section focuses on local tree protection ordinances for the cities in which the project is located, because they are the only local ordinances pertinent to the protection of biological resources that were identified in the study area.

#### ***San Mateo County Tree Ordinances***

San Mateo County provides for the protection of trees in the Significant Tree Ordinance (Section 12,000; Part Three of Division VIII of the San Mateo County Ordinance Code) (San Mateo County, 1990) and the Regulation of the Removal and Trimming of Heritage Trees on Public and Private Property Ordinance (referred to herein as the Heritage Tree Ordinance) (San Mateo County, 1977). The Significant Tree Ordinance requires a permit for the removal from private property of any tree that has a circumference of 38 inches or larger (which is equivalent to 12 inches diameter at breast height).

The Heritage Tree Ordinance protects any tree or grove of trees so designated by the County Board of Supervisors, as well as any of the tree species and sizes listed in Table 5.14-3 on the following page (San Mateo County, 1977). The ordinance regulates activities that could impact heritage trees, and provides guidelines for compensating for lost heritage trees when avoidance is not feasible. Replacement plantings with acceptable tree species may be required.

#### ***Town of Colma Tree Cutting and Removal Ordinance***

Chapter 5 of the Town of Colma Municipal Code specifies the requirements for tree removal (Town of Colma, 2010). Tree removal or activities that would significantly damage trees on private property require a tree removal permit from the town, with certain exceptions. Trees are defined as any live woody plant having a single perennial stem of 12 inches or more in diameter, or multi-

**Table 5.14-3  
Trees Protected by San Mateo County Heritage Tree Ordinance**

Scientific Name	Common Name	Diameter at Breast Height Requirements (inches)
<i>Arbutus menziesii</i>	Madrone	>48 <sup>1</sup>
<i>Chrysolepis chrysolphylla</i>	Golden chinquapin	>20
<i>Cupressus abramsiana</i>	Monterey Cypress	All
<i>Fraxinus latifolia</i>	Oregon Ash	>12
<i>Lithocarpus densiflorus</i>	Tan oak	>48
<i>Quercus agrifolia</i>	Coast live oak	>48
<i>Q. chrysolepis</i>	Canyon live oak	>40
<i>Q. garryana</i>	Oregon white oak	All
<i>Q. kelloggii</i>	Black oak	>32
<i>Q. wislizenii</i>	Interior live oak	>40
<i>Q. lobata</i>	Valley oak	>48
<i>Q. douglasii</i>	Blue oak	>30
<i>Umbellularia californica</i>	California bay or laurel	>48 <sup>1</sup>
<i>Torreya californica</i>	California nutmeg	>39
<i>Sequoia sempervirens</i>	Redwood	>72
Source: San Mateo County, 1977.		
Notes:		
<sup>1</sup> Single stems or multiple stems touching each other 4.5 feet above the ground and have a diameter greater than 48 inches; or clumps visibly connected above ground with a basal area greater than 20 square feet measured 4.5 feet above average ground level.		

stemmed perennial plant having an aggregate diameter of 40 inches or more, as measured 4 feet above the natural grade. The requirements also apply to any woody plant that has been planted by the Town, or planted as required by permit of the Town, even if it is smaller in size than specified above. Tree removal permits may include conditions, including a requirement for the replacement of each tree removed with a 15-gallon size tree or shrub (1:1 replacement).

### ***City of South San Francisco Tree Preservation Ordinance***

The City of South San Francisco Street Tree Preservation Ordinance, Chapter 13.28 (City of South San Francisco, 2000), protects trees on city property. Street trees are defined as trees in a public area along a city street (Ord. 967§ (part) 1984; Ord. 815§ 2 1980), and public area is defined as the city ROW between the curb or edge of pavement and the property line along a city street. The

planting, trimming, or removal of any official street tree in any public area along a city street requires a permit from the deputy city manager/city engineer, technical and maintenance services.

Under the City of South San Francisco Tree Preservation Ordinance, Chapter 13.30 (City of South San Francisco, 2000) no “protected tree” shall be removed or pruned without a permit. Protected trees include:

- Any tree with a circumference of 48 inches or more when measured 54 inches above natural grade; or
- A tree or stand of trees so designated based upon findings that it is unique and of importance to the public due to its unusual appearance, location, or historical significance; or
- A stand of trees whereby each tree is dependent upon the others for survival.

For the purposes of the ordinance, “pruning” means the removal of more than one-third of the crown or existing foliage of the tree, or more than one-third of the root system. Replacement of protected trees may be required as a condition of a permit, but no replacement ratio is designated in the tree ordinance.

### ***City of San Bruno Tree Ordinance***

Chapters 8.24 and 8.25 of the City of San Bruno Municipal Code address tree removal (City of San Bruno, 2002); Chapter 8.24 addresses the planting and removal of street trees, and required permits for each; and Chapter 8.25 addresses heritage trees. A tree removal permit is required for removal of trees or pruning of heritage trees on private or public land. Heritage trees are defined as:

- Any native bay (*Umbellularia californica*), buckeye (*Aesculus* species), oak (*Quercus* species), redwood, or pine tree that has a diameter of 6 inches or more measured at 54 inches above natural grade;
- Any tree or stand of trees designated by resolution of the City Council to be of special historical value or of significant community benefit;
- A stand of trees, the nature of which makes each dependent on the others for survival; or
- Any other tree with a trunk diameter of 10 inches or more, measured at 54 inches above natural grade.

Exemptions from the permit requirements are allowed under certain conditions, including for tree removal or pruning by or for the City on City-owned open space or park parcels, or when such activities are undertaken for fire safety. Public utilities are also exempted, and may remove trees that interfere with the safe and efficient operation of the public service for which they are responsible.

Tree replacement recommendations are at the discretion of the City of San Bruno’s Parks Services Manager, and are formulated on the basis of location, condition, value, age, and reasons for tree removal. For each heritage tree removed, two 24-inch box size trees, or one 36-inch box size tree is required to be planted as replacement. If the Parks Services Manager decides that replacement is not feasible, he or she may require payment based on the purchase price and installation costs of trees that would be replaced.

### *City of Millbrae Tree Protection*

The City of Millbrae Tree Protection and Urban Forestry Program (Millbrae Municipal Code, Chapter 8.60) addresses the planting, removal, and altering of street trees in the city (City of Millbrae, 2011). Street trees are defined as any woody perennial plant located in any street, including a parking strip, having a single main axis or stem, commonly achieving a minimum of 10 feet in height, and capable of shaping and pruning to develop a branch-free trunk at least 9 feet in height. Certain provisions apply to public utility companies subject to the California Public Utilities Commission. The City encourages the development of master tree plans for the planting of street trees, and to ensure a consistent and adequate program for the preservation and proper maintenance of the present street tree population. For each street tree removed, one 24-inch box size tree is required to be planted as a replacement.

## 5.14.3 Impacts and Mitigation Measures

### 5.14.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to biological resources, but generally considers that implementation of the proposed project would have a significant impact on biological resources if it would:

- 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 CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA and as protected under the Porter-Cologne Water Quality Control Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;<sup>6</sup>
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state HCP.

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<sup>6</sup> A wildlife nursery site is an area containing essential habitat features and is used by wildlife over generations for rearing young.

### 5.14.3.2 Approach to Analysis

Due to the nature of the PPSU project, there would be no project impacts related to the following significance criteria. Therefore, an impact discussion is not provided for the topics described below:

PPSU project operations would have no impacts related to the following significance criteria:

- **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 CDFW or USFWS.** Both plant and wildlife species are considered under this significance criterion. With respect to plant species, no special-status plant species are known to occur within or adjacent to the project sites, and therefore, implementation of the PPSU project would not have a substantial adverse effect on any special-status plant species either directly or through habitat modifications. Therefore, this criterion, as it relates to plant species, is not applicable to the proposed project and is not discussed further.

With respect to wildlife species, project operations activities would not result in substantial adverse effects on special-status wildlife. As described in Chapter 3, Project Description, project operations and maintenance activities would be similar to existing operations and maintenance activities and would entail pipe inspections, discharge of water from the pipelines as required for inspections or other SFPUC projects, and management of vegetation within the SFPUC ROW. As described in the SFPUC ROW Integrated Vegetation Management Policy: “all vegetation removal work and consultation on vegetation retention will be reviewed and supervised by a SFPUC-qualified professional on a case-by-case basis” (SFPUC, 2007). Therefore, this criterion is not applicable as it relates to project operations activities and is not analyzed further. However, this significance criterion is applicable to project construction activities as it relates to special-status wildlife species and is analyzed below under Impact BI-1.

- **Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.** During project operations, maintenance activities would be similar to practices implemented by the SFPUC along their ROW at the project sites. As described above, operations would be consistent with SFPUC ROW Integrated Vegetation Management Policy (SFPUC, 2007). No substantial adverse effects on riparian habitat or other sensitive natural communities would occur during operations, and therefore this significance criterion is only analyzed as it relates to project construction under Impact BI-2 below.
- **Have a substantial adverse effect on federally protected wetlands.** Project operations would be consistent with current SFPUC operations and maintenance activities and would not have a substantial adverse effect on federally protected wetlands. Therefore this significance criterion is only analyzed as it relates to project construction under Impact BI-3 below.
- **Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.** Project operations after construction would be consistent with current operational practices implemented along the SFPUC ROW in the



project sites. Because the planting of trees is limited by the SFPUC's ROW Integrated Vegetation Management Policy, tree removal during operations would not be likely to be required, and there would be no conflicts with local tree ordinances. Therefore, this significance criterion is not applicable as it relates to project operations, and it is only analyzed as it relates to project construction under Impact BI-4 below.

Both PPSU project construction and operations would have no impacts related to the following significance criteria:

- **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.** The proposed PPSU project sites do not provide migratory wildlife corridors, nor would the project impede the use of native wildlife nursery sites. Therefore, this criterion is not applicable to the proposed project and is not analyzed further.
- **Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other adopted local, regional, or state Habitat Conservation Plan.** There are no adopted habitat conservation plans, natural community conservation plans, or other approved plans that apply to the PPSU project sites. Therefore, this criterion is not applicable to the proposed project and is not analyzed further.

For this Environmental Impact Report, the definition of the word "substantial" as used in the significance criteria above has three principal components:

- Magnitude and duration of the impact (e.g., temporary/permanent);
- Uniqueness of the affected resource (rarity); and
- Susceptibility of the affected resource to disturbance.

The evaluation of significance also considers the interrelationships among these three components. For example, a relatively small-magnitude impact on a federally endangered species (e.g., California red-legged frog egg destruction) would be considered significant because the species is rare and believed to be very susceptible to disturbance. Conversely, a natural community such as California nonnative grassland is not necessarily rare or sensitive to disturbance, and thus a much larger magnitude of impact would be required to result in a significant impact. The susceptibility of the affected resource to disturbance is based on the vulnerability of the resource to low-level impacts.

Impacts on biological resources are evaluated based on the likelihood that special-status species, sensitive habitats, wildlife corridors, and protected trees are present within the project area (as described in Section 5.14.1, Setting, and summarized in Table 5.14-4) considered in conjunction with the likely effects that construction and operations activities might have on these resources. Special-status resources that have no potential or are unlikely to occur in the project area are not considered in the impact analysis.

Due to the nature of the proposed project, which entails replacement of underground portions of an existing pipeline and restoration of the sites generally to pre-construction conditions, there are no operational impacts associated with the project.

**Table 5.14-4  
Summary of Biological Resources within the Project Area**

Site	Special-Status Plants Species	Special-Status Wildlife Species <sup>1</sup>	Vegetation Community <sup>2</sup>	Sensitive Habitat <sup>2</sup>	Wildlife Corridor, Migratory Habitat, or Wildlife Nursery	Jurisdictional Waters
Colma	–	–	Ruderal	–	–	U.S./State
South San Francisco	–	CRLF; SFDW	Scrub; Ruderal; Urban	Scrub	–	U.S./State
San Bruno North	–	–	Urban	–	–	–
San Bruno South	–	–	Ruderal; Urban	–	–	State
Millbrae	–	MBB; MOB; PB; WRB; WTK; SFDW	Grassland; Eucalyptus; Oak; Ruderal; Urban	Oak	–	U.S./State
Common Staging Area	–	–	Ruderal	–	–	–

Source: PPSU project analysis, BioMaAS and URS.

Notes:

– = Not present

<sup>1</sup> Special-Status Wildlife Species are: CRLF=California red-legged frog; SFDW = San Francisco dusky-footed woodrat; MBB = Mission blue butterfly; MOB = monarch butterfly; PB = pallid bat; WRB = western red bat; WTK = white-tailed kite

<sup>2</sup> Vegetation communities are: Grassland = Annual Grassland; Scrub = Central Coast Riparian Scrub; Oak = Coast Live Oak Woodland; Eucalyptus = Eucalyptus Grove; Ruderal = Ruderal Vegetation; Urban = Urban Landscape

Source:

Information for the common staging area interpreted from Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration Case No. 2006.1314E (SF Planning, 2008).

### 5.14.3.3 Impact Summary

The proposed project's impacts on biological resources and the resulting significance determinations are summarized in Table 5.14-5.

**Table 5.14-5  
Summary of Impacts – Biological Resources**

Impacts	Significance Determination					
	Colma	South San Francisco	San Bruno North	San Bruno South	Millbrae	Common Staging Area
<b>Impact BI-1:</b> Construction of the proposed project could have a substantial adverse effect through habitat modification on special-status wildlife species.	LSM	LSM	LSM	LSM	LSM	LSM
<b>Impact BI-2:</b> Construction of the proposed project could have a substantial adverse effect on coast live oak woodland, central coast riparian scrub habitat, or other sensitive natural community.	NI	LSM	NI	NI	LS	NI
<b>Impact BI-3:</b> Construction of the proposed project could have a substantial adverse effect on jurisdictional waters.	LSM	LSM	NI	LSM	LSM	NI
<b>Impact BI-4:</b> Construction of the proposed project could be inconsistent with local policies or ordinances protecting biological resources, including trees.	NI	LSM	LSM	NI	NI	NI
<b>Impact C-BI:</b> Implementation of the project could result in a cumulatively considerable contribution to cumulative impacts on biological resources during project construction.	LSM	LSM	LSM	LSM	LSM	LSM
Notes: NI = No Impact LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant impact with Mitigation						

#### **5.14.3.4 Construction Impacts and Mitigation Measures**

*Impact BI-1: Construction of the proposed project could have a substantial adverse effect through habitat modification on special-status wildlife species. (Less than Significant with Mitigation)*

##### **Tree Removal (All Sites)**

Tree removal would be required to allow access to the underground water transmission pipelines. A few trees may be removed at each project site. More extensive tree removal would be required at the South San Francisco and Millbrae sites. At the South San Francisco site, removal of approximately 20 willows located within the SFPUC's ROW would be required. The willows are part of the riparian corridor associated with a small section of a drainage adjacent to the site. The removal of trees within the riparian corridor would result in a reduction of riparian canopy, which could decrease food, shelter, and breeding habitat for wildlife species, as described further in Impact BI-2.

Construction at the Millbrae site includes the removal of a grove of approximately 300 trees, dominated by eucalyptus, as well as a portion of coast live oak woodland just east of the eucalyptus grove. Removal of the trees and understory vegetation in the grove would result in a decrease of food, shelter, and breeding habitat for wildlife species. In addition, a few trees may be required to be removed to allow equipment access along the trail from Lomita Avenue, which could serve as an access route to the project site.

Removal of trees and vegetation at any of the project sites could result in nest failure of raptors and migratory bird species by inadvertent destruction or disruption of nests bearing eggs or young. The removal of trees could also impact bats that may use hollowed trees for maternity roosting sites. Additionally, the removal of eucalyptus trees could destroy potential wintering habitat for the monarch butterfly. These potential impacts are described further under the respective species headings below (in Impact BI-1). Tree removal could also conflict with tree protection ordinances, as described under Impact BI-4, below.

##### **Nonnative Plants (All Sites and Commons Staging Area)**

Earth-moving equipment (excavators, backhoes, etc.) typically collect mud and dirt during construction activities. Seeds are contained in the dirt, and if the equipment is not thoroughly washed before it leaves the site, the seeds are transported to the next project site, where they flake off or are washed off from rain or wet conditions. This is a common problem, and causes the spread of invasive, nonnative plants that readily colonize soils, such as yellow star-thistle, purple star-thistle, Italian thistle, bull thistle, and stinkwort. Soil disturbance (including clearing, grubbing, and grading) destabilizes and exposes soil, and increases the risk of the establishment of invasive plants. Such plants may be transported to the site, present in the seed bank, or both, and require less soil nutrients and water to establish than native plant species. Invasive plant seeds already present in the seed bank of soil at the sites (Cal-IPC, 2012). Invasive, nonnative plant species suppress growth and regeneration of native plant species, which are a primary food source for many wildlife species. Invasive, nonnative plants also compete with native plants for resources such as water, space, and nutrients. Native and special-status plant species are easily out-competed by the more vigorous invasive, nonnative species.

The California Invasive Plant Council (Cal-IPC) provides an Invasive Plant Inventory on their website (Cal-IPC, 2006). The CalWeedMapper website provides maps and lists of invasive plants for each county in California. Cal-IPC assigns a rating of high for plants that have severe ecological impacts; moderate for plants that have substantial and adverse impacts; and limited for plants that have minor ecological impacts. The San Francisco Bay RWQCB also maintains a list of invasive species and uses the Cal-IPC ranking system to describe how invasive each species on the list is. The list is entitled "Invasive Non-Native Species to Avoid in Wetland Projects in the San Francisco Bay Region" (RWQCB, 2006). Although nonnative species occur at all of the project sites and the common staging area, precautionary measures should be taken to prevent the spread and growth of additional invasive species. Some special-status wildlife species rely entirely on native plants for breeding; for example, the Mission blue butterfly and other butterfly species only lay eggs on certain species of lupine. The further eradication of native plant species by infestations of nonnatives, either introduced to the site by contaminated construction equipment or through the disturbance of existing seed beds, could harm special-status wildlife species. The introduction of invasive species could prevent the growth of native host plants required by special-status species, which would be a significant impact.

#### **Mission Blue Butterfly (Millbrae Site)**

At the Millbrae site, project construction activities would occur in areas that could provide breeding habitat for the Mission blue butterfly. The construction staging area spoils area north of the construction zone, adjacent to residences and the City of Millbrae open space area could serve as breeding habitat, although it is unlikely that the Mission blue butterfly would occur on the site. The removal of vegetation from the annual grasslands could remove the larval host plants and destroy larvae of the Mission blue butterfly. In addition, introduction of invasive species that prevent the regeneration of the larval host plant, as described above, could result in loss of breeding habitat. Temporary loss of habitat during project construction and possible direct mortality of Mission blue butterfly would be a significant impact.

#### **Monarch Butterfly (Millbrae Site)**

Additionally, at the Millbrae site, project construction activities would occur in areas that provide wintering habitat for the monarch butterfly. Although no monarch butterflies were observed in the eucalyptus grove within the SFPUC ROW at the Millbrae site during December 2010 surveys and there are no CNDDDB records for the area, the removal of eucalyptus trees could destroy potential wintering habitat for the monarch butterfly. Loss of wintering habitat for monarch butterfly would be permanent; however, because no monarch butterflies were observed during surveys and much of the eucalyptus grove adjacent to the project site would remain, this impact would be less than significant. Therefore, potential impacts on Monarch butterfly during project construction activities would be less than significant.

#### **California Red-Legged Frog (South San Francisco Site)**

At the South San Francisco site, project construction activities would occur in an area that is a potential dispersal habitat for California red-legged frog; therefore, site clearing and preparation for construction activities could temporarily disturb habitat for this species. The movement of construction vehicles across the project area could cause direct mortality of individuals by crushing them. Trenches and excavations, if left open during the night, could trap and injure

California red-legged frogs that are moving through the construction area. Construction activities could also impede the dispersal movement of juveniles or the movement of adults between breeding ponds and upland refugia. Noise, vibration, the presence of human activities, and degradation of water quality during construction could affect habitat and cause injury or mortality to the California red-legged frog. The potential for direct mortality of California red-legged frog in this area would be a significant impact.

#### **San Francisco Dusky-Footed Woodrat (South San Francisco and Millbrae Sites)**

At the South San Francisco and Millbrae sites construction activities would occur in woodland and riparian habitat that potentially provide breeding habitat for the San Francisco dusky-footed woodrat. Impacts to San Francisco dusky-footed woodrat through direct removal of habitat could cause temporary disruption of breeding habitat due to construction noise and activities. The potential for direct mortality of San Francisco dusky-footed woodrat in these areas would be a significant impact.

#### **Nesting Birds, Raptors, and Bats (All Sites)**

Construction activities could remove the nesting and foraging habitat of special-status birds and other wildlife that depend on grassland, woodland, eucalyptus grove, and riparian habitat through direct removal of habitat, or could result in disruption of breeding and foraging habitat due to construction noise and activities. Project construction could result in the removal of large mature trees in developed and ruderal areas that provide important nesting habitat for nesting birds, raptors, and bats. Potentially affected bird and raptor species include nesting white-tailed kite. Potentially affected bat species include western red bat and pallid bat. These species are sensitive to human activity and noise from construction activity within 500 feet of an active nest or maternity site (for bats) could disrupt breeding of these species.

Mature trees are located within the PPSU sites. Trees that are located above or adjacent to the pipelines would be removed to allow access to the pipelines and for consistency with the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007), which limits the location and types of vegetation within the ROW, particularly trees. The PPSU project would require more extensive tree removal at the South San Francisco and Millbrae sites as a dense stand of trees is established above the ROW along portions of each project site. The potential for temporary and permanent habitat loss and disruption of breeding and foraging habitat in these areas would be a significant impact.

#### ***Impact Conclusion***

Construction of the proposed project could result in significant impacts associated with the temporary loss of habitat for Mission blue butterfly and temporary loss of potential California red-legged frog dispersal habitat; and loss of breeding habitat for San Francisco dusky-footed woodrat, birds, raptors, and bats, as described above.

**Mitigation Measures M-BI-1a through M-BI-1h**, described below, would address impacts on special-status wildlife that have potential to occur on the project sites, as well as impacts related to loss and disruption of breeding and foraging habitat for nesting birds, raptors, and bats by: requiring general protection measures; a worker training and awareness program; biological

monitoring for certain species; exclusion fencing to keep certain species outside of the work areas; implementation of protocols if individuals are found in the project area during construction; and revegetation and site restoration, including measures to prevent the spread and introduction of harmful invasive plant species that could prevent the growth of native plant species necessary for the survival of some special-status species.

In addition, **Mitigation Measure M-HY-1: Preparation and Implementation of a SWPPP** (see Section 5.16, Hydrology and Water Quality) would reduce significant impacts to wildlife species from sediment-laden water, which can be lethal to aquatic species such as the California red-legged frog. Sediment suspended in water can clog the gills of amphibians and fish, causing them to suffocate. Proper best management practices (BMPs) (i.e., silt fence, straw wattles) would protect aquatic environments by preventing construction spoils from entering ditches and drainages and increasing turbidity. The preparation and implementation of a stormwater pollution prevention plan (SWPPP) to avoid construction-related water quality impacts would provide protection for aquatic-dependent special-status species.

Therefore, with implementation of **Mitigation Measures M-BI-1a through M-BI-1h**, and **M-HY-1**, impacts to special-status wildlife species during construction would be reduced to a *less-than-significant* level.

#### **Mitigation Measure M-BI-1a: General Protection Measures**

This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC shall ensure that the following general measures are implemented by the contractor(s) during construction to minimize or avoid impacts on biological resources:

- Construction contractor(s) shall minimize the extent of the construction disturbance as much as feasible, which shall be limited to boundaries of the project sites.
- For trees to be retained or trimmed:
  - A qualified arborist or a qualified biologist will identify trees to be retained, and exclusion fencing will be installed no closer than the drip line of these trees.
  - Prior to the start of construction, SFPUC or its contractors will install exclusion fencing at the limits of construction, outside the dripline of all trees bordering the limits.
  - All necessary tree pruning will be completed either by a certified arborist or by the contractor under the supervision of either an International Society of Arboriculture qualified arborist, American Society of Consulting Arborists consulting arborist, or a qualified horticulturist.
- Project-related vehicles shall observe a 15-mile-per-hour speed limit on unpaved roads in the work area, or as otherwise determined by the applicable regulatory agencies.
- The contractor shall provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage shall be

collected daily from the project site and placed in a closed container from which garbage shall be removed weekly.

- Construction personnel shall not feed or otherwise attract wildlife in the project area.
- No pets shall be allowed in the project area.
- No firearms shall be allowed in the project area.
- Staging areas shall be located at least 100 feet from riparian habitat, creeks, and wetlands, where feasible. If not feasible, then staging areas shall be situated outside of the dripline of riparian trees. If a 100-foot setback is not feasible due to field constraints, the project biologist will work with the contractor to determine where the silt fence erected for perimeter control should be placed, and what additional BMPs may be required to prevent construction spoils and sediment from leaving the work area. Sediment controls, such as silt fence or straw wattles, shall be erected along the perimeter of all construction and staging areas to minimize the transport of sediment from the site. If silt fence is used, the fence shall be installed so that the stakes face toward the outside of the work area.
- Exclusion fencing shall be erected along the boundaries of construction and staging areas to provide perimeter control, and to prevent construction personnel and activities from entering sensitive areas, as determined to be needed by the project biologist.
- If vehicle or equipment fueling or maintenance is necessary, it shall be performed in the designated staging area, consistent with **Mitigation Measure M-HY-1: Preparation and Implementation of a SWPPP** (see Section 5.16, Hydrology and Water Quality).

#### **Mitigation Measure M-BI-1b: Worker Training and Awareness Program**

This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC shall ensure that mandatory biological resources awareness training is provided to all construction personnel as follows:

- The training shall be developed and provided by a qualified biologist or construction compliance manager familiar with the sensitive species that may occur in the project area. If a consulting biologist prepares the training program, SFPUC staff shall approve the program prior to implementation.
- The training shall be provided before any work, including vegetation clearing and grading, occurs within the work area boundaries.
- The training shall provide education on the natural history of the special-status species potentially occurring in the project area, and discuss the required mitigation measures to avoid impacts on the special-status species and the penalties for failing to comply with biological mitigation requirements.



- The environmental awareness training program for construction personnel shall include an orientation regarding the importance of preventing the spread of invasive nonnative plants.
- If new construction personnel are added to the project, the contractor shall ensure that they receive training prior to starting work. The subsequent training of personnel can include a videotape of the initial training and/or the use of written materials rather than in-person training by a biologist.

#### **Mitigation Measure M-BI-1c: Prepare and Implement a Vegetation Restoration Plan**

This mitigation measure applies to all project sites, but does not apply to the common staging area. The SFPUC or contractor shall prepare and implement a vegetation restoration plan with detailed specifications for minimizing the introduction of invasive weeds, and for restoring all temporarily disturbed areas. The plan shall include methods to ensure that the contractor successfully implements the vegetation restoration plan after the project is completed, so that proposed success criteria can be achieved subsequent to construction.

- The plan shall be developed by a qualified restoration ecologist familiar with the ecological requirements of special-status species. Willows removed from the South San Francisco site, north of Westborough Boulevard, shall be replaced with vegetation that would provide shelter for California red-legged frog, as specified in the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007).
- The plan shall be developed with the intent to replace (to the extent possible) the function and values of trees removed during the construction project with plants that are acceptable for planting within the SFPUC ROW.
- The plan shall indicate the best time of year for seeding to occur and will be consistent with the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007). The restoration plan shall specify measures to remove and/or control weeds in the project area. For grassland and ruderal areas, the affected areas shall be reseeded with a native or noninvasive grass and forb seed mix.
- Replacement of ordinance-protected trees shall be completed as described in **Mitigation Measure M-BI-4: Replacement of Trees to Be Removed**. As specified therein, a qualified biologist shall conduct post-construction monitoring of the replacement trees for 5 years.
- The SFPUC or contractor shall ensure that topsoil is salvaged during construction in areas that will be disturbed by grading and earthmoving activities (including during the preparation of spoils sites), stockpiled separately from subsoils, and protected from erosion (e.g., covered or watered); that composting amendments are added, if necessary; and, if needed, that potentially compacted construction work areas are properly prepared prior to reuse of the soil in the post-construction restoration of temporarily disturbed areas. The SFPUC shall ensure that a minimum of 12 inches of topsoil is salvaged; or, if there is less than 12 inches of topsoil, as much as practicable.

- Construction equipment shall arrive at the project areas free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species. Prior to leaving the project site or moving between sites, construction equipment shall again be cleaned of soil, seed, and plant parts so as not to introduce new nonnative species to other project areas or off-project locations.
- Any soil amendments, gravel, etc., required for construction and/or restoration activities that would be placed within the upper 12 inches of the ground surface shall be free of vegetation and plant material, and certified pathogen-free. Imported fill material shall be covered with the topsoil layer to prevent any imported seed bed from growing.
- Certified, weed-free, imported erosion-control materials (or rice straw in upland areas) shall be used exclusively, as applicable (this measure concerns biological material and does not preclude the use of silt fences, etc.). Erosion-control materials shall be natural and biodegradable, such as burlap wattles, and not have plastic netting, especially in areas with the potential for California red-legged frog, to prevent wildlife entanglement.
- No invasive nonnative plant species shall be used in any restoration plantings.

**Mitigation Measure M-BI-1d: Minimize Disturbance to Nesting Birds and Raptors**

This mitigation measure applies to all project sites, as well as the common staging area. As feasible, the SFPUC shall conduct tree and shrub removal in the project areas during the nonbreeding season (generally August 15 through February 15) for migratory birds, raptors, and special-status bird species. If trees cannot be removed outside of the bird breeding season, nesting bird surveys will be conducted on all trees prior to removal.

If construction activities must occur during the bird breeding season (February 15 to August 15), the SFPUC shall retain a qualified wildlife biologist who is experienced in identifying birds and their habitat to conduct nesting-raptor surveys in and within 300 feet of the project area. Migratory passerine bird surveys shall be conducted within 50 feet of all work areas (as feasible) unless otherwise directed by CDFW. If an area is not accessible for survey, the project biologist shall make a determination if further survey is necessary, and may request assistance to enter properties that may need closer investigation. All migratory bird and active raptor nests within these areas shall be mapped. These surveys must be conducted within 2 weeks prior to initiation of construction activities at any time between February 15 and August 15. If no active nests are detected during surveys, no additional mitigation is required.

If migratory bird and/or active raptor nests are found in the project areas or in the adjacent surveyed area, the SFPUC shall establish a no-disturbance buffer around the nesting location to avoid disturbance or destruction of the nest site until after the breeding season or after a wildlife biologist determines that the young have fledged (usually late June through mid-July). The extent of these buffers would be determined by a wildlife biologist in consultation with CDFW and would depend on the species' sensitivity to disturbance (which can vary among species); the level of noise or

construction disturbance; line of sight between the nest and the disturbance; ambient levels of noise and other disturbances; and consideration of other topographical or artificial barriers. The wildlife biologist shall analyze and use these factors to assist the CDFW in making an appropriate decision on buffer distances.

#### **Mitigation Measure M-BI-1e: Preconstruction Surveys for Special-Status Bats and Avoidance and Minimization Measures**

This mitigation measure applies to the Millbrae site. Not more than 1 week prior to tree removal in the project areas, 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. Bats may be present any time of the year. The biologist shall thoroughly search the tree or snag that provides appropriate habitat (trees with foliage or cavities or that are hollow) for the presence of roosting bats or evidence of bats. If bats are found or evidence of use by bats is present, the following procedures shall be implemented before felling the tree:

1. Trees shall be removed under the warmest possible conditions. Peel any sections of the exfoliated bark off the tree gently and search for any roosting bats underneath. Create noise and vibrations on the tree itself. Noise and vibrations may include running a chain saw and making shallow cuts in the trunk (where bark has been), and striking the tree base with fallen limbs or tools such as hammers. 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, be especially careful to check for the presence of bats in those areas. Cut slowly and carefully at all times. If possible, section trunk near cavities to focus noise and vibrations, and open hollows by sectioning off a side.
2. The SFPUC will ensure that trees are not removed or altered until CDFW has been contacted for guidance on measures to avoid and minimize disturbance of the bats. Additional measures may include monitoring trees, excluding bats from a tree until it is removed and/or restricting the timing of tree removal, and use of 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-1f: Mitigation for the Mission Blue Butterfly**

This mitigation measure applies to the Millbrae site. At the Millbrae site, not more than 2 weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, the 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.

If it is infeasible to avoid host plants of the Mission blue butterfly, SFPUC shall restore the site to pre-construction conditions as specified in the Vegetation Restoration Plan.

### **Mitigation Measure M-BI-1g: Mitigation for San Francisco Dusky-Footed Woodrat Middens**

This mitigation measure applies to the South San Francisco and Millbrae sites. Not more than 2 weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, the qualified biologist shall survey the areas to be disturbed within the Central Coast riparian scrub (South San Francisco site) and eucalyptus grove and coast live oak woodland (Millbrae site) for San Francisco dusky-footed woodrat and their nests.

If no middens are found within such areas, no further action is required.

If middens are found and can be avoided, the biologist shall direct the contractor in placing orange barrier fencing between the proposed construction clearing and the midden, allowing as much room as possible to avoid indirect disturbance to the midden, but no less than 2 feet from and along the construction side of the middens to protect them from construction activities.

If avoidance is not feasible and the minimum fencing distance cannot be achieved, a qualified biologist shall disassemble middens or, if adjacent habitat is not suitable, trap and relocate woodrats out of the construction area (using live-traps) prior to the start of construction. In addition, the biologists shall attempt to relocate the disassembled midden to the same area where the woodrats are released. If young are present during disassembling, discontinue disassembling and inspect every 48 hours until young have relocated. The midden may not be fully disassembled until the young have left.

### **Mitigation Measure M-BI-1h: Mitigation for the California Red-Legged Frog**

This mitigation measure applies to the South San Francisco site. Not more than 2 weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, the qualified biologist shall survey the South San Francisco site project area for California red-legged frog, and potential refuge or burrow/estivation sites. As feasible, potential burrow/estivation areas identified within the project boundaries shall be temporarily fenced and avoided. At locations where potential refuge/estivation burrows are identified and cannot be avoided, burrows shall be excavated by hand or by other means by a qualified biologist, approved by the CDFW and USFWS, prior to construction. If a burrow is occupied, the individual animal shall be moved to suitable habitat within 0.25 mile of the project area, or other location as agreed by the appropriate agencies, where a natural burrow or artificial burrow will be constructed of PVC pipe. Even if California red-legged frog species are not found at the site, temporary exclusion fencing shall be installed as described below to prevent movement of the species.

At the beginning of each work day at the South San Francisco site during initial ground disturbance, including grading, excavation, and vegetation removal activities, a qualified biological monitor shall conduct on site monitoring for California red-legged frog in the area where ground disturbance shall occur, as follows:

- The South San Francisco site shall be surveyed within a week prior to any ground disturbing or vegetation removal activities.
- Prior to the start of construction at the South San Francisco site, the contractor, in coordination with a qualified biologist, shall install wildlife exclusion fencing to prevent species such as California red-legged frog from moving through the project site. If a silt fence is used as an exclusion fence, it shall be installed with the stakes on the inside of the work area (facing construction) so that wildlife cannot climb up the stakes to enter the construction zone. The SFPUC shall ensure that the temporary fencing is continuously maintained until all construction activities are completed, and that construction equipment is confined to the designated work areas. The fencing shall be made of suitable material that does not allow the species to pass through, and the bottom shall be buried to a depth of 6 inches (or to a sufficient depth specified by the applicable resource agencies) so that these species cannot crawl under the fence. The fencing shall have one-way escape funnels to allow for species to leave the site.
- Perimeter fences shall be inspected weekly to ensure they do not have any tears or holes, that the bottoms of the fences are still buried, and that no individuals have been trapped in the fences.
- Any California red-legged frogs found along and inside the fence shall be closely monitored until they move away from the construction area, or a qualified biologist may be brought in to relocate the frog as described above.
- All open trenches or holes and areas under parked vehicles shall be checked daily for the presence of California red-legged frogs.
- All excavated or deep-walled holes or trenches greater than 2 feet shall be covered at the end of each workday using plywood or similar materials, or escape ramps shall be constructed of earth fill or wooden planks. Before such holes are filled, they shall be thoroughly inspected for trapped animals.
- In cases where excavations require dewatering, the intakes shall be screened with a maximum mesh size of 5 millimeters.
- Project personnel shall be required to immediately report any harm, injury, or mortality of a special-status species during construction (including entrapment) to the construction foreman or biological monitor, and the construction foreman or biological monitor shall immediately notify the SFPUC. The SFPUC shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and/or to the local CDFW warden or biologist (as applicable) within one working day of the incident. The SFPUC shall follow up with written notification to USFWS and/or CDFW (as applicable) within five working days of the incident. All observations of federally- and state-listed species shall be recorded on CNDDDB field sheets and sent to the CDFW by the SFPUC or representative biological monitor.
- Willows removed from the South San Francisco site, north of Westborough Boulevard, shall be replaced with vegetation that would provide shelter for

California red-legged frog, as specified in the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007). Replacement plantings will be included in the Vegetation Restoration Plan.

***Impact BI-2: Construction of the proposed project could have a substantial adverse effect on coast live oak woodland, central coast riparian scrub habitat, or other sensitive natural community. (Less than Significant with Mitigation)***

### **Coast Live Oak Woodland**

The only coast live oak woodlands within the PPSU study area are located at the Millbrae site. These coast live oak woodlands are protected under the Oak Woodlands Conservation Act because the canopy cover is composed of greater than 10 percent oak (CRA, 2001).

The approximately 2.83 acres of coast live oak woodlands within the study area comprise a small portion of the oak woodlands that are the primary vegetation community within the approximately 16.3-acre City of Millbrae open space area.

Within the PPSU study area, the majority of the oak woodlands, approximately 2.47 acres, are located along the trail from Lomita Avenue that extends through the City of Millbrae open space area (Figure 5.14-5). A few trees may be required to be removed and/or trimmed to allow access for equipment along the trail. Otherwise, oaks along the trail will not be affected by the project. The remainder of oak woodlands within the study area, approximately 0.36 acre, are located within the pipeline construction zone where the live oak woodland abuts and somewhat intergrades with the adjacent eucalyptus grove. The trees within the ROW would be required to be removed.

The oaks within the SFPUC ROW are located at the periphery of the woodlands, and would likely have diminished habitat value due to their immediate adjacency to the golf course fairway, which is routinely maintained. The removal of the 0.36-acre area conservatively represents approximately 2 percent of the oak woodland-dominated area within the contiguous City of Millbrae open space area, because the 0.36-acre area classified as oak woodlands in the ROW includes several nonnative tree species interspersed with the oaks. Given the scale of the impacted area, the removal of coast live oak woodlands within the project site would not result in a substantial loss or conversion of oak woodlands that would have a significant effect on the environment (CEQA public resources code §21083.4).

Therefore, the impact on coast live oak woodland habitat would be less than significant. Coast live oak woodland does not occur at the Colma, South San Francisco, San Bruno North, or San Bruno South sites, or at the common staging area, and therefore there would be no impact to oak woodlands at these sites.

### **Central Coast Riparian Scrub Habitat**

Aside from protected coast live oak woodland at the Millbrae site as described above, the only other sensitive natural community identified with the project area is Central Coast riparian scrub, located at the South San Francisco site. Therefore, no impact to sensitive communities would occur at the Colma, San Bruno North, or San Bruno South sites, or at the common staging area.

The Central Coast riparian scrub at the South San Francisco site is a sensitive habitat because of its jurisdictional designation as riparian habitat under CDFW Codes §1600 through §1602. The willow canopy is continuous outside of the study area to the west, where a small natural drainage provides a riparian context to the willow stand. Although the drainage associated with this habitat is beyond the project site, it has a distinct bed, bank, and channel, and CDFW may take jurisdiction over the riparian vegetation surrounding it. CDFW requires notification about any activity that could adversely affect an existing fish or wildlife resource (CDFW Code 1602, 4Ai). Project construction would remove approximately 0.17 acre of riparian scrub vegetation, as described above under Impact BI-1. Because the growth of the scrub above the pipelines is not consistent with the SFPUC ROW Integrated Vegetation Management Policy, the trees would not be replanted after construction is completed, resulting in a significant impact to riparian habitat.

### ***Impact Conclusion***

The less-than-significant impact on coast live oak woodlands at the Millbrae site would be further reduced by implementation of **Mitigation Measure M-BI-1a: General Protection Measures**, which would require the installation of exclusion fencing along the PPSU project work area boundaries adjacent to the oak woodlands to prevent construction personnel from damaging oak vegetation outside of the work area.

The removal of mature and emergent Central Coast riparian scrub along with native and nonnative vegetation located along the SFPUC ROW would be a significant impact on riparian habitat. The mature willows provide essential habitat for many species of birds and mammals including special-status species that depend on them for breeding, cover, and foraging. Removal of this vegetation would temporarily decrease the availability of food and shelter for wildlife. **Mitigation Measures M-BI-2a: Minimize Disturbance to Riparian Habitat** and **M-BI-2b: Supplemental Measures for the Vegetation Restoration Plan** (identified below), along with **Mitigation Measures M-BI-1a: General Protection Measures**, **M-BI-1b: Worker Training and Awareness Program**, and **M-BI-1c: Prepare and Implement a Vegetation Restoration Plan** (which are described above under Impact BI-1), would protect sensitive habitats and mature native trees by minimizing the overall area of construction disturbance and avoiding sensitive habitats, implementing a worker training and awareness program, and establishing protocols and performance standards for revegetation and restoration of disturbed areas. Therefore, impacts to riparian habitat or other sensitive natural communities would be *less than significant with mitigation*.

#### **Mitigation Measure M-BI-2a: Minimize Disturbance to Riparian Habitat**

This mitigation measure applies to the South San Francisco site. To minimize impacts to Central Coast riparian scrub and water quality in the drainage situated adjacent to the northwest end of the work area, a silt fence shall be placed along the work area boundaries adjacent to the drainage. This would prevent construction personnel from damaging riparian vegetation outside of the work area, and prevent sediment and debris from entering the drainage.

### **Mitigation Measure M-BI-2b: Supplemental Measures for the Vegetation Restoration Plan**

This mitigation measure applies to the South San Francisco site. The following activities shall be completed for the Vegetation Restoration Plan at the site:

- To facilitate preparation of the plan, the SFPUC shall ensure that prior to construction a qualified botanist (i.e., one experienced in identifying plant species in the project area) performs additional preconstruction surveys of the areas to collect more detailed vegetation composition data, including species occurrence, vegetation characterization (tree diameter size, etc.), and percent cover of plant species. Photo documentation shall be used to show pre-project conditions.
- If required, the SFPUC shall provide the vegetation restoration plan to the CDFW and RWQCB during the permitting process, as any vegetation to be removed may provide habitat for special-status species and may also be within areas under the jurisdiction of the Corps and the RWQCB.
- Although trees cannot be replanted within the SFPUC ROW, native plant species allowed for planting as described in the Right of Way Integrated Vegetation Management Policy (SFPUC, 2007) should be selected and planted in appropriate locations. Enhancement of the riparian corridor outside of the ROW may be incorporated into the Vegetation Restoration Plan (see Impact BI-1, above, for description).
- To ensure success, vegetation planted as part of the vegetation restoration plan will be monitored for 1 year following installation. In addition, monitoring shall be conducted for 5 years for any tree species planted.

### ***Impact BI-3: Construction of the proposed project could have a substantial adverse effect on jurisdictional waters. (Less than Significant with Mitigation)***

Several water conveyance features extend through the project sites; three of these features would be under U.S. and State jurisdiction. Two concrete culverts convey creeks in the project sites: an unnamed tributary of Colma Creek extends under the Colma site and a portion of Twelve Mile Creek extends under the South San Francisco site. These areas would be classified as “other waters” of the United States. In addition, a concrete v-ditch located at the Millbrae site at the eastern end of Larkspur Drive adjacent to the Green Hills Country Club would be under U.S. jurisdiction. At the Colma site, the project activities would require the demolition of a portion of the culvert and the diversion of the upstream flow around the construction area by use of a temporary pipeline and cofferdams to maintain natural flow in the culvert downstream of the construction area, potentially resulting in significant impacts to jurisdictional waters. After completion of the pipeline replacement, the SFPUC would restore the culvert and replace the segment that was removed in kind. Construction activities at the South San Francisco and Millbrae sites would not affect the existing creek culvert or v-ditch. These features would also fall under the jurisdiction of the RWQCB.



Additionally, features that would fall under the jurisdiction of the RWQCB would include several man-made ditches excavated in uplands at the Colma, San Bruno South, and Millbrae sites. Construction-related impacts on these waters of the State could occur if ditches are removed for construction activities or if erosion and sediment enters the ditches, resulting in significant impacts due to degradation of water quality from pollution and dewatering discharges. One v-ditch at the Colma site and one at the San Bruno South site would be removed for construction activities. After completion of the pipeline replacement, the SFPUC would replace the v-ditches in kind.

Construction-related impacts on jurisdictional waters could also occur adjacent to the drainage at the South San Francisco site without the proper placement and maintenance of BMPs. Impacts on riparian habitat associated with trenching adjacent to the drainage were discussed in Impact BI-2, above, and could be significant because construction-related debris, or toxins, and/or sediment-laden water could enter the water if there are no protective measures (i.e., silt fence, straw wattles).

No jurisdictional waters were identified at the San Bruno North site or the common staging area. Therefore, there would be no impacts to jurisdictional waters in these areas.

### *Impact Conclusion*

Implementation of **Mitigation Measure M-BI-3: Avoidance and Protection Measures for Jurisdictional Water Bodies**, along with **Mitigation Measures M-BI-1a: General Protection Measures** and **M-BI-1b: Worker Training and Awareness Program** (described above under Impact BI-1)—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 (if permits are required)—would address impacts on aquatic resources by requiring staging areas to be set back from riparian areas, where feasible, requiring worker training regarding the resources present and general impact avoidance, requiring temporary fencing around the construction zone, and establishing protocols and performance standards for revegetation and restoration activities for impacted riparian areas. Additionally, **Mitigation Measure M-HY-1: Preparation and Implementation of a SWPPP** (see Section 5.16, Hydrology and Water Quality), which prescribes BMPs to protect water quality in receiving water bodies during construction activities, would reduce impacts to jurisdictional waters. Therefore, impacts to federal and State protected wetlands would be *less than significant with mitigation*.

#### **Mitigation Measure M-BI-3: Avoidance and Protection Measures for Jurisdictional Water Bodies**

This mitigation measure applies to the Colma, San Bruno South, and Millbrae sites. The SFPUC and its contractors shall minimize impacts on waters of the United States and waters of the State by implementing the following measures:

- Erosion and sedimentation control measures such as a silt fence shall be installed adjacent to all water conveyance features to be avoided within 100 feet of any proposed construction activity, and signs installed indicating the required avoidance. If a 100-foot setback is not feasible due to field constraints, the project biologist or

qualified environmental inspector will work with the contractor to determine where the silt fence erected for perimeter control should be placed, and what additional erosion and sedimentation controls, such as sediment traps, may be required to prevent construction spoils and sediment from leaving the work area. No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity, shall occur until a representative of the SFPUC has inspected and approved the fencing installed around these features. The SFPUC shall ensure that the temporary fencing is continuously maintained until all construction activities are completed. No construction activities, including equipment movement, material storage, or temporary spoil stockpiling, shall be allowed within the fenced areas protecting water features.

- Exposed slopes shall be stabilized immediately upon the completion of construction activities.

***Impact BI-4: Construction of the proposed project could be inconsistent with local policies or ordinances protecting biological resources, including trees. (Less than Significant with Mitigation)***

Applicable tree ordinances and mitigation steps are listed below for each site.

#### **Colma Site**

Tree permits are required by the Town of Colma for any live woody plant having a single perennial stem of 12 inches or more in diameter, or any multi-stemmed perennial plant having an aggregate diameter of 40 inches or more as measured 4 feet above the natural grade. A 1-to-1 replacement ratio with a 15-gallon size tree or shrub is required. Tree removal would not be required at this site; therefore, there would be no impact resulting from inconsistencies with local ordinances protecting trees.

#### **South San Francisco Site**

Tree removal and pruning would be required for construction of the project at this site. The City of South San Francisco protects street trees (which are trees in a public area along a city street), as well as any tree with a circumference of 48 inches or more when measured 54 inches above natural grade, or trees or stands of trees that have been designated as protected because they are of importance to the public due to their unusual appearance, location, or historical significance. The city has not designated a replacement ratio for protected trees. No street trees will be removed from the site; however, as described above under Impact BI-1, a dense stand of willows (approximately 20 trees) would be removed, resulting in a significant impact.

A portion of the South San Francisco Site falls within unincorporated San Mateo County. However, tree removal at the project site south of Westborough Boulevard (within unincorporated San Mateo County) would not be required; therefore, there would be no impact resulting from inconsistencies with the San Mateo County local ordinances protecting trees.

### San Bruno North and South Sites

The City of San Bruno Municipal Code protects from removal or pruning any native bay, buckeye, oak, redwood or pine trees that are 6 inches or greater when measured at 54 inches above grade. All other trees with a trunk diameter of 10 inches or more measured at 54 inches above grade also are protected. For each heritage tree removed, two 24-inch box size trees, or one 36-inch box size tree is required to be planted as a replacement.

At the San Bruno North site, tree removal may be required to allow for excavation of access pits to the tunnel, and to allow for construction staging. If trees protected by the ordinance are removed, it would result in inconsistencies with the city's Municipal Code, resulting in a significant impact.

At the San Bruno South site, tree removal would not be required. Therefore, there would be no impact resulting from inconsistencies with local ordinances protecting trees at the San Bruno South site.

### Millbrae Site

As described above under Impact BI-1, approximately 300 trees, dominated by eucalyptus and interspersed with native oaks, would be removed from the SFPUC's ROW at the Millbrae site. In addition, a few trees may be required to be removed along the trail from Lomita Avenue (outside of the SFPUC ROW). Because the City of Millbrae Tree Protection and Urban Forestry Program only protects street trees, removal of these trees would not be inconsistent with local ordinances. The Millbrae Municipal Code defines street trees as any woody perennial plant located in any street, including a parking strip, having a single main axis or stem, commonly achieving a minimum of 10 feet in height, and capable of shaping and pruning to develop a branch-free trunk at least 9 feet in height. Therefore, there would be no impact resulting from inconsistencies with local ordinances protecting trees at the Millbrae site.

### Common Staging Area

The City of South San Francisco Tree Preservation Ordinance is the applicable ordinance at the common staging area. However, no tree removal would be required in the common staging area. Therefore, there would be no impact resulting from inconsistencies with local ordinances protecting trees at the common staging area.

### Impact Conclusion

Tree removal that is inconsistent with the applicable local tree preservation ordinances would be a potentially significant impact at the South San Francisco and San Bruno North sites. However, this potential impact would be reduced to less than significant by **Mitigation Measure M-BI-1a: General Protection Measures**, which would protect the root systems of trees to be retained on site by requiring appropriate fencing; and would prevent long-term damage to trees by requiring that tree trimming be completed by an arborist. In addition, **Mitigation Measure M-BI-4: Replacement of Trees to Be Removed**, described below, would fulfill the intent of local tree-preservation ordinances by requiring replanting of trees that are removed for construction of the project. Therefore, tree impacts would be reduced to *less than significant with mitigation*.

**Mitigation Measure M-BI-4: Replacement of Trees to be Removed**

This mitigation measure applies to the South San Francisco and San Bruno North sites only, where affected trees meet the parameters of the applicable ordinance outlined in the summary table below. The SFPUC will avoid and minimize impacts on ordinance-protected trees by implementing the following measures:

- A tree survey will be conducted prior to construction by a qualified arborist (defined as an International Society of Arboriculture certified arborist or consulting arborist who is a member of the America Society of Consulting Arborists) or a qualified biologist to specifically identify the protected and heritage trees within the project footprint. Protected trees and heritage trees are defined in Table 5.14-6 for the City of South San Francisco and the City of San Bruno.
- Removal of ordinance-protected trees or work within the dripline of such trees will be avoided to the extent feasible during construction. If construction must occur within the dripline of a tree, a qualified arborist will determine where the protective fencing should be placed in order to protect the tree.
- Where feasible, native trees to be removed that are located within the existing SFPUC ROW, shall be replaced according to the SFPUC’s Right of Way Integrated Vegetation Management Policy. If it is not feasible to compensate for all native tree removal in SFPUC’s ROW in the vicinity of the project, then native tree compensation shall occur at a suitable offsite location.

**Table 5.14-6  
 Summary of Applicable Tree Ordinances**

City	Protected Trees
South San Francisco	<ul style="list-style-type: none"> <li>• Any tree with a circumference of 48 inches or more when measured 54 inches above natural grade; or</li> <li>• A tree or stand of trees so designated based upon findings that it is unique and of importance to the public due to its unusual appearance, location, or historical significance; or</li> <li>• A stand of trees whereby each tree is dependent upon the others for survival.</li> </ul>
San Bruno	<ul style="list-style-type: none"> <li>• Any native bay (<i>Umbellularia californica</i>), buckeye (<i>Aesculus</i> species), oak (<i>Quercus</i> species), redwood, or pine tree that has a diameter of 6 inches or more measured at 54 inches above natural grade;</li> <li>• Any tree or stand of trees designated by resolution of the City Council to be of special historical value or of significant community benefit;</li> <li>• A stand of trees, the nature of which makes each dependent on the others for survival; or</li> <li>• Any other tree with a trunk diameter of 10 inches or more, measured at 54 inches above natural grade.</li> </ul>
Sources: City of South San Francisco, 2000; City of San Bruno, 2002.	

- For each removed landscape tree that meets ordinance criteria, the SFPUC shall plant two 24-inch box size trees or one 36-inch box size replacement tree of similar species. If replanting trees on the same site is infeasible, the SFPUC shall find a suitable alternative location.
- A qualified biologist or arborist shall conduct post-construction monitoring of replacement trees for 5 years. Any replacement trees that fail within the first 5 years shall be replaced. The survival period shall be extended, as necessary, until the planted trees have survived for a period of 5 years, and show signs that they are permanently established.

### 5.14.3.5 Operational Impacts and Mitigation Measures

As summarized in Section 5.14.3.2, due to the nature of the project, which entails replacement of underground portions of an existing pipeline and restoration of the sites to pre-construction conditions, there are *no impacts* associated with operation of the project.

### 5.14.3.6 Cumulative Impacts and Mitigation Measures

*Impact C-BI: Project construction could result in a cumulatively considerable contribution to cumulative impacts on biological resources. (Less than Significant with Mitigation)*

The geographic scope for cumulative impacts on biological resources encompasses the project sites and extends for a small area beyond the sites to the jurisdictional waters and developed or previously disturbed habitats in the project area. Because the project would be located entirely within urban areas previously disturbed by development and routine operations and maintenance activities, and because the sites do not provide wildlife movement corridors, the area of potential cumulative impact is relatively limited.

#### Adverse Effects on Special-Status Wildlife Species

Although the areas to be developed by the cumulative projects are also located in urban areas that are generally previously disturbed, there remains the potential that these projects, in combination with the PPSU project, could result in substantial adverse effects on special-status wildlife species during construction activities due to the potential to affect species habitats. Several of the cumulative projects, including the Groundwater Storage and Recovery (GSR) project and the Harry Tracy Water Treatment Plant (HTWTP) Long-Term Improvement project, would be located in areas that support special-status species. These projects, together with the PPSU project, could result in significant cumulative impacts to species in the region through loss of habitat and/or mortality of species during construction activities.

As discussed in Impact BI-1, construction of the PPSU project could result in significant impacts to several special-status wildlife species that have the potential to occur in the project area including the California red-legged frog, San Francisco dusky-footed woodrat, white-tailed kite, Mission blue butterfly, western red bat, and pallid bat. For example, the removal of trees at the South San Francisco and Millbrae sites would result in a reduction of sources of food, shelter, and breeding sites for wildlife species. In addition, construction of the project could result in the

inadvertent introduction of invasive nonnative plant species that can out-compete native vegetation on which special-status wildlife species rely for food, shelter, and breeding.

However, with implementation of Mitigation Measures **M-BI-1a: General Protection Measures; M-BI-1b: Worker Training and Awareness Program; M-BI-1c: Prepare and Implement a Vegetation Restoration Plan; M-BI-1d: Minimize Disturbance to Nesting Birds and Raptors; M-BI-1e: Preconstruction Surveys for Special-Status Bats and Avoidance and Minimization Measures; M-BI-1f: Mitigation for the Mission Blue Butterfly; M-BI-1g: Mitigation for San Francisco Dusky-Footed Woodrat Middens; M-BI-1h: Mitigation for the California Red-Legged Frog; and M-HY-1: Preparation and Implementation of a SWPPP** (see Section 5.16, Hydrology and Water Quality), PPSU project-construction-related impacts on special-status species would be reduced by requiring general protection and avoidance measures, worker training, preconstruction surveys and construction monitoring, implementation of erosion control and water quality BMPs during construction, and revegetation and restoration of disturbed areas after construction.

These mitigation measures would reduce the PPSU project's potential impacts through avoidance, restoration, and construction practices to a de minimis level that would not adversely combine with the biological impacts of other projects. Therefore, with implementation of mitigation, the PPSU project would not have a cumulatively considerable contribution to significant cumulative impacts on special-status species (*less than significant with mitigation*).

#### **Adverse Effects on Coast Live Oak Woodland and Riparian Habitat**

Oak woodlands extend through the PPSU Millbrae site and HTWTP project site. Impacts from each of these projects to oak woodlands would be minor and in combination would be limited to a small geographic extent (SF Planning, 2011). The oak woodlands in the vicinity of each of the cumulative project sites would not be significantly affected by the individual projects. Because the two sites are isolated from one another by approximately ½ mile, in an area largely composed of urban development, cumulative impacts of the PPSU project with these other projects would not result in the loss or conversion of oak woodlands that would have a significant effect on the environment. Therefore, cumulative impacts to oak woodland habitats would be *less than significant*.

Construction of the cumulative projects could result in riparian habitat removal and impacts from sediment and polluted runoff. A riparian corridor extends through the HTWTP project site, and several GSR sites are located in riparian habitat. Together with the PPSU project, the cumulative projects could result in significant impacts to riparian habitats.

As discussed in Impact BI-2, the proposed project could adversely affect Central Coast riparian scrub habitat at the South San Francisco site. Mature willow trees and understory vegetation consisting of California and Himalayan blackberry would be removed. While providing food, shelter, and breeding sites, riparian trees also provide a canopy over aquatic habitats that harbor native species. Although the area of riparian scrub habitat that would be removed at the South San Francisco is fairly small, when added to the removal of riparian habitat at other related project sites, the impact could be cumulatively significant.

The PPSU project's impact on these resources would be reduced to a less-than-significant level with the implementation of **Mitigation Measures M-BI-1a: General Protection Measures;**

**M-BI-1b: Worker Training and Awareness Program; M-BI-1c: Prepare and Implement a Vegetation Restoration Plan; M-BI-2a: Minimize Disturbance to Riparian Habitat; and M-BI-2b: Supplemental Measures for the Vegetation Restoration Plan.** Implementation of these mitigation measures would protect riparian habitat by minimizing the overall area of construction disturbance and avoiding sensitive habitats, providing a worker training and awareness program, and establishing protocols and performance standards for revegetation and restoration of disturbed areas. With implementation of these mitigation measures that require restoration of the riparian habitat, the PPSU project's impacts would be reduced to de minimis levels, and the project would not have a cumulatively considerable contribution to significant cumulative impacts on riparian habitat (*less than significant with mitigation*).

### **Adverse Effects on Jurisdictional Waters**

Construction of the PPSU project in combination with the cumulative projects has the potential to adversely affect jurisdictional waters, including waters of the U.S. and waters of the State. Both the GSR and HTWTP projects would adversely impact jurisdictional waters. Potential impacts could be direct, through modification of creeks, culverts, and indirect, through polluted stormwater runoff during construction. These cumulative impacts could be significant to jurisdictional waters.

As discussed in Impact BI-3, construction of the proposed project could degrade water quality through direct modification of the creek culvert at the Colma site, or through other temporary impacts to concrete lined v-ditches at the Colma, San Bruno South, and Millbrae sites. Degraded water quality often has negative impacts on native aquatic life. Suspended sediment in water can clog the gills of fish and amphibians, including the California red-legged frog. The release of hazardous materials and other construction-related toxins into aquatic environments can result in the death or impairment of wildlife species when they ingest it. The PPSU project's contribution to degraded water quality could be cumulatively considerable when added to impacts to jurisdictional waters from other SFPUC projects.

However, the PPSU project's impact on jurisdictional waters would be reduced to a less-than-significant level with implementation of **Mitigation Measure M-BI-3: Avoidance and Protection Measures for Jurisdictional Water Bodies**, as well as **M-BI-1a: General Protection Measures**, **M-BI-1b: Worker Training and Awareness Program**; and **M-HY-1a: Preparation and Implementation of a SWPPP** (see Section 5.16, Hydrology and Water Quality). These measures would address impacts on jurisdictional waters and aquatic resources by requiring staging areas to be sited at least 100 feet from riparian areas where feasible, requiring worker training regarding the resources present and general impact avoidance, requiring temporary fencing around the construction zone, and requiring preparation and implementation of a SWPPP that prescribes BMPs to protect water quality in receiving water bodies during construction activities. With implementation of these mitigation measures that would avoid and protect the jurisdictional waters, the PPSU project's impacts would be reduced to de minimis levels, and would not have a cumulatively considerable contribution to cumulative impacts on jurisdictional waters (*less than significant with mitigation*).

### **Inconsistencies with Local Ordinances Protecting Biological Resources**

Construction of the cumulative projects would result in the removal of trees protected by local ordinances, resulting in inconsistencies with local tree protection ordinances at the South San Francisco and San Bruno North sites. Together with tree removal for several other cumulative projects, including the GSR, HTWTP, and the 599 Cedar Avenue project, impacts from inconsistencies with local tree protection ordinances could result in cumulatively significant impacts. However, the PPSU project, as discussed in Impact BI-4, implementation of **Mitigation Measures M-BI-1a: General Protection Measures** and **M-BI-4: Replacement of Trees to be Removed** would protect the root systems of trees to be retained on site by requiring appropriate fencing; prevent long-term damage to trees by requiring that tree trimming is completed by an arborist; and fulfill the intent of local tree-preservation ordinances by requiring replanting of trees that are removed for construction of the project. Therefore, potential tree impacts from the PPSU project would be reduced to de minimis levels, so that the project would not have a cumulatively considerable contribution to cumulative impacts (*less than significant with mitigation*).

### **5.14.4 References**

- Abrams, L. R., 1923–1960. Illustrated Flora of the Pacific States, Washington, Oregon and California, Vol. 4 by L. R. Abrams and R. Ferris. Stanford University Press, Stanford, California. 4 vols.
- Arnold, R. A., 1983. Ecological Studies of Six Endangered Butterflies Island Biogeography, Patch dynamics, and design of habitat preserves. Pp. 1-161. University of California Publications in Entomology 99.
- Beier, P., and S. Loe, 1992. A checklist for evaluating impacts to wildlife movement corridors. Wildlife Society Bulletin, 20:434 – 440.
- BioMaAS (BioMaAS, Inc.) and URS (URS Corporation), 2012. Rare Plant Survey Report for the Peninsula Pipelines Seismic Upgrade Project. Prepared for San Francisco Public Utilities Commission and San Francisco Planning Department, Environmental Planning Division. June.
- BioMaAS (BioMaAS, Inc.) and URS (URS Corporation), 2013. Revised Final Wetlands Delineation and Jurisdictional Determination of Waters of the United States Report for the Peninsula Pipelines Seismic Upgrade Project. Prepared for San Francisco Public Utilities Commission and San Francisco Planning Department, Environmental Planning Division. January.
- Brylski, P., 2005. Dusky-Footed Woodrat *Neotoma fuscipes*. In California Wildlife Habitat Relationships System. California Interagency Wildlife Task Group Database Version 8.1, CDFG. Available online at [nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2523&inline=1](http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2523&inline=1). Accessed June 13, 2011.
- Cal-IPC (California Invasive Plant Council), 2006. Invasive Plant Inventory. Online: [cal-ipc.org/ip/inventory/index.php#inventory](http://cal-ipc.org/ip/inventory/index.php#inventory). Accessed June 23, 2012.
- Cal-IPC, 2012. Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (3rd ed.). Cal-IPC Publication. California Invasive Plant Council, Berkeley, CA.



CalWeedMapper, 2012. California Invasive Plant Mapper. CalWeedMapper. Available online at: [calweedmapper.calflora.org/maps](http://calweedmapper.calflora.org/maps). Accessed June 23.

CDFG (California Department of Fish and Game), 2003. List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database. The Vegetation Classification and Mapping Program, Wildlife and Habitat Data Analysis Branch. September.

CDFG (California Department of Fish and Game), 2009. Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities. The Resources Agency. Sacramento. November 24.

CDFG (California Department of Fish and Game), 2010. Hierarchical List of Natural Communities with Holland Types. September. Available online at: [dfg.ca.gov/biogeodata/vegcamp/natural\\_comm\\_list.asp](http://dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp). Accessed September 23, 2011.

CDFG (California Department of Fish and Game), 2011a. Special Vascular Plants, Bryophytes, and Lichens List. Natural Diversity Database. April.

CDFG (California Department of Fish and Game), 2011b. Fully Protected Animals. Available online at: [dfg.ca.gov/wildlife/nongame/t\\_e\\_spp/fully\\_pro.html](http://dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html). Accessed June 15, 2011.

CDFG (California Department of Fish and Game), 2011c. Non-game wildlife program. Available online at: [dfg.ca.gov/wildlife/nongame/ssc](http://dfg.ca.gov/wildlife/nongame/ssc). Accessed June 13, 2011.

CDFG (California Department of Fish and Game), 2011d. Vegetation Classification and Mapping Program. Available online at: [dfg.ca.gov/biogeodata/vegcamp/](http://dfg.ca.gov/biogeodata/vegcamp/). Accessed September 23, 2011.

City of Millbrae, 2011. City of Millbrae Municipal Code, Chapter 8.60, Tree Protection and Urban Forestry Program.

City of San Bruno, 2002. City of San Bruno Municipal Code, Chapter 8.24, Street Trees and Other Plantings; and Chapter 8.25, Heritage Trees.

City of South San Francisco, 2000. South San Francisco Municipal Code, Chapter 13.28, Street Trees; and Chapter 13.30, Tree Preservation. Tree Preservation Ordinance No. 1271-2000.

CNDDDB (California Natural Diversity Database), 2011. RareFind 3. Computer printout for special-status species within San Francisco North, San Francisco South, Hunters Point, Montara Mountain, San Mateo, Redwood Point, Woodside, and Half Moon Bay USGS 7.5-minute quadrangles. California Natural Heritage Division, CDFG, Sacramento, CA.

CNPS (California Native Plant Society), 2001. Inventory of Rare and Endangered Plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. Sacramento, California. 388 pp.

CNPS (California Native Plant Society), 2010. Online Inventory of Rare and Endangered Plants (8th edition). Database printout version 15.38b for the Montara Mountain, San Mateo, San Francisco South, Hunter's Point, Half Moon Bay, and Woodside USGS 7.5-minute quadrangles. December 8.

CRA (California Resource Agency), 2001. The Oak Woodlands Conservation Act of 2001 Program Application and Guidelines.

CWHR (California Wildlife Habitat Relationships), 2011. California Wildlife Habitat Relationships. Available online at: [dfg.ca.gov/biogeodata/cwhr/](http://dfg.ca.gov/biogeodata/cwhr/) Accessed June 13, 2011.

Environmental Laboratory, 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. January. 100 pp.

Fahrig, L., 2002. Effect of habitat fragmentation on the extinction threshold: a synthesis. *Ecological Applications* 12(2), pp. 346-353.

Fischer, J., and D. B. Lindenmayer, 2007. Landscape modification and habitat fragmentation: a synthesis. *Global Ecology and Biogeography* 16, pp. 265-280.

Goodrich, J., and S. Buskirk, 1995. Control of Abundant Native Vertebrates for conservation of endangered species. *Conservation Biology*, 9 p 1357-1364.

Hall, E. U., 1981. The Mammals of North America. New York: Wiley. Vol. 2. pp. 767.

Harris, J., 2005. Pallid Bat *Antrozous pallidus*. In California Wildlife Habitat Relationships System. California Interagency Wildlife Task Group Database Version 8.1, CDFG. Available online at: [nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2349&inline=1](http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2349&inline=1). Accessed June 13, 2011.

Hickman, J. C., 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley, California. 1400 pp.

Holland, R., 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. California Department of Fish and Game (CDFG), The Resources Agency. 156 pp.

Holland, V. L., and D. J. Keil, 1995. California Vegetation. Kendall/Publishing Company, Dubuque, Iowa. pp. 516.

Kie, J. G., 2005. Annual Grassland. In California Wildlife Habitat Relationships System. CDFG. Available online at: [dfg.ca.gov/biogeodata/cwhr/pdfs/PGS.pdf](http://dfg.ca.gov/biogeodata/cwhr/pdfs/PGS.pdf). Accessed June 12, 2011.

Mayer, K., and W. Laudenslayer Jr. (eds.), 1988. A Guide to Wildlife Habitats of California. CDFG. Wildlife Habitat Relationships systems. Available online at: [dfg.ca.gov/biogeodata/cwhr/wildlife\\_habitats.asp](http://dfg.ca.gov/biogeodata/cwhr/wildlife_habitats.asp). Accessed June 11, 2011.

McBride, J. R., and C. Reid, 2008. Urban Vegetation. In California Wildlife Habitat Relationships Systems. Life History Accounts and Range Maps. CDFG. Available online at: [dfg.ca.gov/biogeodata/cwhr/pdfs/URB.pdf](http://dfg.ca.gov/biogeodata/cwhr/pdfs/URB.pdf). Accessed on June 11, 2011.

Pearson, D. C., 1988. Eucalyptus. In California Wildlife Habitat Relationships System. CDFG. Available online at: <http://www.dfg.ca.gov/biogeodata/cwhr/pdfs/EUC.pdf>. Accessed April 18, 2011.

Pierson, E. D. and W. E. Rainey, 1998a. Red bat (*Lasiurus blossevillii*). In Terrestrial Mammal Species of Special Concern in California (B.C. Bolster, Ed.). p.33-34. Available online at: [dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/species/11.pdf](http://dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/species/11.pdf). Accessed June 11, 2011.

Pierson, E. D. and W. E. Rainey, 1998b. Pallid Bat. In *Terrestrial Mammal Species of Special Concern in California* (B.C. Bolster, Ed.). pp.33-34. Available online at: [dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/species/08.pdf](http://dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/species/08.pdf). Accessed June 11, 2011.

Polite, C., 2005. White-tailed kite. In *California Wildlife Habitat Relationships Systems. Life History Accounts and Range Maps*. CDFG. Available online at: [dfg.ca.gov/?=&=1](http://dfg.ca.gov/?=&=1). Accessed June 11, 2011.

Reed, P. B., 1988. National List of Plant Species that Occur in Wetlands; California (Region 0). National Wetlands Inventory, U.S. Fish and Wildlife Service. Biological Report 88(26.10).

RWQCB (Regional Water Quality Control Board), 2006. Appendix I. Invasive Non-Native Species to Avoid in the San Francisco Bay Region.

RWQCB (Regional Water Quality Control Board), 2010. Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region. December 31.

RWQCB (Regional Water Quality Control Board), 2011. Porter-Cologne Water Quality Control Act (Cal. Water Quality Control, Division 7), January.

San Mateo County, 1977. Regulation of the Removal and Trimming of Heritage Trees on Public and Private Property. Ordinance No. 2427.

San Mateo County, 1990. The Significant Tree Ordinance of San Mateo County, Part Three of Division VIII of the San Mateo County Ordinance Code. Ordinance No. 3229.

Sawyer, J., and T. Keeler-Wolf, 1995. *A Manual of California Vegetation*. CNPS Sacramento. 471 pp.

Sawyer, J., T. Keeler-Wolf, and J. Evens, 2009. *A Manual of California Vegetation* (Second edition), CNPS Sacramento. 1,300 pp.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2011. Harry Tracy Water Treatment Plant Long-Term Improvements Project, Draft EIR. SCH No. 2008052106. March.

SFPUC (San Francisco Public Utilities Commission), 2007. Right-of-Way Integrated Vegetation Management Policy. February.

Shapiro, A. M., and T. D. Manolis, 2007. *Field Guide to Butterflies of the San Francisco Bay and Sacramento Valley Regions*. University of California Press, Berkeley and Los Angeles, California, 302 pp.

Shuford, W. D., and T. Gardali (Eds.), 2008. *California Bird Species of Special Concern; a ranked assessment of species, subspecies and distinct populations of birds of immediate concern in California*. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, and California

Department of Fish and Game, Sacramento. Available online from [dfg.ca.gov/wildlife/nongame/ssc/birds.html](http://dfg.ca.gov/wildlife/nongame/ssc/birds.html). Accessed June 13, 2011.

Thomas, J. H., 1961. Flora of the Santa Cruz Mountains of California. Stanford University Press. 434 pp.

Town of Colma, 2010. Colma Municipal Code, Chapter Five: Planning, Zoning, Use, and Development of Land and Improvements, Subchapter 5.06: Tree Cutting and Removal. March 2010.

USFWS (U.S. Fish and Wildlife Service), 1976. Determination that Six Species of Butterflies are Endangered Species; 41 FR 22041-22044 (Lotis blue, *Lycaeides argyrognomon lotis*; El Segundo blue, *Shijimiaeoides battoides allyni*; Smith's blue, *Shijimiaeoides enoptes smithi*; Mission blue, *Icaricia icarioides missionensis*; San Bruno elfin, *Callophrys mossi bayensis*; Lange's metalmark, *Apodemia mormo langei*). Final rule. Federal Register, June 1, 1976. Vol. 41: pp. 22041-22044. Available online at: [ecos.fws.gov/docs/federal\\_register/fr99.pdf](http://ecos.fws.gov/docs/federal_register/fr99.pdf). Accessed June 11, 2011.

USFWS (U.S. Fish and Wildlife Service), 1984. Recovery Plan for San Bruno Elfin and Mission Blue Butterflies.

USFWS (U.S. Fish and Wildlife Service), 1996a. Endangered and Threatened Plant and Animal Taxa; Proposed Rule. 50 Code of Federal Regulations (CFR) Part 17. February 28.

USFWS (U.S. Fish and Wildlife Service), 1996b. Endangered and threatened wildlife and plants; determination of threatened status for the California red-legged frog. Final rule. Federal Register, Vol. 61 No. 101: 25813-25833. May 23, 1996.

USFWS (U.S. Fish and Wildlife Service), 2002. Recovery Plan for the California Red-Legged Frog (*Rana aurora draytonii*). Region 1 U.S. Fish and Wildlife Office, Portland, Oregon.

USFWS (U.S. Fish and Wildlife Service), 2005. Revised guidance on site assessments and field surveys for the California Red-Legged Frog. Sacramento Fish and Wildlife Office.

USFWS (U.S. Fish and Wildlife Service), 2010. San Bruno Elfin Butterfly (*Callophrys mossii bayensis*) and Mission Blue Butterfly (*Icaricia icarioides missionensis*). 5-Year Review: Summary Review and Evaluation. Available online at: [fws.gov.ecos/ajax/docs/five\\_year\\_review/doc3216.pdf](http://fws.gov.ecos/ajax/docs/five_year_review/doc3216.pdf). Accessed June 11, 2011.

## 5.15 Geology and Soils

This section describes existing geologic and soils conditions in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project as well as the site vicinity's seismicity and evaluates the potential impacts of the proposed project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.15.1 Setting

This section was prepared based on previous studies pertaining to the project vicinity and information was tailored to the PPSU site-specific conditions. Regional information is excerpted from the Crystal Springs/San Andreas Transmission Upgrade Project, Final Environmental Impact Report (SF Planning, 2010) and site-specific geology and information pertaining to the Serra Fault is based on the Fault Rupture Hazard Assessment, Final Report (FWLA, 2011).

#### 5.15.1.1 Regional Geology

The study area is located on the San Francisco Peninsula within the Coast Ranges geomorphic province, which extends from the Transverse Ranges in Santa Barbara County northward beyond the Oregon border (CGS, 2002a). The region consists of northwest-trending mountain ranges and parallel elongated valleys. Most of the valleys are associated with differential erosion along faults that are generally oriented parallel to the San Andreas Fault. In the Coast Ranges, older, consolidated rocks are characteristically exposed in the mountains and are buried beneath younger, unconsolidated alluvial sediments in the valleys. In the coastal lowlands adjacent to San Francisco Bay, these younger sediments commonly interfinger with marine deposits (Norris and Webb, 1990; Clifton and Leithold, 1991). The major geographic features in the study area include San Francisco Bay and the Diablo Range to the east and north, the Santa Cruz Mountains to the south and west, and the Santa Clara Valley to the south and east.

The principal basement rock on the San Francisco Peninsula is the Franciscan Complex, which commonly consists of greenstone, sandstone, serpentinite, and *mélange*, a mixture of lithologies typically in a sheared, clay-rich matrix. On the San Francisco Peninsula, the Franciscan Complex is locally overlain by Tertiary, Quaternary, and Holocene marine and nonmarine sedimentary deposits of variable degrees of cementation or consolidation. In the study area, these are assigned to the Santa Clara Formation and Merced Formation (Wagner et al., 1990). Unconsolidated geological materials encountered in the study area include artificial fill, colluvium, alluvium, stream channel deposits, and alluvial fans.

The study area is within a seismically active region near the boundary between two major tectonic plates: the Pacific Plate to the southwest and the North American Plate to the northeast. Within California, this plate boundary begins north of the Gulf of California near the Mexican border and traverses much of the state before terminating off the coast of Humboldt County.

At the Earth's surface, motion between the two plates within the study area is accommodated not only on the San Andreas Fault, but also on a number of subsidiary faults across a 50-mile-wide

zone that runs northeast from the San Gregorio Fault (which is southwest of the study area) to faults along the western margin of the Central Valley.

The major active faults in the study area comprise a complex system of right-lateral, strike-slip faults known as the San Andreas Fault system. The principal active fault in the immediate project vicinity is the San Andreas Fault. The San Andreas Fault zone is topographically expressed in the valley in which the Crystal Springs and San Andreas reservoirs lie. Other substantial faults within the San Andreas Fault system are the San Gregorio Fault, approximately 7 miles to the southwest; the Hayward Fault, approximately 18 miles to the northeast; and the Calaveras Fault, approximately 26 miles to the northeast. Other more distant active faults in the region include the Concord-Green Valley Fault, approximately 31 miles to the northeast, and the Greenville Fault, approximately 41 miles to the northeast. Earthquakes occurring along these and other faults are capable of generating strong groundshaking at the project sites. Faults in the area that represent substantial potential seismic sources are listed in Table 5.15-1. Future earthquakes along these structures could be associated with localized liquefaction episodes.

Although future earthquakes could occur anywhere along the faults listed in Table 5.15-1, only earthquakes of magnitude (M) 6.0 or greater are likely to be associated with surface fault rupture and offset in the study area; faults within the study area all have strike-slip displacement (CDMG, 1996). Co-seismic movement on nonseismogenic faults (e.g., the Serra Fault) may result from large earthquakes on nearby active faults. The most recent prediction has an approximately 20 percent probability of a rupture-producing earthquake on the northern San Andreas Fault within the next 30 years (USGS and CGS, 2008).

### 5.15.1.2 Study Area Geology

An overview of the geologic units in the study area is shown on Figure 5.15-1, and geologic information for each site is shown on Figures 5.15-2 through 5.15-6. Geologic deposits in and around the study area are primarily composed of four units: Cretaceous and Jurassic Franciscan Complex basement rock, Pleistocene and Pliocene Merced Formation, Late Pleistocene Colma Formation, and other late Quaternary deposits (Pampeyan, 1994; Brabb et al., 1998; FWLA, 2011). Historic artificial fill is also common in the study area.

The Franciscan Complex rock found along the Serra Fault zone in and south of the study area principally consists of sheared rock and clay (mélange) with tectonic inclusions of greywacke, chert, and greenstone, and minor serpentinite (Pampeyan, 1994).

The Merced Formation unconformably overlies or is in fault contact with Franciscan Complex rocks within the study area, including at the San Francisco Public Utilities Commission (SFPUC) pipeline fault crossings. It principally consists of weakly lithified to well-cemented, thinly bedded to massive sandstone and siltstone, with minor claystone and conglomerate with shell hash, deposited in shallow marine to estuarine and nonmarine coastal environments (FWLA, 2011). The age of the Merced Formation is uncertain, but likely is between about 1.8 million years old and about 400,000 years old (FWLA, 2011), with the uppermost beds along the coast being younger than ~400,000 years (Kennedy, 2002). Clean to silty, fine-grained, poorly consolidated micaceous sands are characteristic of the upper Merced deposits, whereas nonmicaceous shallow marine sands and silts are characteristic of the lower Merced. Tectonic models imply original

**Table 5.15-1  
Significant Active and Potentially Active Faults**

<b>Fault Name</b>	<b>Estimated Maximum Earthquake Magnitude<sup>1,2</sup></b>	<b>Approximate Fault Segment Length (Miles)<sup>2</sup></b>	<b>Average Recurrence Interval (Years)<sup>3</sup></b>	<b>Fault Type, Dip Direction<sup>2</sup></b>	<b>Approximate Slip Rate (mm/yr)<sup>2,4</sup></b>
San Andreas (Peninsula)	M7.2	53	246	Right-lateral strike-slip, 90°	17
San Andreas (North Coast South)	M7.4	118	218	Right-lateral strike-slip, 90°	24
San Gregorio (North)	M7.2	68	392	Right-lateral strike-slip, 90°	7
Monte Vista-Shannon	M6.7	28	2,400	Blind thrust, 90° west	0.4
Hayward (Northern)	M6.5	22	155	Right-lateral strike-slip, 90°	9
Hayward (Southern)	M6.7	33	161	Right-lateral strike-slip, 90°	9
Calaveras (Northern)	M6.8	28	187	Right-lateral strike-slip, 90°	6
Calaveras (Central)	M6.2	37	54	Right-lateral strike-slip, 90°	15
Concord-Green Valley	M6.9	35	176	Right-lateral strike-slip, 90°	6
Mount Diablo	M6.6	15	389	Reverse thrust, 38° northeast	2
Greenville (North)	M6.7	17	644	Right-lateral strike-slip, 90°	2
Greenville (South)	M6.6	15	623	Right-lateral strike-slip, 90°	9

Source: SF Planning, 2010.

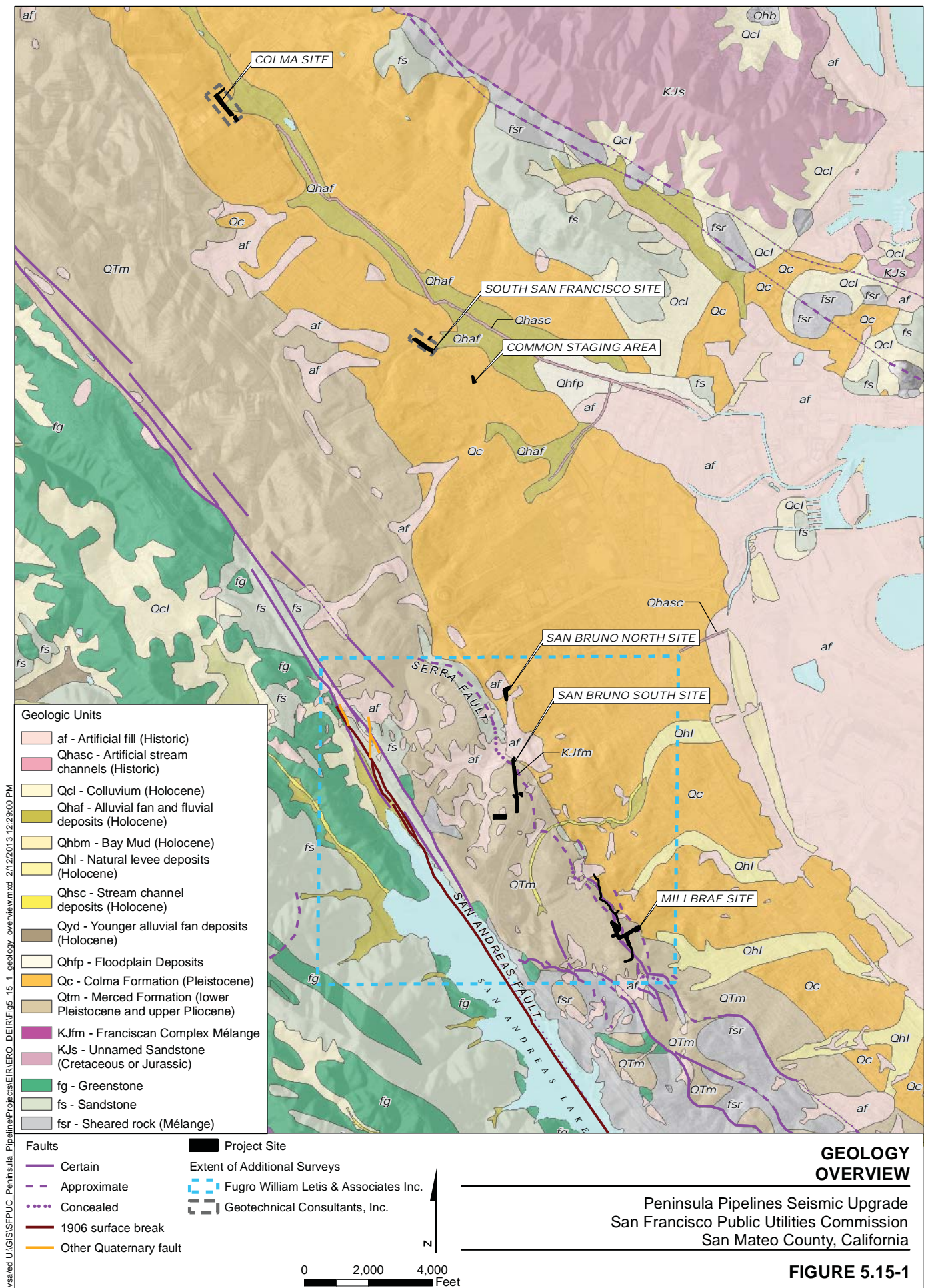
Notes:

<sup>1</sup> Estimated Maximum Earthquake Magnitude: the maximum earthquake that appears capable of occurring under the presently known tectonic framework, using the Richter scale. M = earthquake magnitude.

<sup>2</sup> Fault parameters from CDMG, 1996; CGS, 2002b; USGS, 2003; and USGS and CGS, 2008.

<sup>3</sup> Recurrence intervals from USGS, 2003, and USGS and CGS, 2008.

<sup>4</sup> mm/yr = millimeters per year.

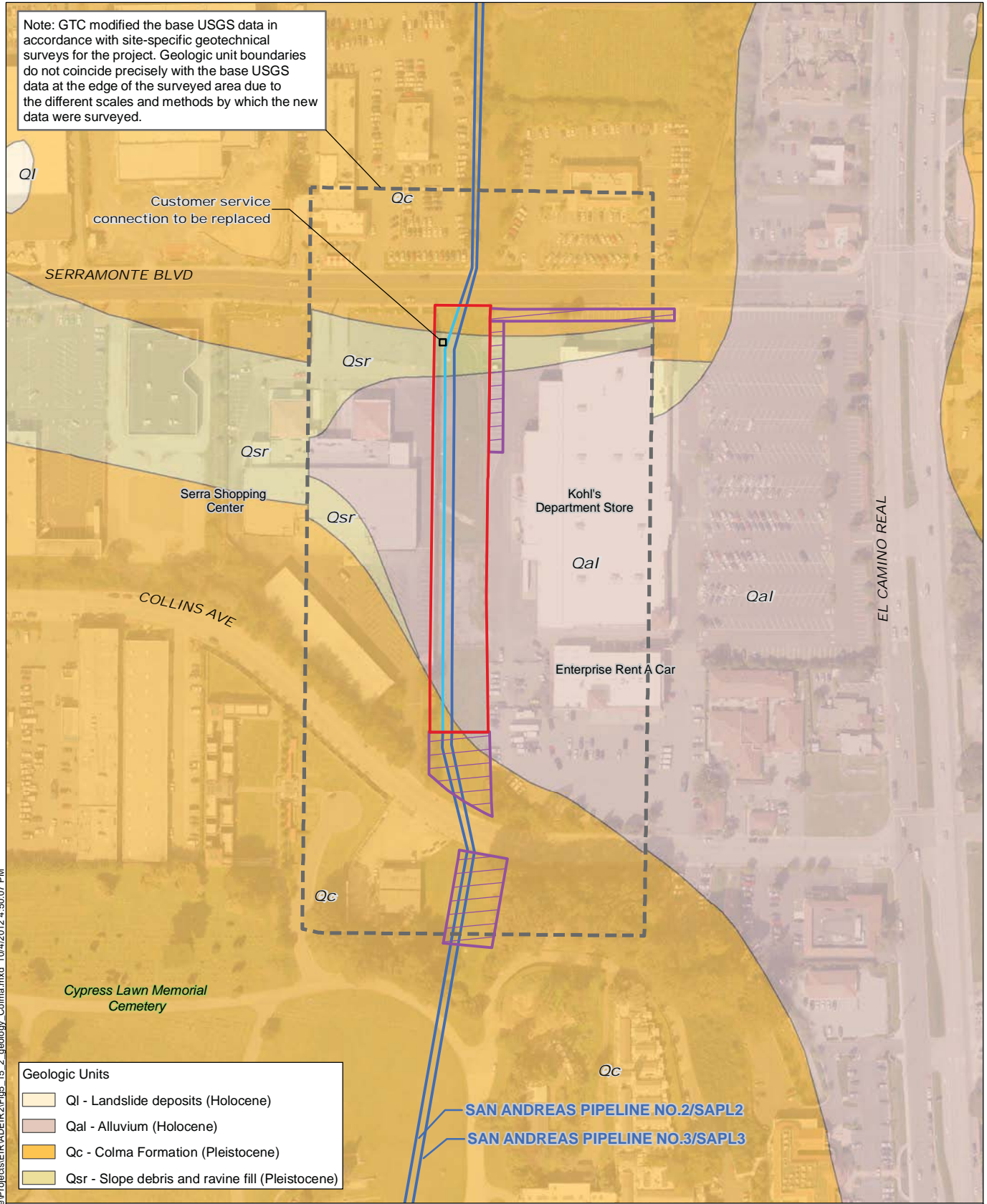


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Sources: Geology: Overview, San Bruno Sites, and Millbrae sites-USGS Open-File 98-137 (Brabb, Graymer, Jones), 1998. Colma, South San Francisco sites-USGS Open-File 98-354 (Bonilla), 1998. Additional geologic features surveyed: Colma and South San Francisco sites, Geotechnical Consultants, 2011. San Bruno and Millbrae sites, Fugro William Lettis & Associates, Inc., January 2011. Faults, digitized from maps included in Fault Rupture Hazard Assessment, Fugro William Lettis & Associates, Inc., January 2011.



Note: GTC modified the base USGS data in accordance with site-specific geotechnical surveys for the project. Geologic unit boundaries do not coincide precisely with the base USGS data at the edge of the surveyed area due to the different scales and methods by which the new data were surveyed.

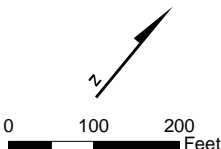


Geologic Units	
	Ql - Landslide deposits (Holocene)
	Qal - Alluvium (Holocene)
	Qc - Colma Formation (Pleistocene)
	Qsr - Slope debris and ravine fill (Pleistocene)

Project Components	
	Construction Zone
	Staging and Spoils Area
	SFPUC Water Transmission Line
	SFPUC Water Transmission Line to be Replaced

Extent of Additional Surveys	
	Geotechnical Consultants, Inc.



**GEOLOGY  
COLMA SITE**

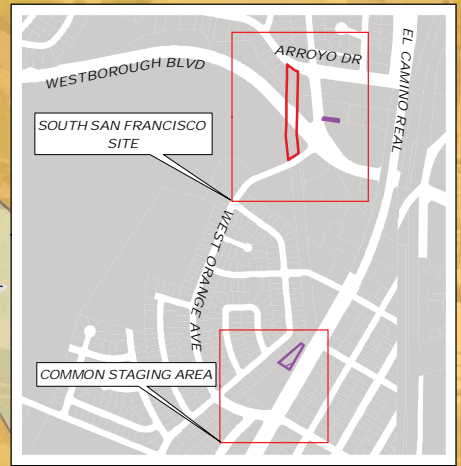
Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.15-2**

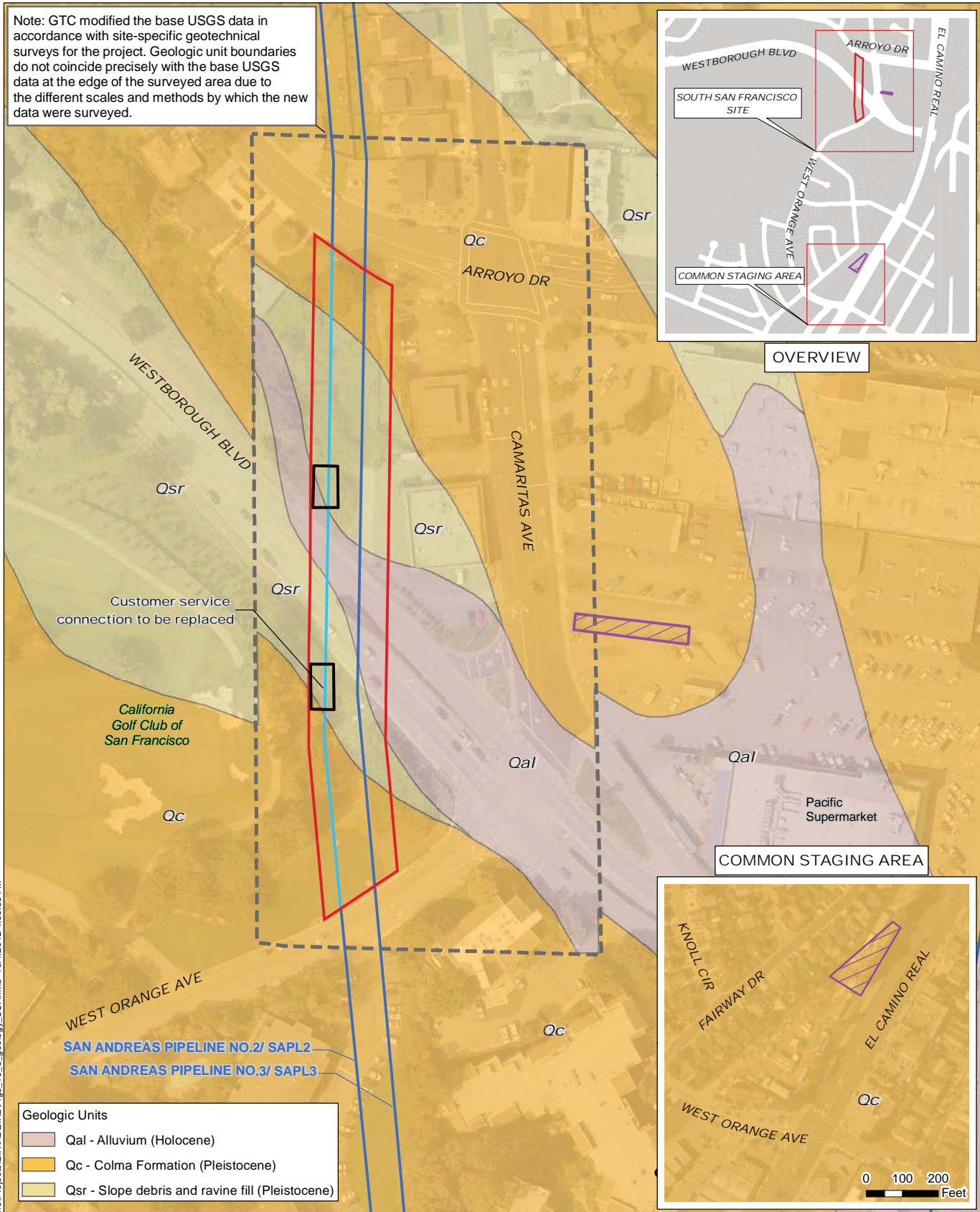
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Source: SFPUC Water Transmission line, October 2011; Aerial Imagery, Bing Imagery 2009; Geology: USGS Open-File 98-354 (Bonilla), 1998; modified by URS with data from Geotechnical Consultants, Inc., 2011.

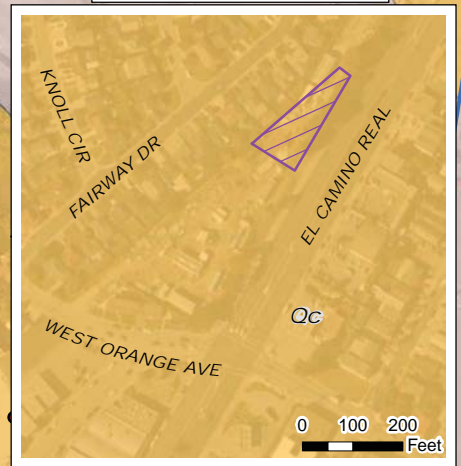
Note: GTC modified the base USGS data in accordance with site-specific geotechnical surveys for the project. Geologic unit boundaries do not coincide precisely with the base USGS data at the edge of the surveyed area due to the different scales and methods by which the new data were surveyed.



OVERVIEW



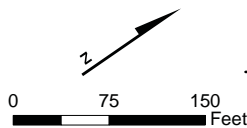
COMMON STAGING AREA



Geologic Units	
	Qal - Alluvium (Holocene)
	Qc - Colma Formation (Pleistocene)
	Qsr - Slope debris and ravine fill (Pleistocene)

- Project Components**
- Construction Zone
  - Staging and Spoils Area
  - Boring Pit
  - SFPUC Water Transmission Line
  - SFPUC Water Transmission Line to be Replaced

- Extent of Additional Surveys**
- Geotechnical Consultants, Inc.



**GEOLOGY**  
**SOUTH SAN FRANCISCO SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.15-3**

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Bayhill Shopping Center

SAN ANDREAS PIPELINE NO.2/SAPL2  
SAN ANDREAS PIPELINE NO.3/SAPL3

af

SAN BRUNO AVE WEST

CEDARWOOD CT



CEDAR AVE

af

Qc

Qc

CRESTMOR DR

fs

SHELTER CREEK LN

af

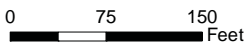
LIVINGSTON TERRACE DR

PEPPER DR

\\saled\U\GIS\SFPUC\_Peninsula\_Pipeline\Projects\EIR\FIG5\_15\_4\_geology\_SanBrunoNorth.mxd 2/7/2013 11:22:21 AM

- Project Components**
- Construction Zone
  - Staging and Spoils Area
  - Access Portal
  - SFPUC Water Transmission Line

- Geologic Units**
- af - Artificial fill (Historic)
  - Qc - Colma Formation (Pleistocene)
  - fs - Sandstone

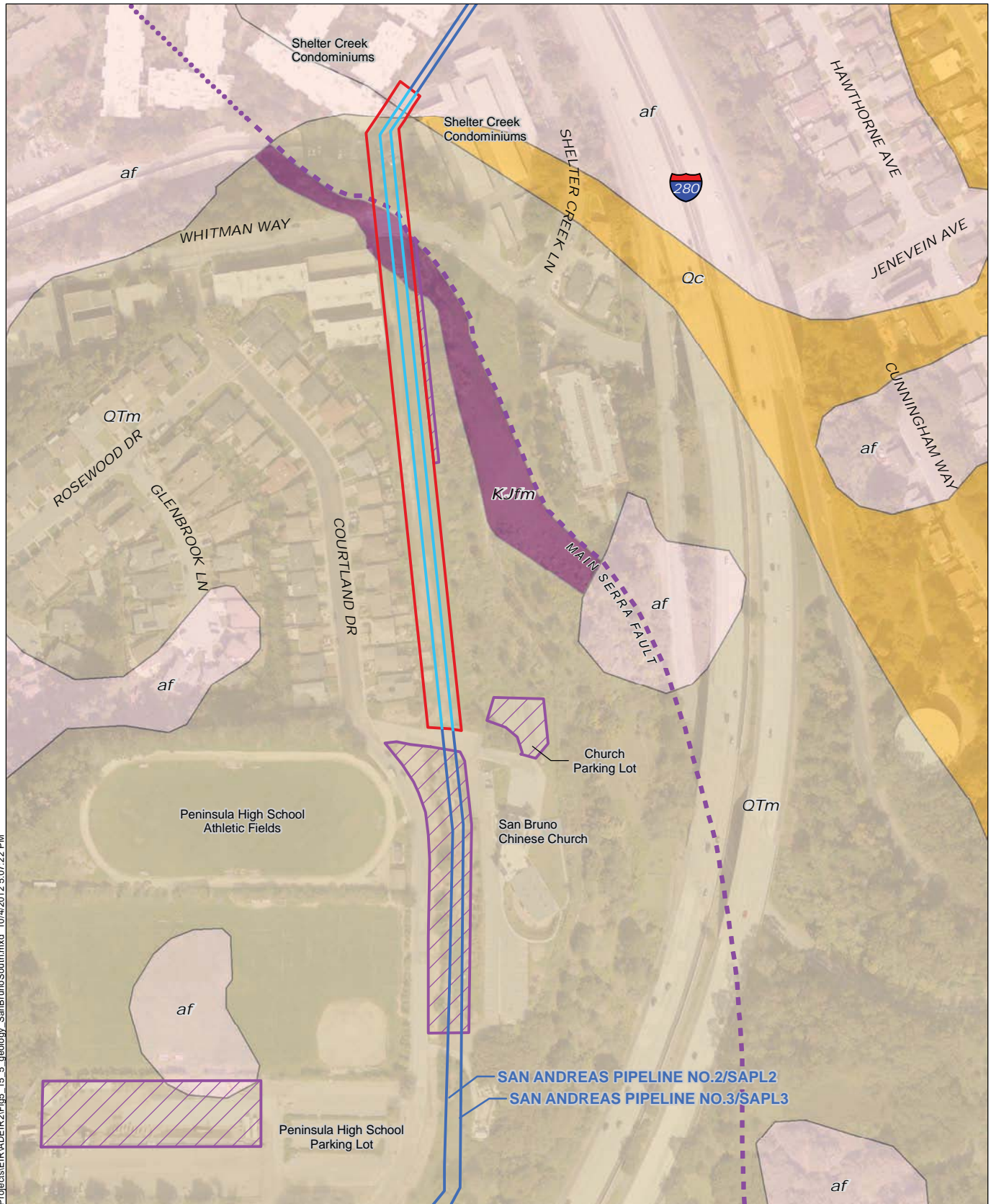


**GEOLOGY**  
**SAN BRUNO NORTH SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.15-4**

Source: SFPUC Water Transmission line, October 2011; Aerial Imagery, Bing Imagery 2009; Geology: USGS Open-File 98-137 (Brabb, Graymer, Jones), 1998 (modified by URS, 2011)



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- Project Components**
- Construction Zone
  - Staging and Spoils Area
  - SFPUC Water Transmission Line
  - SFPUC Water Transmission Line to be Replaced
- Faults**
- Approximate
  - Concealed

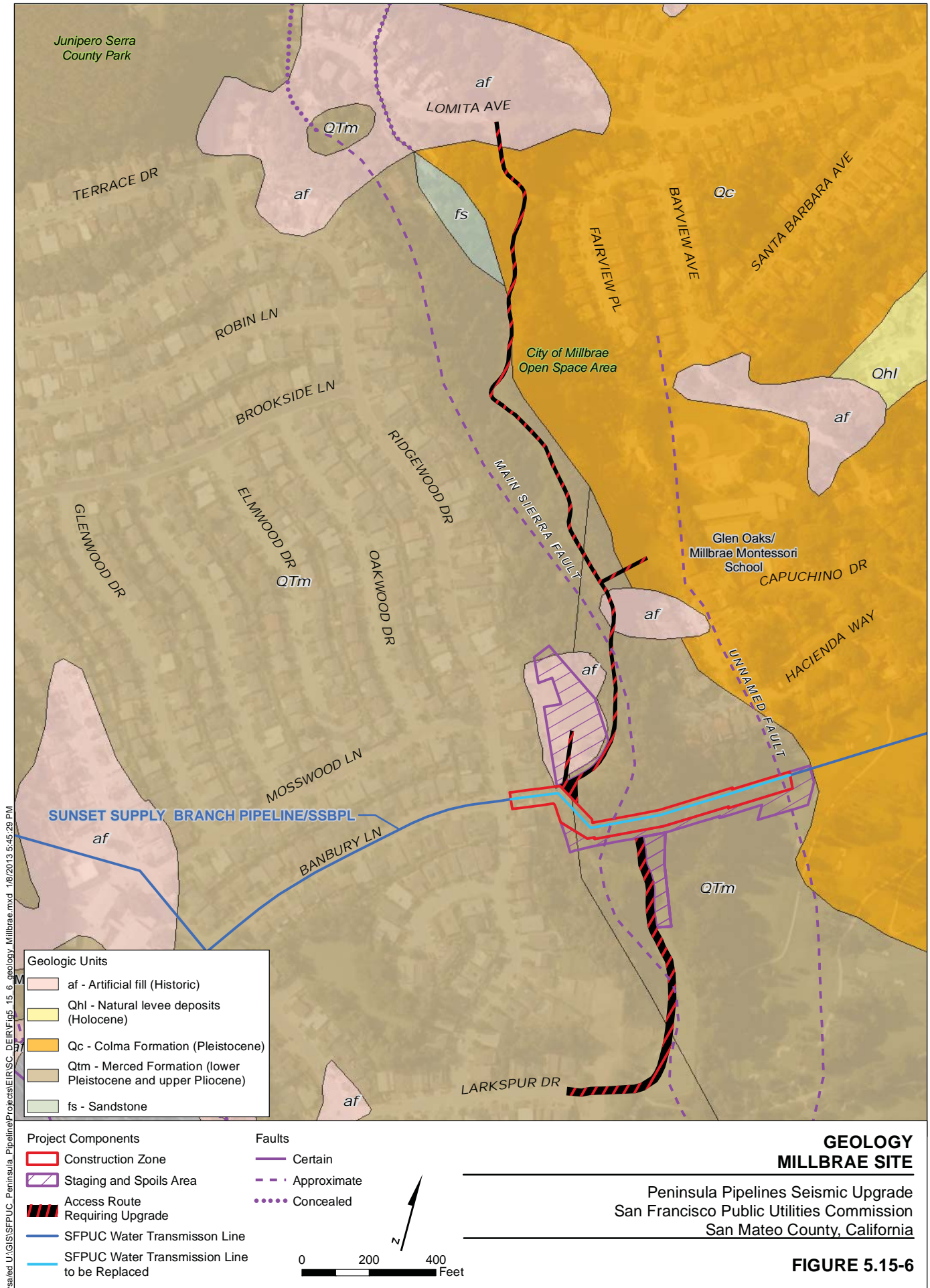
- Geologic Units**
- af - Artificial fill (Historic)
  - Qc - Colma Formation (Pleistocene)
  - Qtm - Merced Formation (lower Pleistocene and upper Pliocene)
  - KJfm - Franciscan Complex Mélange



**GEOLOGY**  
**SAN BRUNO SOUTH SITE**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.15-5**

Source: SF PUC Water Transmission line, October 2011; Aerial Imagery, Bing Imagery 2009; Geology, USGS Open-File 98-137 (Brabb, Graymer, Jones), 1998 (modified by URS, 2011); Faults, digitized from maps included in Fault Rupture Hazard Assessment, Fugro William Lettis & Associates, Inc., January 2011.



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Source: SFPUC Water Transmission line, October 2011; Aerial Imagery, NAIP Imagery Summer 2010; Geology, USGS Open-File 98-137 (Brabb, Graymer, Jones), 1998 (modified by URS, 2011); Faults, digitized from maps included in Fault Rupture Hazard Assessment, Fugro William Lettis & Associates, Inc., January 2011.

deposition in the southern part of an ancestral pull-apart basin, and subsequent migration of the basin, and with the Merced Formation becoming younger to the north (FWLA, 2011).

The Colma Formation overlies Merced Formation strata at and near the coast, and has a mapped outcrop extent similar to the Merced Formation (Pampeyan, 1994; Brabb et al., 1998). The Colma Formation, as described at and near the coast, consists of poorly consolidated to unconsolidated sand and silt, and represents a variety of mostly nonmarine environments, including nearshore, foreshore, and backshore deposits. The age of the Colma Formation is latest Pleistocene, between about 130,000 and 11,000 years old (FWLA, 2011; Kennedy, 2002). Inland from the coast, however, the Colma Formation is poorly characterized, and at its southern mapped extent appears to be laterally continuous with deposits characterized as “older alluvium” (Brabb et al., 1998).

The other late Quaternary deposits primarily consist of recent alluvium, slope wash/fill, and artificial fill. Recent alluvium (Qal) deposits in the study area consist of unconsolidated mixtures of sands, silts, clays, and gravels found along stream channels. Slope wash/fill/(Qsr) consists of unconsolidated to moderately consolidated sands, silts, clays, and rock fragments accumulated by downslope movement of weathered rock debris and soil (GTC, 2011b). Artificial fill is common in the study area, and likely was used locally to infill ravines in order to flatten the topography to allow development activities. Artificial fill in the study area consists of various combinations of recent poorly- to well-compacted gravel, sand, silt, and rock fragments (GTC, 2011b).

Local geologic units for each of the five sites are presented on Figures 5.15-2 through 5.15-6 and consist of the following:

- The Colma site (Figure 5.15-2) is underlain by about 600 lineal feet of Quaternary alluvium and a short length of slope debris/fill, flanked by sediments of the Colma Formation.
- The South San Francisco site (Figure 5.15-3) is similarly underlain by a short length of Quaternary alluvium (about 100 to 200 lineal feet), flanked by two bodies of slope debris/fill and sediments of the Colma Formation at both ends of the project site.
- The San Bruno North site (Figure 5.15-4) is predominantly underlain by Colma Formation, with some artificial fill to the north along San Bruno Avenue.
- The San Bruno South site (Figure 5.15-5) spans the trace of the Serra Fault, and is underlain predominantly by sediments of the Merced Formation.
- The Millbrae site (Figure 5.15-6) project site is underlain by the Merced Formation. It also spans the main track of the Serra Fault. A portion of the access route requiring upgrade is underlain by the Colma Formation.

The common staging area (Figure 5.15-3) is underlain predominantly by the Colma Formation. A several-foot-thick layer of artificial fill consisting of paving and granular base materials underlain by silty sand, silt, and sandy clay blankets the Colma Formation. A layer of mixed gravel was also encountered in a number of historical borings in the area (SF Planning, 2008).

The tectonic setting of the upper San Francisco Peninsula is dominated by the San Andreas Fault, the primary structure in the broad transform boundary that accommodates right-lateral relative motion between the Pacific and North America tectonic plates. According to the most recent earthquake hazard model conducted by the 2007 Working Group on California Earthquake Probabilities, there is about a 10 percent chance of a major earthquake on the peninsula segment of the San Andreas Fault by the year 2038 (GTC, 2011c). The Working Group on California Earthquake Probabilities model considers the most likely rupture scenario for the northern San Andreas near the pipeline crossings of the Serra Fault and other project components to be an earthquake similar to the 1906 moment magnitude 7.9 earthquake.

The Serra Fault accommodates a component of transpression (a combination of fault-parallel and contractional fault-normal movement) in the San Andreas Fault system, and is the northernmost structure in the foothills fold belt (Kennedy and Hitchcock, 2004), a set of faults and folds located east of the San Andreas Fault at the boundary between the hills and the Santa Clara Valley and San Francisco Bay margin. Onshore, the Serra Fault is located between about Hillsborough in the southeast to Fort Funston in southwestern San Francisco in the northwest (Pampeyan, 1994; Graymer et al., 2006; FWLA, 2011; GTC, 2011a). The Serra Fault dips southwest and probably intersects the San Andreas Fault in the shallow crust.

Evidence for Holocene activity of the Serra Fault comes from at least three locations. Near Fort Funston, Kennedy (Kennedy, 2002) documented back-tilted peat beds and channel deposits that yielded mid-Holocene radiocarbon dates. The back-tilting was attributed to active folding above a blind Serra Fault. In San Bruno, at Junipero Serra County Park, a trench exposure across the main strand revealed evidence for multiple episodes of deformation in the late Quaternary, including a most recent episode in the late Holocene (Hengesh et al., 2004; FWLA, 2011). A possible third location comes from trench exposures in Millbrae, where ENGEO, Inc. interpreted a Holocene surface faulting event on a shorter, secondary trace of the Serra Fault based on soil stratigraphy (FWLA, 2011). Based on these data, the Serra Fault is considered an active fault.

Because of its probable shallow intersection depth with the San Andreas Fault, the Serra Fault is considered unlikely to generate its own moderate to large earthquakes, although this has not been disproven. Instead, a commonly accepted view is that the Serra Fault is capable of secondary surface-fault rupture during large earthquakes on the San Andreas Fault.

The main Serra Fault defines the primary fault rupture hazard to the pipelines in the study area. This fault zone is marked by the presence of Franciscan *mélange* (or thick fault gouge derived from *mélange*) that juxtaposes distinct bodies of friable to well-cemented sandstone, siltstone, and minor conglomerate of the Merced Formation. The best characterization of the fault zone comes from a paleoseismic trench completed at Junipero Serra County Park in San Bruno (FWLA, 2011). The trench site is located directly between the two fault crossing locations. Review of historical stereographic aerial photographs and ground reconnaissance shows the main Serra Fault at the park to coincide with a side-hill bench and a low (~1- to 2-foot-high) scarp, and local outcrops of resistant “knockers” of greenstone and greywacke.

### 5.15.1.3 Seismicity and Geologic Hazards

Groundshaking is the product of a specific earthquake as manifested at a particular location with specific geologic conditions. The intensity of the groundshaking (also referred to as strong

ground motion) during an earthquake is dependent on the distance between a site and the epicenter of the earthquake, the magnitude of the earthquake, and the geologic conditions underlying and surrounding the site. Other conditions being equal, earthquakes with closer epicenters or higher magnitudes produce more intense groundshaking. Geologic conditions have a substantial impact on the intensity of local groundshaking.

Areas that are underlain by bedrock tend to experience less groundshaking than those underlain by unconsolidated sediments such as artificial fill or alluvium. The composition of underlying soils in areas relatively distant from earthquake epicenters can intensify groundshaking from specific earthquakes. For instance, locations in the San Francisco Bay Area that experienced the worst structural damage during the 1989 Loma Prieta earthquake were not those closest to the epicenter. Instead, the greatest damage was on Bay Muds and artificial fill, because those soils magnified the effects of groundshaking (Plafker and Galloway, 1989).

Figure 5.15-7 presents historic seismicity in the San Francisco Bay Area for earthquakes larger than or equal to magnitude M2.0 for the period 1967 to the 2011. A review of historic earthquake activity from 1800 to 2009 indicates that 10 earthquakes of magnitude M6.0 or greater have occurred in and near the study area during that time frame. A summary of these significant and/or damaging earthquakes is presented in Table 15.5-2.

#### 5.15.1.4 Seismic Hazards

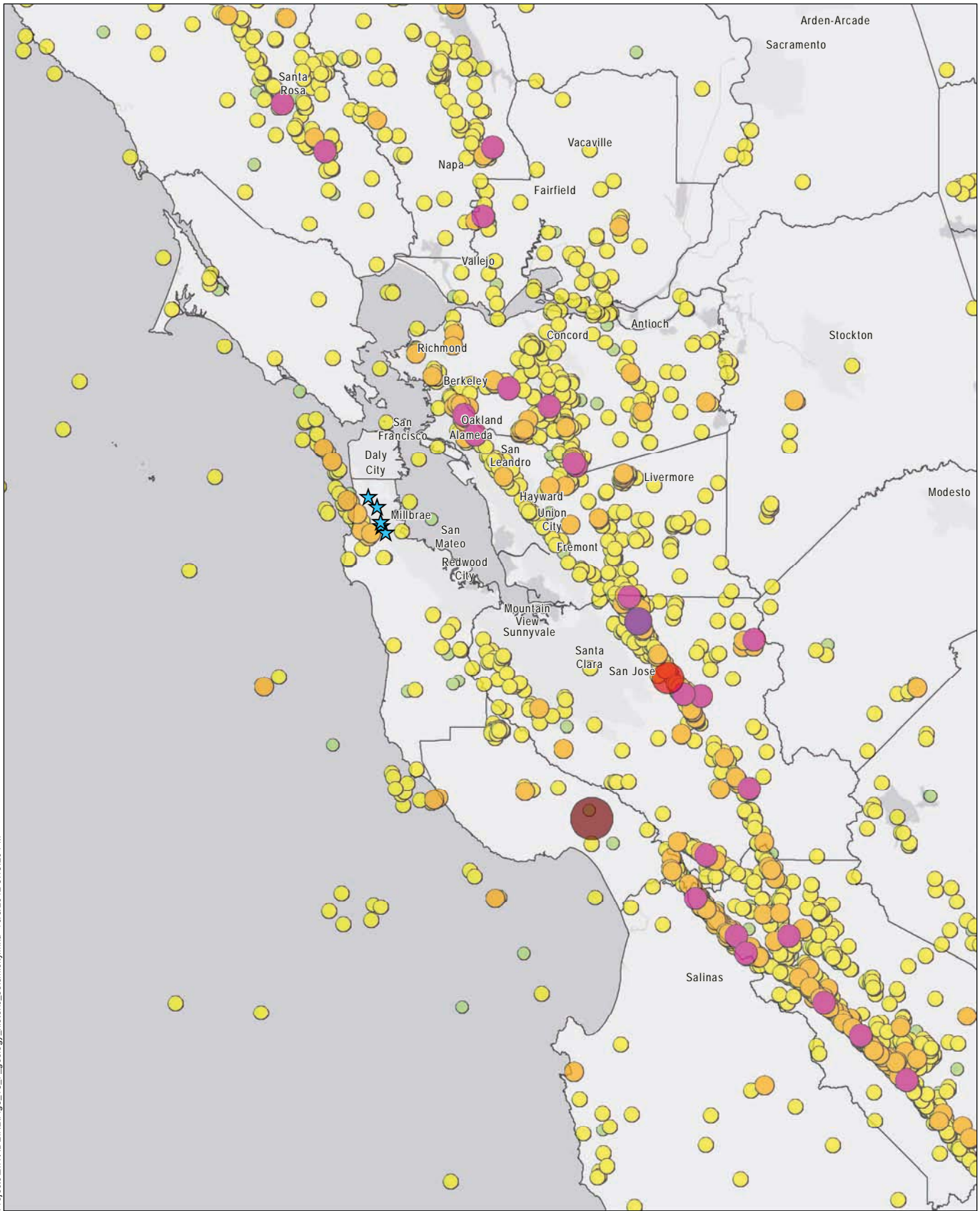
##### *Surface Fault Rupture*

The main Serra Fault zone is identified at the San Andreas Pipeline No. 2 (SAPL2) and San Andreas Pipeline No. 3 (SAPL3) crossing and the Sunset Supply Branch Pipeline (SSBPL) crossing, and constitutes a significant fault rupture hazard at both the San Bruno South and Millbrae sites. The main fault is characterized by the presence of shearing and the juxtaposition of clayey Franciscan mélange over sandy Merced Formation at the SAPL2 and SAPL3 crossing, and by clay gouge derived from mélange that is in fault contact with sandy Merced Formation at the SSBPL crossing. The main Serra Fault strikes about N30°W and dips gently (~12°SW) at the SAPL2 and SAPL3 crossing. The main Serra Fault strikes between about N10°W and N30°W and dips gently (approximately 29 SW) at the SSBPL crossing. Total fault movements for each of the pipeline crossings, using a best estimate 975-year net displacement and deterministic values, range between 7 and 22 inches, respectively. Movement of the Serra Fault would likely be secondary, or sympathetic, related to a major event on the nearby San Andreas Fault rather than primary displacement of the Serra Fault itself (FWLA, 2011).

##### *Seismically Induced Ground Failure: Liquefaction and Related Failures*

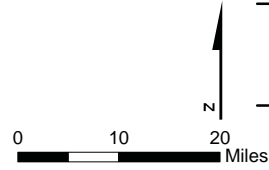
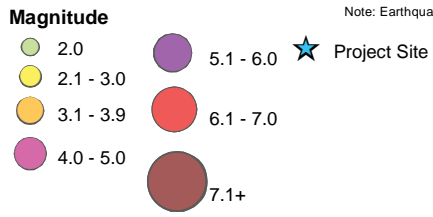
Liquefaction is a secondary effect of groundshaking, whereby saturated granular sediments temporarily lose their strength and stiffness. Liquefaction can be mechanically induced to consolidate sediments at a site prior to construction, but presents a hazard when it occurs as a result of earthquake-induced, strong groundshaking. The susceptibility of a site to liquefaction is a function of the thickness, depth below ground surface, density, and water content of the sediments and the intensity of groundshaking at the site. Loose saturated sediments near the ground surface are most susceptible to liquefaction. As sediments consolidate over time, they





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Note: Earthquakes in the San Francisco Bay Area with magnitude 2.0 or greater from 1967 to 2011.



**HISTORIC SEISMICITY**

Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

**FIGURE 5.15-7**

Source: Northern California Earthquake Catalog Search (<http://www.ncedc.org/ncedc/catalog-search.html>), 2011; USGS Historic Earthquakes, 2011.

**Table 5.15-2  
Significant Historic Earthquakes in the San Francisco Bay Area**

<b>Date</b>	<b>Earthquake Magnitude<sup>1</sup></b>	<b>Name, Location, or Region Affected</b>	<b>Associated Fault</b>	<b>Comments<sup>2</sup></b>
June 10, 1836	~M6.25	South San Francisco Bay	Unknown, east of Monterey Bay	Shaking from Santa Clara to Carmel. Previously attributed to a source on the Hayward Fault from comparisons made at the time of that later event.
June 1838	Assumed between M6.8 and M7.4	San Francisco Area	San Andreas	Associated with probable rupture of the San Andreas Fault from Santa Clara to San Francisco (approximately 37 miles). Walls were cracked at Mission Dolores and in Monterey.
October 8, 1865	M6.5	Santa Cruz Mountain	San Andreas	Caused severe damage in New Almaden, Petaluma, San Francisco, San Jose, Santa Clara, and Santa Cruz, resulting in \$500,000 in property damage. Ground cracks, heaving, and subsidence were noted in several areas.
October 21, 1868	M6.8	Hayward	Hayward	Felt throughout northern California and Nevada. Resulted in 30 deaths and \$300,000 in property damage. Occurred on the Hayward Fault, with rupture from Berkeley to Fremont. Caused severe damage in the East Bay and San Francisco; destroyed Mission San Jose. U.S. Geological Survey estimates M7.0.
June 20, 1897	M6.2	Gilroy	Calaveras	Felt from Woodland to San Luis Obispo. Resulted in building collapse in the Santa Clara Valley. Fissures were noted on the Calaveras Fault southeast of Gilroy.
March 31, 1898	M6.3	Mare Island	Rodgers Creek	Approximately \$350,000 in property damage from building collapse at Mare Island Naval Yard and Tubbs Island. Additional severe damage at Schellville, Greenwood Estate, and along Petaluma Creek in Sonoma County, with moderate damage in San Francisco.

**Table 15.5-2  
Significant Historic Earthquakes in the San Francisco Bay Area (Continued)**

Date	Earthquake Magnitude <sup>1</sup>	Name, Location, or Region Affected	Associated Fault	Comments <sup>2</sup>
April 18, 1906	M7.8	San Francisco Earthquake, San Francisco	San Andreas	Earthquake and resulting fires caused approximately 3,000 deaths and \$524 million in damage (\$24 million from the earthquake alone). Destruction from earthquake occurred at distances of up to 350 miles from the epicenter.
June 1, 1911	M6.4	Morgan Hill	Calaveras	Caused substantial damage in Gilroy and the Santa Clara Valley. Felt as far away as Reno, Nevada.
April 24, 1984	M6.2	Morgan Hill Earthquake, Morgan Hill	Calaveras	Earthquake was felt from San Francisco to Bakersfield, and was located near the epicenter of the 1911 earthquake in Morgan Hill. Resulted in injuries and approximately \$8 million in property damage.
October 17, 1989	M6.9	Loma Prieta Earthquake, Santa Cruz Mountains	San Andreas	Largest earthquake to occur on the San Andreas Fault since 1906. Resulted in 63 deaths, more than 3,000 injuries, and an estimated \$6 billion in property damage. Severe damage occurred from San Francisco to Monterey and in the East Bay, and included damage and destruction of buildings, roads, bridges, and freeways.

Source: SF Planning, 2010.

Notes:

<sup>1</sup> Earthquake magnitudes and locations before 1932 are estimated by Real et al., 1978; Topozada et al., 1981; Topozada and Parke, 1982; Topozada et al., 1992; and Topozada and Borchardt, 1998, based on reports of damage and felt effects. Magnitudes reported using the Richter scale or equivalents.

<sup>2</sup> Earthquake damage information primarily compiled from the national Earthquake Information Center and the Berkeley Seismological Laboratory websites. Estimates of property damage are in dollars valued to the year of damage.

usually become less susceptible to liquefaction. For this reason, younger (i.e., Holocene-aged) alluvial sediments are especially prone to liquefaction (Knudsen et al., 2005). Damage from liquefaction results from any of a number of ground responses, including densification and subsidence, lateral spreading and flow failures, ground oscillation, and loss of bearing strength and temporary buoyancy of structures on the liquefied sediments (ABAG, 2001). Damage from liquefaction is generally most severe when liquefaction occurs within 15 to 20 feet of the ground surface.

Lateral spreading is a secondary effect of liquefaction, whereby large blocks of intact, nonliquefied soil move downslope on a liquefied substrate (Youd and Perkins, 1978; Tinsley et al., 1985). The mass moves toward an unconfined area such as down a slope. Because the failure surface is liquefied and has no strength to resist movement, lateral spreading can occur on slope gradients as gentle as a few degrees (ABAG, 2001).

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement and compaction of subsurface materials, causing the land surface to subside. Loose, uncompacted, sandy sediments are most prone to settlement; if this material is saturated and liquefies, settlement is typically greater. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible but nonhomogeneous sediments, such as poorly engineered artificial fill. With even small amounts of differential settlement, overlying structures are likely to be damaged (ABAG, 2001).

Liquefaction, lateral spreading, and seismic settlement may occur at the Colma and South San Francisco sites (GTC, 2011c).

Groundshaking can induce substantial changes in the stresses on slopes, causing earthquake-induced landslides or ground cracking if these changes are sufficient to cause the slope to fail. Landslides can occur in areas that are at moderate risk for landslides if they are also subject to strong ground motion during an earthquake. Strong groundshaking can trigger landslides on steep terrain underlain by weak soil and low-strength sheared rock, such as Franciscan mélange. The risk of landslides increases when the groundshaking occurs during periods of wet weather, compounding the effect of ground saturation on reduced slope stability (Highland and Bobrowski, 2008).

### 5.15.1.5 Geologic Hazards

#### *Expansive/Corrosive/Collapsible Soils*

The engineering properties of site soils can contribute to geologic hazards, such as those described below.

- Expansivity can occur when a soil is subjected to variations in moisture content that can relate to shrinkage and/or swelling, and thus to differential ground movements. Susceptibility is usually related to the content of expansive clays; therefore, coarse-grained soils are, by definition, not susceptible to expansion. An increase in moisture content triggers expansivity, while a decrease leads to shrinkage.

- Corrosivity to buried concrete and/or steel can occur when the chemical properties plus moisture conditions result in failure of engineering structures, unless they are properly designed and constructed.
- Collapsible materials are normally related to the soil structure, a function of depositional environment. Materials deposited rapidly in a generally arid environment are normally the most susceptible to collapse.

The soils data, described below, do not indicate that these types of geologic hazards would occur at the PPSU project sites.

### ***Landslides***

A landslide is a geological phenomenon that includes a wide range of ground movement. The action of gravity is the primary driving force for a landslide to occur; the slope of the hillside, and soil and rock conditions generally, resist the action of gravity. These resisting forces can decrease with increased slope steepness (as from erosion or excavation of the toe of the slope), with reduced soil cohesion or internal friction, and with increased soil pore water. Often, these changes occur gradually and make the area/slope prone to failure, whereas the actual landslide often requires a trigger such as earthquake shaking or rapid changes in soil pore water pressure (Johnson and DeGraff, 1988; Highland and Bobrowski, 2008).

Landslides can be classified based on the material involved (e.g., bedrock, coarse-grained soil, or fine-grained soil), the geometry of the failure surface (e.g., planar, translational, rotational), and the rapidity of earth movement (Johnson and DeGraff, 1988). Three types of damaging landslide activity that range from slow-moving to fast-moving and that could potentially occur within the study area are slides, earth flows, and debris flows. The term *slide* includes both slumps and translational slides, and *earth flows* are composed of clayey earth (Highland and Bobrowski, 2008). These kinds of landslides move slowly, in contrast to the rapid movement of *debris flows*. Slides and earth flows result in a deformed ground surface when they move, but remain in the landscape as recognizable landslide masses when they come to rest; whereas debris flows run downslope to locations lower in the landscape and form separate deposits that quickly become unrecognizable (Wentworth et al., 1997).

Geologists from Fugro William Lettis & Associates, Inc. identified several shallow landslides in the Franciscan mélangé above the main Serra Fault in the roadcut for Interstate 280, to the east of the SFPUC right-of-way (ROW), near the intersection with the Whitman Way onramp (FWLA, 2011). This geologic investigation was conducted on behalf of the SFPUC for the purpose of designing the PPSU project. Mapped landslides are not located in the project sites.

### ***Soils***

The characteristics of soil reflect the influences of climate, biological activity, time, and topography on the weathering of geological source material. Most of the soils in the study area have formed from in situ weathering of bedrock and are loamy (a mixture of sand, silt, and clay) (NRCS, 2009).

Figures 5.15-8 and 5.15-9 present a map showing the distribution of naturally occurring soils in the study area (Figure 5.15-8: Colma and South San Francisco sites and the common staging area; and Figure 5.15-9: San Bruno North and South and Millbrae sites) (USDA/SCS, 1991). The descriptions of the soil units are provided in Table 5.15-3.

As shown on Figure 5.15-8, the Colma and South San Francisco sites are predominantly underlain by Urban Land (greater than 85 percent covered by development), and the common staging area is underlain by Urban Land Orthents, smoothed complex 5- to 50-percent slopes.

As shown on Figure 5.15-9, the San Bruno North site is dominantly underlain by Orthents 5- to 75-percent slopes and Urban Land Orthents 5- to 75-percent slopes. The San Bruno South site is predominantly underlain by Urban land (the main staging and spoils areas), Urban Land Orthents 5- to 75-percent slopes, and Orthents, cut and fill, 15- to 75-percent slopes (pipeline ROW). The Millbrae site is underlain predominantly by Candlestick-Kron-Buriburi Complex soils, 30- to 75-percent slopes, some Orthents, cut and fill, 0- to 15-percent slopes along the golf course, and a small area of Urban Land Orthents 5- to 75-percent slopes near the trailhead at Lomita Avenue and Larkspur Drive access routes.

## 5.15.2 Regulatory Framework

### 5.15.2.1 Federal

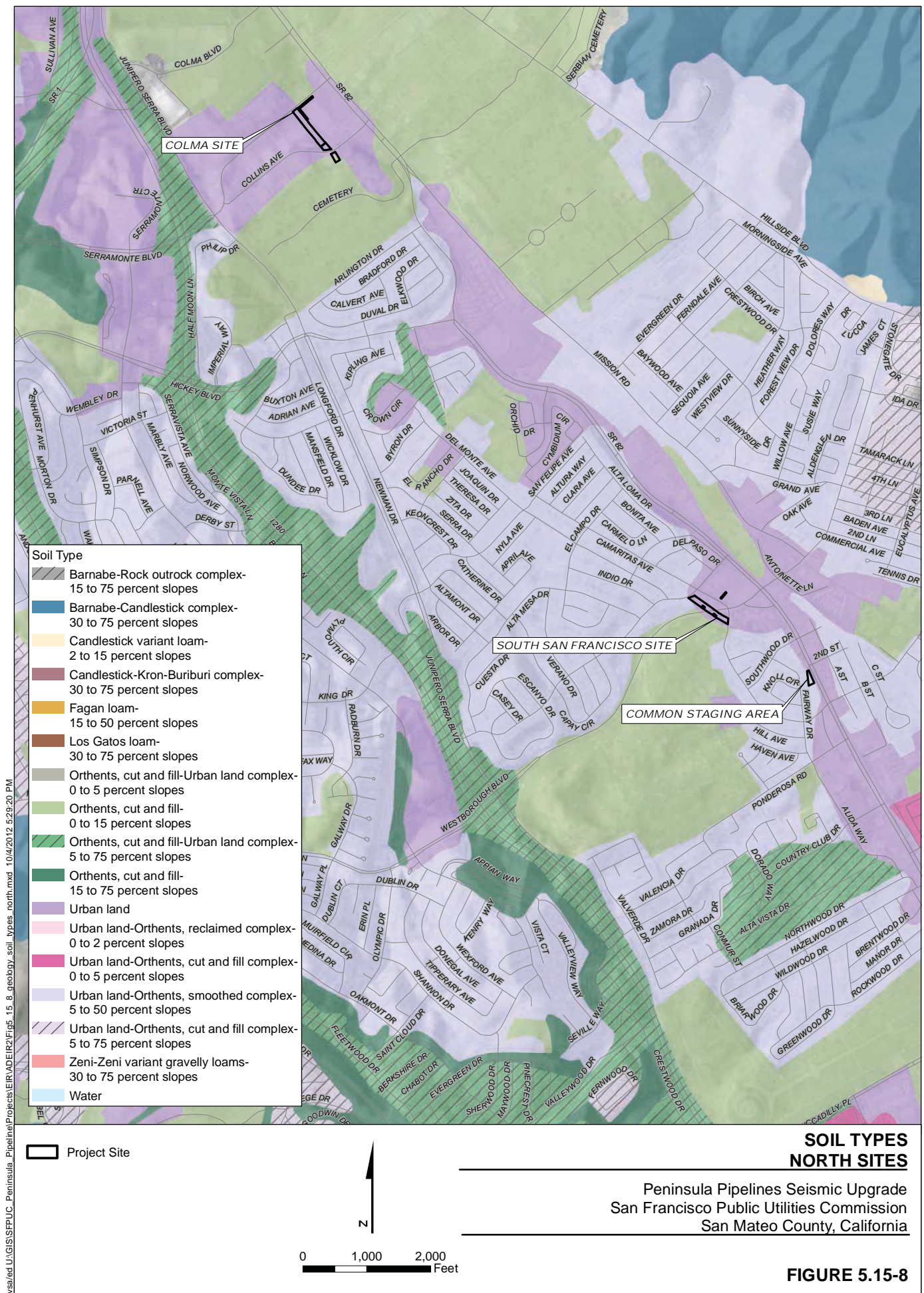
There are no federal regulations governing geologic and seismic hazards that are applicable to the proposed project.

### 5.15.2.2 State

#### *Alquist-Priolo Earthquake Fault Zoning Act*

California's Alquist-Priolo Earthquake Fault Zoning Act (California Public Resources Code Sec. 2621 et seq.), originally enacted in 1972 as the Alquist-Priolo Special Studies Zones Act and renamed in 1994, is intended to reduce the risk to life and property from surface fault rupture during earthquakes. The Alquist-Priolo Act prohibits the location of most types of structures intended for human occupancy across the traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as active, and establishes a process for reviewing building proposals in and adjacent to Earthquake Fault Zones.

Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well-defined." A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during Holocene time (defined for purposes of the Act as referring to approximately the last 11,000 years). A fault is considered well-defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Hart and Bryant, 1997).



- Soil Type**
- Barnabe-Rock outcrop complex- 15 to 75 percent slopes
  - Barnabe-Candlestick complex- 30 to 75 percent slopes
  - Candlestick variant loam- 2 to 15 percent slopes
  - Candlestick-Kron-Buriburi complex- 30 to 75 percent slopes
  - Fagan loam- 15 to 50 percent slopes
  - Los Gatos loam- 30 to 75 percent slopes
  - Orthenets, cut and fill-Urban land complex- 0 to 5 percent slopes
  - Orthenets, cut and fill- 0 to 15 percent slopes
  - Orthenets, cut and fill-Urban land complex- 5 to 75 percent slopes
  - Orthenets, cut and fill- 15 to 75 percent slopes
  - Urban land
  - Urban land-Orthenets, reclaimed complex- 0 to 2 percent slopes
  - Urban land-Orthenets, cut and fill complex- 0 to 5 percent slopes
  - Urban land-Orthenets, smoothed complex- 5 to 50 percent slopes
  - Urban land-Orthenets, cut and fill complex- 5 to 75 percent slopes
  - Zeni-Zeni variant gravelly loams- 30 to 75 percent slopes
  - Water

Project Site



0 1,000 2,000 Feet

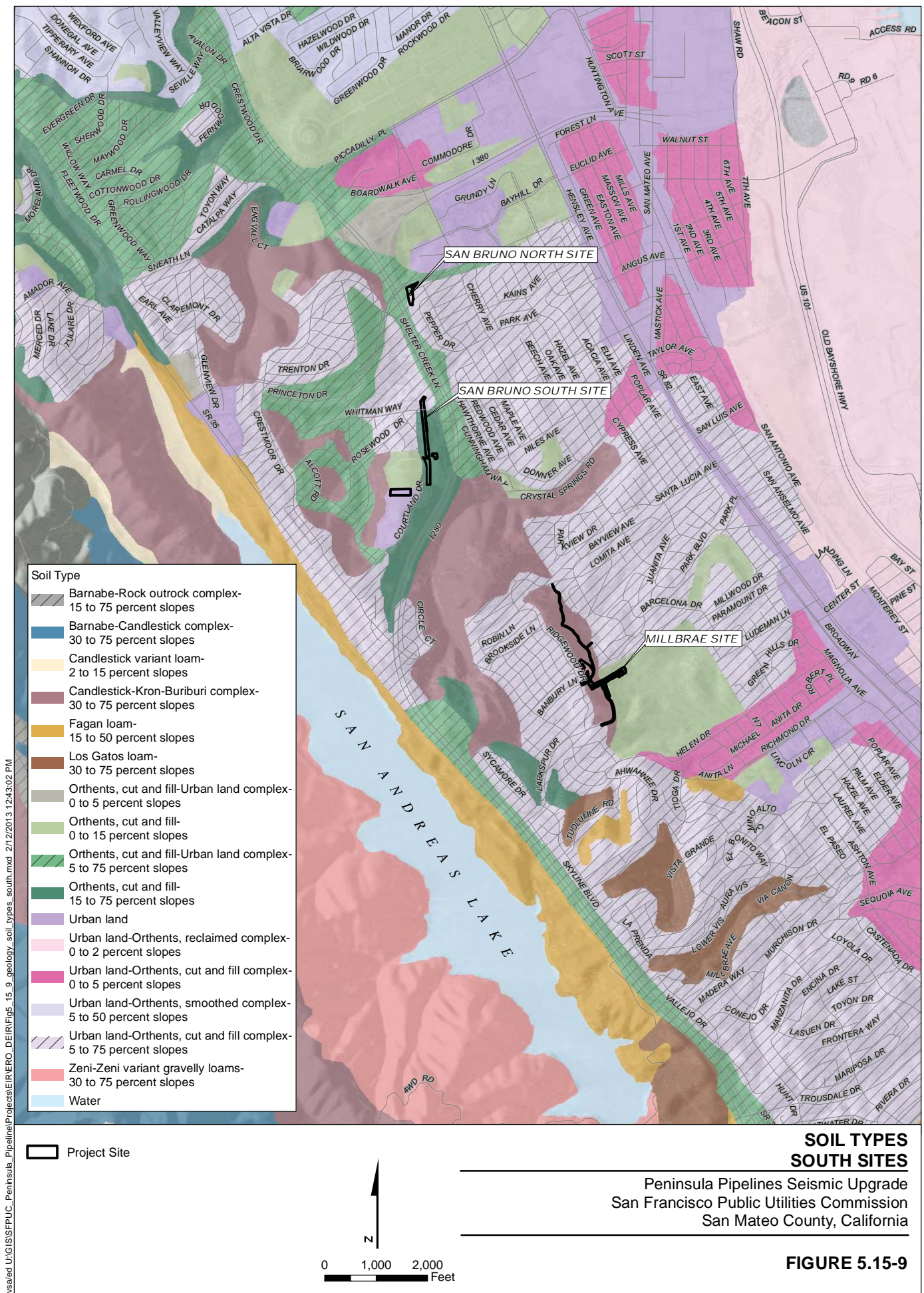
**SOIL TYPES  
NORTH SITES**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.15-8**

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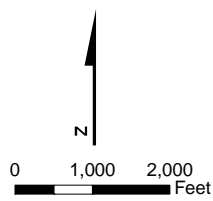
Sources: SFPUC 2011; Soil Data, NRCS, 2010



**Soil Type**

[Symbol]	Barnabe-Rock outcrop complex- 15 to 75 percent slopes
[Symbol]	Barnabe-Candlestick complex- 30 to 75 percent slopes
[Symbol]	Candlestick variant loam- 2 to 15 percent slopes
[Symbol]	Candlestick-Kron-Buriburi complex- 30 to 75 percent slopes
[Symbol]	Fagan loam- 15 to 50 percent slopes
[Symbol]	Los Gatos loam- 30 to 75 percent slopes
[Symbol]	Orthenis, cut and fill-Urban land complex- 0 to 5 percent slopes
[Symbol]	Orthenis, cut and fill- 0 to 15 percent slopes
[Symbol]	Orthenis, cut and fill-Urban land complex- 5 to 75 percent slopes
[Symbol]	Orthenis, cut and fill- 15 to 75 percent slopes
[Symbol]	Urban land
[Symbol]	Urban land-Orthenis, reclaimed complex- 0 to 2 percent slopes
[Symbol]	Urban land-Orthenis, cut and fill complex- 0 to 5 percent slopes
[Symbol]	Urban land-Orthenis, smoothed complex- 5 to 50 percent slopes
[Symbol]	Urban land-Orthenis, cut and fill complex- 5 to 75 percent slopes
[Symbol]	Zeni-Zeni variant gravelly loams- 30 to 75 percent slopes
[Symbol]	Water

Project Site



**SOIL TYPES  
SOUTH SITES**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 5.15-9**

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Sources: SFPUC 2011; Soil Data, NRCS 201



**Table 5.15-3  
Soil Types in the Study Area**

<b>Soil Type<sup>1</sup></b>	<b>Predominant Parent Material</b>	<b>Permeability and Other Physical Properties</b>	<b>Runoff</b>	<b>Water Erosion Hazard</b>	<b>Other</b>
110 Candlestick-Kron-Buriburi Complex, 30- to 75-percent slopes	Hard, fractured sandstone	Moderately slow to moderate	Rapid or very rapid	High or very high	Highly susceptible to slippage when wet
121 Orthents – Cut and Fill 0- to 15-percent slopes	Hard or soft sandstone	Highly variable due to different fill materials	Medium	Moderate	Typically used for recreational development (e.g., golf courses) or cemeteries
122 Orthents – Cut and Fill 15- to 75-percent slopes	Sandstone	Highly variable due to different fill materials	Rapid or very rapid	High or very high	Typically urban development
124 Orthents Cut and Fill Urban Land Complex 5- to 75-percent slopes	Sandstone	Highly variable	Medium to very rapid	Moderate to very high	Typically used for urban development
131 Urban Land (>85 percent covered by asphalt, concrete, buildings)	N/A	N/A	N/A	N/A	Typically used for homesite, urban and recreational development
133 Urban Land – Orthents Cut and Fill Complex 5- to 75-percent slopes	N/A	Highly variable due to different fill materials	Medium to very rapid	Moderate to very high	Typically used for homesite development, including roads and streets
135 Urban Land – Orthents, smoothed complex, 5- to 50-percent slopes	Soft sandstone	Highly variable	Medium to rapid	Moderate or high	Typically used for homesite development

Source: USDA/SCS, 1991.

Note:

<sup>1</sup> Refer to Figures 5.15-8 and 5.15-9 for location of soil types relative to project components.

### ***Seismic Hazards Mapping Act***

Like the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (California Public Resources Code Sections 2690-2699.6) is intended to reduce damage resulting from earthquakes. While the Alquist-Priolo Act addresses surface fault rupture, the Seismic Hazards Mapping Act addresses other earthquake-related hazards, including strong groundshaking, liquefaction, and seismically induced landslides. Its provisions are similar in concept to those of the Alquist-Priolo Act: The state is charged with identifying and mapping areas at risk of strong groundshaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within mapped Seismic Hazard Zones.

Under the Seismic Hazards Mapping Act, permit review is the primary mechanism for local regulation of development. Specifically, cities and counties are prohibited from issuing development permits for sites within Seismic Hazard Zones until appropriate site-specific geologic and/or geotechnical investigations have been carried out and measures to reduce potential damage have been incorporated into the development plans.

### ***Building Codes***

The California Building Code (CBC), which is codified in Title 24 of the California Code of Regulations, Part 2, was promulgated to safeguard the public health, safety, and general welfare by establishing minimum standards related to structural strength, egress facilities, and general building stability. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable.

The 2010 CBC is based on the 2009 International Building Code. In addition, the CBC contains necessary California amendments that are based on the American Society of Civil Engineers Minimum Design Standards 7-05. American Society of Civil Engineers 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion in building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients, all of which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site, and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

While construction of any aboveground facilities would generally be subject to the CBC, the Building Seismic Safety Council acknowledges that structures that require special considerations, such as buried utility lines, and their appurtenances, are not typical structures (BSSC, 2009).

### 5.15.2.3 Local

#### *SFPUC General Seismic Design Requirements*

The SFPUC established the General Seismic Design Requirements (SFPUC, 2006) to implement consistent criteria for the design and retrofit of all facilities and components of the regional water system. These design requirements require that every Water System Improvement Program project must have project-specific design criteria based on the local seismic environment and the importance of the subject facility to achieve the water service delivery goals in the event of a major earthquake. A major earthquake is identified in the General Seismic Design Requirements as earthquakes of M 7.8 or larger on the San Andreas Fault, M 7.1 or larger on the Hayward Fault, or M 6.8 or larger on the Calaveras Fault. The design criteria are based on standard industry practices, codes and standards, but exceed these requirements for facilities that are located in a severe seismic environment and are needed to achieve water system delivery goals. Under these design requirements, each facility is evaluated for its necessity in meeting the water service delivery goals and assigned a seismic performance class for the purposes of determining appropriate seismic design criteria.

Facilities needed to achieve a basic level of service within 24 hours of a major earthquake are assigned a seismic performance class of Critical. Facilities needed to achieve the specified level of service within 30 days of a major earthquake are classified as Important. This class includes structures and components of the storage, distribution, treatment, and control systems with some level of redundancy, or for which failure would not result in an unacceptable level of service. Other facilities, such as administrative centers, repair shops, service centers, and similar support facilities, are classified as Standard. These facilities are not needed to achieve the water service delivery goals of the Water System Improvement Program and might not be repaired following a major earthquake for economic reasons.

The PPSU project would be classified as “Critical” due to the number of components and control systems with little or no redundancy, the failure of which would result in an unacceptable level of service (G&E Engineering Systems, Inc., 2012).

## 5.15.3 Impacts and Mitigation Measures

### 5.15.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to geology and soils, but generally considers that implementation of the proposed project would have a significant impact on geology and soils if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42),

- Strong seismic groundshaking,
- Seismic-related ground failure, including liquefaction, or
- Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems; or
- Substantially change the topography or any unique geologic or physical features of the site.

### 5.15.3.2 Approach to Analysis

Due to the nature of the proposed project, there would be no project impacts related to the following significance criteria. Therefore, an impact discussion is not provided for the reasons described below.

PPSU project construction would have no impacts related to the following significance criteria:

- **Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving; rupture of a known earthquake fault; strong seismic groundshaking; seismic-related ground failure, including liquefaction; or landslides.** Because the project construction duration is considered relatively brief compared to the recurrence interval for a seismic event, it is considered unlikely that surface fault rupture, groundshaking, ground failure, or landslides associated with a seismic event, would have a substantial adverse effect on the proposed project. This significance criterion is intended to address facility siting and design impacts and does not apply to temporary construction impacts. Therefore, this significance criterion is not applicable to project construction activities and is discussed below under Impact GE-2 only as it relates to long-term operational impacts.
- **Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code, creating substantial risks to life or property.** This significance criterion is intended to address facility siting and design impacts, and does not apply to temporary construction impacts. Therefore, this significance criterion is not applicable to project construction activities, and is analyzed below under Impact GE-4 only as it relates to project operations.

PPSU project operations would have no impacts related to the following significance criterion:

- **Result in substantial soil erosion or the loss of topsoil.** During project operations, project activities would be similar to existing operations and maintenance activities, and would

entail inspections, discharge of water from the manholes as required by other SFPUC projects or inspections, and vegetation management in the SFPUC ROW. Water discharge would be conducted in accordance with SFPUC standard operating procedures for erosions control and water transmission system discharges (SFPUC's Erosion Control Standard Operating Procedure [RMC Water and Environment, 2008]) and the SFPUC's Policies and Procedures for Transmission System Discharges (SFPUC, 2009a), as well as the San Francisco Regional Water Quality Control Board (RWQCB)'s Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008) and the State Water Resources Control Board's National Pollutant Discharge Elimination System General Permit (Order 2003-0003-DWQ), as described in Section 5.16, Hydrology and Water Quality. No project operations impacts related to soils erosion or loss of topsoil are anticipated. Therefore, this significance criterion is not applicable to project operations and is analyzed below under Impact GE-1 only as it relates to project construction.

Both PPSU project construction and operations would have no impacts related to the following significance criteria:

- **Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.** Construction and operation of the proposed project would not result in the disposal of wastewater via infiltration to soils. Therefore, the significance criterion related to the capacity of soils in the project area to support septic tanks or alternative wastewater disposal systems is not applicable to construction or operation of the proposed project and is not analyzed further.
- **Substantially change the topography or any unique geologic or physical features of the site.** The proposed project would entail excavation activities for the upgrade of the pipelines, and the existing topography would be altered during project construction activities. Because there are no unique geologic or physical features on the sites, the project sites have previously been modified from their natural state, and project-related modifications would be consistent with the current character and topography of the site, the project would not result in substantial changes to topography or unique features. Therefore, the significance criterion related to substantial changes in topography or unique geologic or physical features of the site is not applicable to construction or operation of the proposed project, and is not analyzed further.

### 5.15.3.3 Summary of Impacts

Table 5.15-4 summarizes the proposed project's impacts on geology and soils and the resulting significance determination.

### 5.15.3.4 Construction Impacts and Mitigation Measures

***Impact GE-1: The project construction could result in substantial soil erosion or the loss of topsoil. (Less than Significant with Mitigation)***

Implementation of the proposed project would require excavation of up to approximately 60,940 cubic yards of soils to allow for the replacement and upgrade of existing pipelines. A portion of

**Table 5.15-4  
Summary of Impacts – Geology and Soils**

<b>Impacts</b>	<b>Significance Determination</b>
<b>Impact GE-1:</b> The project construction could result in substantial soil erosion or the loss of topsoil.	LSM
<b>Impact GE-2:</b> The project would not be located on a geologic unit that is unstable or that would become unstable as a result of the project.	LS
<b>Impact GE-3:</b> The project operations would not expose people or structures to potential substantial adverse effects involving surface fault rupture, groundshaking, ground failure, or landslides.	LS
<b>Impact GE-4:</b> During project operations, the project sites are not likely to become unstable.	LS
<b>Impact GE-5:</b> The proposed project would not be located on expansive soils that could create substantial risks during project operations.	LS
<b>Impact C-GE:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts related to geology and soils.	LSM
Notes: LS = Less-than-Significant impact, no mitigation required. LSM = Less-than-Significant impact, with Mitigation	

the soils would be reused on site and the remaining soils would be off-hauled. The excavation of these sites could result in substantial soil erosion during the rainy season. Additionally, the discharge and dewatering of water from the pipelines during construction could result in downstream erosion. As described in Section 5.16, Hydrology and Water Quality, the proposed project would comply with SFPUC standard operating procedures for erosions control and water transmission system discharges (SFPUC's Erosion Control Standard Operating Procedure [RMC Water and Environment, 2008] and the SFPUC's Policies and Procedures for Transmission System Discharges [SFPUC, 2009a]). The project would be implemented in accordance with the San Francisco RWQCB's Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008) and with the State Water Resources Control Board's National Pollutant Discharge Elimination System General Permit (Order 2003-0003-DWQ).

The removal of the topsoil during site preparation and excavation activities could result in the permanent loss of these soils. While it is possible that topsoil was previously disturbed or removed from these sites during the installation of the existing pipelines, whatever topsoil does remain would be removed during project construction activities. The removal of topsoil could result in a significant loss of topsoil.

**Mitigation Measure M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan** (see Section 5.16, Hydrology and Water Quality) addresses soil erosion by requiring the SFPUC's construction contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that specifies erosion control measures to be implemented during construction activities. This SWPPP would include best management practices to reduce

the likelihood of erosion; e.g., silt fences or fiber rolls around the perimeter of the construction zone, location of stockpiles greater than 50 feet from concentrated flows of water, and preservation of existing vegetation wherever possible. **Mitigation Measure M-BI-1a: General Protection Measures** (see Section 5.14, Biological Resources) addresses impacts related to the loss of topsoil by requiring the construction contractor to salvage topsoil generated during excavations for subsequent use as part of site restoration activities. With implementation of these mitigation measures at all project sites, as well as the common staging area, in addition to compliance with regulations described above, impacts related to substantial soil erosion or the loss of topsoil would be reduced to *less than significant with mitigation*.

***Impact GE-2: The project would not be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project. (Less than Significant)***

The project would not be located on statically unstable soils or geologic materials. However, as described in Section 5.15.1.4, Seismic Hazards, above, during an earthquake the soils at the Colma and South San Francisco sites could become dynamically unstable (GTC, 2011c). The likelihood of an earthquake capable of causing liquefaction, lateral spreading, and seismic settlement occurring during the 2-month construction period at the Colma site or the 3-month construction period at the South San Francisco site is extremely remote. In addition, during project construction, engineered shoring or sloping of excavation faces would prevent slope or excavation face instability. Construction activities including excavation, shoring, and trenching are subject to occupational safety standards specified in the regulations of the California Division of Occupational Safety and Health (Title 8 of the California Code of Regulations and Section A33 of the CBC), which prescribe allowable slope steepness based on the characteristics of site soils, and identify situations where shoring or other support systems are required to ensure worker safety. These regulations, and compliance with additional recommendations from site-specific geotechnical investigations conducted to support construction activities, would further reduce potential impacts related to instability and failure or collapse of temporary excavations. Detailed geotechnical investigations have been conducted at the five sites (GTC, 2011a, GTC, 2011b, and GTC, 2011c). Specific requirements pertain to each of the following activities: site preparation; excavations and ground support; groundwater/dewatering; pipeline trenching; pipe bedding and pipe-zone backfill; trench zone backfill; trenchless crossings; modulus of soil reaction; thrust block design; and corrosion. These requirements would be implemented for the project as described in Section 3.8 of the Project Description. For all of the above reasons, impacts related to unstable geologic units or soils would be *less than significant*.

### 5.15.3.5 Operational Impacts and Mitigation Measures

***Impact GE-3: The project operations would not expose people or structures to potential substantial adverse effects involving surface fault rupture, groundshaking, ground failure, or landslides. (Less than Significant)***

The proposed project would reduce the seismic vulnerability of SAPL2, SAPL3, and SSBPL to earthquakes. This would be accomplished by replacing pipeline segments and providing structural support for pipeline segments where they are susceptible to the Serra Fault, liquefaction, and groundshaking. Implementation of the SFPUC's General Seismic Design

Requirements, described in Section 5.15.2.3, above (which include designation of facilities as Critical, Important, or Standard), would serve to ensure that water service delivery goals are achieved in the event of a major earthquake without related geology and soils impacts. In accordance with SFPUC guidelines, the pipelines are all considered Critical; the retrofits would be designed and constructed to the highest standards to ensure that water service delivery goals are met. These design requirements require a site-specific investigation, and development of project-specific design criteria based on the seismic performance class of the facility as well as the site-specific geologic and seismic hazards.

The seismic criteria and procedures included in the SFPUC's General Seismic Design Requirements are incorporated into the design of the project, including strengthening of the pipes. Therefore, impacts during project operation related to seismic hazards, including fault rupture, groundshaking, seismic-related liquefaction and settlement, and landslides, would be *less than significant*.

***Impact GE-4: During project operations, the project sites are not likely to become unstable. (Less than Significant)***

The proposed project involves the seismic upgrade of subsurface pipelines. The pipelines are not located on slopes that are subject to failure. Small slope failures are identified in the Franciscan mélangé exposures over 100 feet east of SAPL3 at the San Bruno South site but not in the Merced Formation that underlies the pipe alignment. Therefore, the potential slope instability of the reconstructed slopes would be *less than significant*.

***Impact GE-5: The proposed project would not be located on expansive soils that could create substantial risks during project operations. (Less than Significant)***

Problematic soils, including expansive and corrosive soils, can cause damage to improperly designed structures and facilities, potentially requiring repairs, and/or increasing the need for maintenance. Although clay-rich zones within Franciscan bedrock may be expansive, project-specific geotechnical studies (GTC, 2011a, 2011b, 2011c) have not identified any substantial hazards associated with shrink-swell potential in native soils at the PPSU sites. Therefore, the PPSU project would have a *less-than-significant* impact due to expansive or corrosive soils.

### 5.15.3.6 Cumulative Impacts and Mitigation Measures

***Impact C-GE: Project construction could result in a cumulatively considerable contribution to cumulative impacts related to geology and soils. (Less than Significant with Mitigation)***

The geographic scope for cumulative geologic and seismic impacts includes the project sites and immediate vicinity because these impacts are generally site-specific and depend on the local geology and soil conditions.

The SFPUC's Groundwater Storage and Recovery project would construct 16 groundwater production well facilities in various Peninsula locations, including the Town of Colma, the cities of Daly City, South San Francisco, San Bruno, Millbrae, and a small area of unincorporated San Mateo County. The SFPUC's Harry Tracy Water Treatment Plant (HTWTP) Long-Term



Improvements project entails improvements to water treatment facilities to meet water quality and delivery reliability goals, seismic reliability improvements, and other improvements to the HTWTP such as pipeline distribution, access, and site improvements. This project is also located in San Bruno, on Crystal Springs Road, East of Interstate 280. These projects would comply with SFPUC's General Seismic Design Requirements and the 2010 CBC. The SFPUC General Seismic Design Requirements are generally more stringent than the CBC because they take into account the critical nature of the facilities that are being upgraded. Other pending development projects in San Bruno and Millbrae include 14 single-family homes with a new private access road on Cedar Avenue, and improvements to Parkside Intermediate School classroom buildings (demolition and replacement) at Donner Avenue and Niles Avenue. In Millbrae, the Millbrae Safeway Store Replacement Project would demolish the existing store and reconstruct a new, podium style store, with parking underneath, at El Camino Real between Taylor Boulevard and Silva Avenue. Each of these three projects would address its specific geologic site conditions in accordance with the 2010 CBC. The CBC provides requirements for general structural design and determining earthquake and other loads, and provides design specifications based on a project's seismic design category. Compliance with these regulatory requirements would minimize potential cumulative impacts related to surface fault rupture, groundshaking, ground failure, landslides, slope instability, or expansive soils at each project site, through design for strengthened pipelines at fault crossings and at zones susceptible to liquefaction; and through pipeline stabilization. Cumulative impacts related to these issues would therefore be less than significant.

All of the cumulative projects described above would require ground disturbance, which could result in soil erosion and loss of topsoil. This would be greatest at projects involving new construction, as well as at the Parkside Intermediate School, where several aged trees would be removed from the western part of the site, and the current landscaping would be replaced. The PPSU project could contribute to this potential impact during project construction. Depending on the extent of erosion and removal of topsoil, these projects could result in a significant cumulative impact. The PPSU project could have a cumulatively considerable contribution to this potentially significant impact because project excavation could result in substantial soil erosion during the rainy season, and the discharge and dewatering of water from the pipelines during construction could result in downstream erosion. Additionally, topsoil would be removed at all sites. However, Mitigation Measures **M-HY-1: Preparation and Implementation of a SWPPP** (see Impact HY-1 in Section 5.16, Hydrology and Water Quality, for description), and **M-BI-1a: General Protection Measures** (see Impact BI-1 in Section 5.14, Biological Resources, for description), identified under Impact GE-1, would reduce the project's contribution to cumulative impacts. These mitigation measures would require preparation and implementation of a SWPPP that includes erosion control measures, the salvage of topsoil excavated during construction activities, and reuse of that topsoil during site restoration activities. With implementation of these measures, the PPSU project would not have a cumulatively considerable contribution (*less than significant with mitigation*).

### 5.15.4 References

ABAG (Association of Bay Area Governments), 2001. The Real Dirt on Liquefaction: A Guide to the Liquefaction Hazard in Future Earthquakes Affecting the San Francisco Bay Area. Available online at: [www.abag.ca.gov/bayarea/eqmaps/liquefac/Lq\\_rept.pdf](http://www.abag.ca.gov/bayarea/eqmaps/liquefac/Lq_rept.pdf). Accessed July 2009.

ASCE (American Society of Civil Engineers) Minimum Design Standards 7-05.

Brabb, E. E., R. W. Graymer, and D. L. Jones, 1998. Geology of the Onshore Part of San Mateo County, California: A Digital Database. U.S. Geological Survey Open-File Report 98-137, 1:62,500.

Bryant, W. A., and E. W. Hart, 2007. Fault-Rupture Hazard Zones in California: Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps. Special Publication 42. California Geologic Survey.

BSSC (Building Seismic Safety Council), 2003. The 2003 NEHRP Recommended Provisions for New Buildings and Other Structures Part 2: Commentary (FEMA 450), Chapter 14. Available online at: [www.bssconline.org/NEHRP2003/comments](http://www.bssconline.org/NEHRP2003/comments). Accessed July 2009.

CDMG (California Division of Mines and Geology), 1996. Probabilistic Seismic Hazard Assessment for the State of California. Open File Report 9608.

CGS (California Geological Survey), 2002a. California Geomorphic Provinces. Note 36.

CGS (California Geological Survey), 2002b. The revised 2002 California Probabilistic Seismic Hazard Maps. Tianqing Cao, William A. Bryant, Badie Rowshandel, David Branum, and Christopher J. Wills. Available online at: [www.conservation.ca.gov/cgs/rghm/psha/Pages/Index.aspx](http://www.conservation.ca.gov/cgs/rghm/psha/Pages/Index.aspx). Accessed July 2009.

CGS (California Geological Survey), 2009. Seismic Hazards Zonation Program Available online at: [www.conservation.ca.gov/cgs/rghm/psha/Pages/Index.aspx](http://www.conservation.ca.gov/cgs/rghm/psha/Pages/Index.aspx). Accessed July 2009.

Clifton, H. E., and E. L. Leithold, 1991. Quaternary Coastal and Shallow-Marine Facies Sequences, Northern California and the Pacific Northwest. In R.B. Morrison (ed.), Quaternary Nonglacial Geology: Conterminous U.S. The Geology of North America Volume K-2. Geological Society of America.

FWLA (Fugro William Lettis & Associates, Inc.), 2011. Final Report, Fault Rupture Hazard Assessment. San Andreas Numbers 2 and 3 and Sunset Supply Branch Pipelines Serra Fault Zone Crossings, San Bruno and Millbrae, California. January.

G&E Engineering Systems, Inc., 2012. CUW 36702 Peninsula Pipeline Seismic Upgrade Project, Final Conceptual Engineering Report. April. GTC (Geotechnical Consultants, Inc.), 2011a. Final Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade, CS-101, SF10016B, March.

GTC (Geotechnical Consultants, Inc.), 2011b. Final Addendum to the Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade, CS-101, SF10016C. November.

GTC (Geotechnical Consultants, Inc.), 2011c. Final Addendum to the Geotechnical Interpretive Report, Peninsula Pipelines Upgrade, CS 101, SF10016C, November.

Graymer, R.W., W. Bryant, C.A. McCabe, S. Hecker, and C.S. Prentice, 2006. Map of Quaternary-active Faults in the San Francisco Bay Region: USGS Scientific Investigations Map 2919, scale 1:275,000, digital files. Available online at: <http://pubs.usgs.gov/sim/2006/2919>.

Hengesh, J. V., J. M. Nolan, and J. Wakabayashi, 2004. Seismic Hazards associated with the Serra Fault, San Francisco Peninsula, California: in Kennedy, D.G., and C.S. Hitchcock, eds., AEG Field Trip Guide Book Seismic Hazard of the Range Front Thrust Faults Northeastern Santa Cruz Mountains/ Southwestern Santa Clara Valley, pp. 4-1 to 4-9.

Highland, L. M. and P. Bobrowsky, 2008. The Landslide Handbook—A Guide to Understanding Landslides. USGS Circular 1345.

Johnson, R. B., and J. V. DeGraff, 1988. Principles of Engineering Geology. New York: John Wiley & Sons.

Kennedy, D. G., 2002. Neotectonic Character of the Serra fault, Northern San Francisco Peninsula, California: unpublished M.S. thesis, San Francisco State University, 117 pp.

Kennedy, D. G., and C. S. Hitchcock, 2004. Seismic Hazard of the Range Front Thrust Faults, Northeastern Santa Cruz Mountains/Southwestern Santa Clara Valley: An Overview: *in* Kennedy, D.G., and C.S. Hitchcock, eds., AEG Field Trip Guide book Seismic Hazard of the Range Front Thrust Faults Northeastern Santa Cruz Mountains/Southwestern Santa Clara Valley. pp. 1-6.

Knudsen, K. L., J. M. Sowers, R. C. Witter, C. M. Wentworth, and E. J. Helley, 2005. Preliminary Mapping of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California. United States Geological Survey Open-File Report 00-444. Scale 1:275,000.

NRCS (Natural Resources Conservation Service), 2009. Web Soil Survey, San Mateo County Eastern Part and San Francisco County [map and data 2004, 2008] and San Mateo County Area [map and data 2006–2007]. Available online at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. Accessed July 2009. Accessed July 2009.

Norris, R. M., and R. W. Webb, 1990. Geology of California, 2nd Ed. John Wiley & Sons, Inc.

Pampeyan, E. H., 1994. Geologic Map of the Montara Mountain and San Mateo 7-½-foot Quadrangles, San Mateo County, California: U.S. Geological Survey Map I-2390, 1:24,000.

Plafker, G. and J. P. Galloway, 1989. Lessons Learned from the Loma Prieta, California Earthquake of October 17, 1989. U.S. Government Printing Office.

Real, C. R., T. R. Topozada, and D. L. Parke, 1978. Earthquake Catalog of California, January 1, 1900–December 31, 1974, California Division of Mines and Geology Special Publication 52.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2010. Crystal Springs/San Andreas Transmission Upgrade Project, Final Environmental Impact Report, Case No. 2007.1255E. May.

SFPUC (San Francisco Public Utilities Commission), 2006. General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities. August 15.

Tinsley, J. C., T. L. Youd, D. M. Perkins, and A. T. F. Chen, 1985. Evaluating Liquefaction Potential in Evaluating Earthquake Hazards in the Los Angeles Region—An earth science perspective. U.S. Geological Survey Professional Paper 1360:263–315.

Topozada, T. R., C. R. Real, and D. L. Parke, 1981. Preparation of Iseismal Maps and Summaries of Reported Effects for Pre-1900 California Earthquakes. California Division of Mines and Geology Open-File Report 81-11, 182 pp.

Topozada, T. R., and D. L. Parke, 1982. Areas Damaged by California Earthquakes, 1900–1949. California Division of Mines and Geology Open-File Report 82-17, 65 pp.

Topozada, T. R., J. H. Bennett, C. L. Hallstrom, and L. G. Youngs, 1992. 1898 “Mare Island” Earthquake at the Southern end of the Rodger Creek Fault. Pages 385–392 in G. Borchardt et al. (eds.). Proceedings of the second conference on earthquake hazards in the eastern San Francisco Bay Area. California Division of Mines and Geology Special Publication 113.

Topozada, T. R., and G. Borchardt, 1998. Re-evaluation of the 1836 “Hayward Fault” and the 1838 San Andreas Fault Earthquakes. Bulletin of the Seismological Society of America 88(1):140–159.

USDA (U.S. Department of Agriculture)/SCS (Soil Conservation Service), 1991. Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California.

USGS (U.S. Geological Survey), 2003. Earthquake Probabilities in the San Francisco Bay Region: 2002–2031. Open-File Report 03-214. Working Group on California Earthquake Probabilities.

USGS (U.S. Geological Survey) and CGS (California Geological Survey), 2008. The Uniform California Earthquake Rupture Forecast, Version 2 (UCERF 2). Open-File Report 2007-1437; CGS Special Report 203. 2007 Working Group on California Earthquake Probabilities.

Wagner, D. L., E. J. Bortugno, and R. D. McJunkin, 1990. Geologic Map of the San Francisco–San Jose Quadrangle, Scale 1:250,000. (Regional Geologic Map Series, Map No. 5A.) Sacramento, CA: California Division of Mines and Geology.

Wentworth, C. M., S. E. Graham, R. J. Pike, G. S. Beukelman, D. W. Ramsey, and A. D. Barron, 1997. Summary Distribution of Slides and Earth Flows in the San Francisco Bay Region, California. GIS database for USGS Open-File Report 97-745 Part C.

Youd, T. L., and D. M. Perkins, 1978. Mapping Liquefaction Induced Ground Failure Potential. In Proceedings of the American Society of Civil Engineers, Journal of the Geotechnical Engineering Division.

## 5.16 Hydrology and Water Quality

This section describes existing surface water and groundwater features in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project and evaluates the potential hydrology and water quality impacts of the proposed project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.16.1 Setting

This section describes the setting, including San Francisco Public Utilities Commission (SFPUC) water supply facilities and operations related to surface water and groundwater hydrology, and water quality resources that could be affected by the proposed project.

#### 5.16.1.1 Regional Hydrology

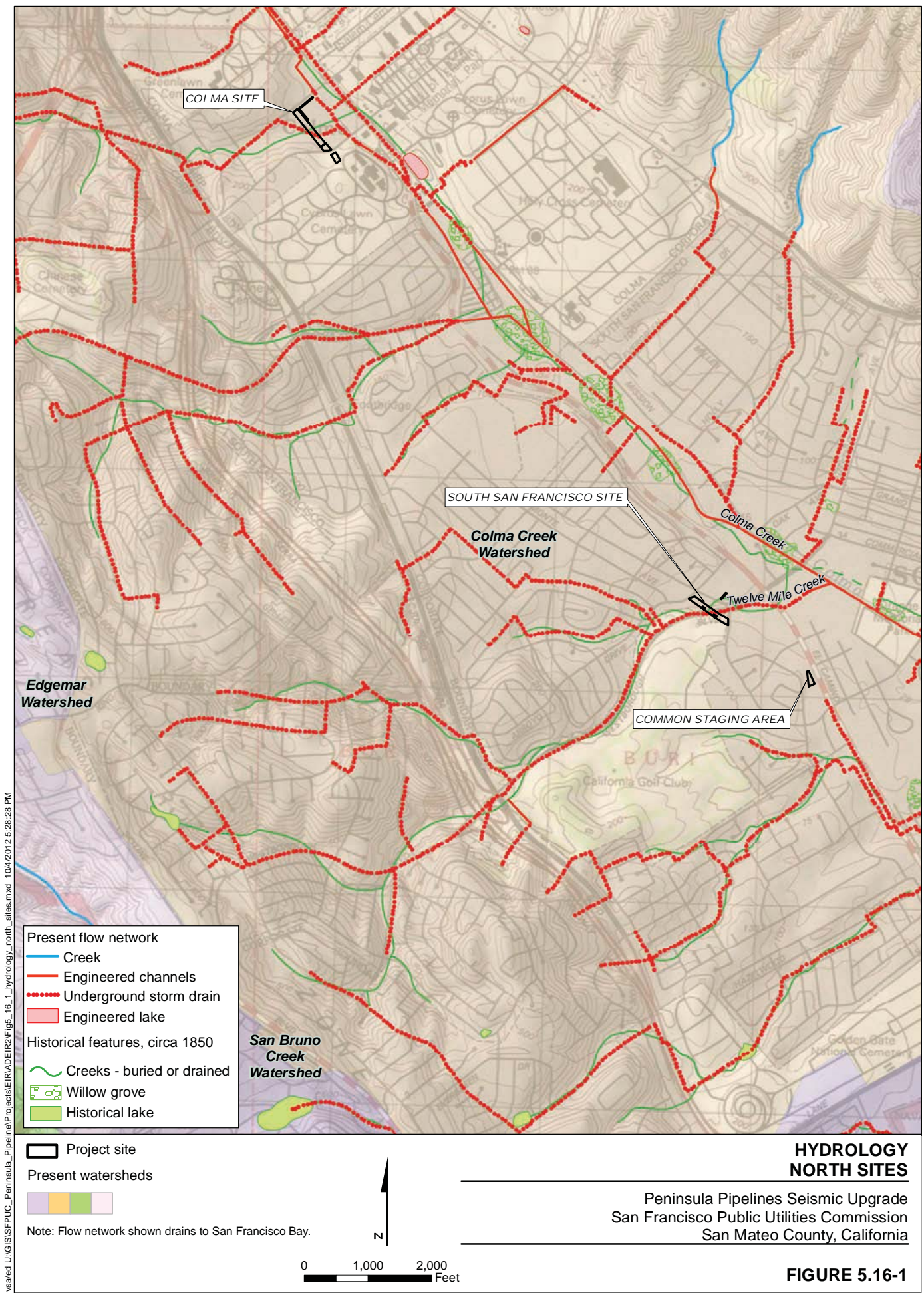
The study area lies within the San Francisco Bay hydrologic region, which covers an area of approximately 4,603 square miles extending from southern Santa Clara County north to Tomales Bay in Marin County, and inland to the confluence of the Sacramento and San Joaquin rivers (RWQCB, 2010). Rivers and streams in the region flow to San Francisco Bay or directly to the Pacific Ocean. The dominant feature is San Francisco Bay, where fresh water from the Central Valley mixes with saline water from the Pacific Ocean. Along the San Francisco Peninsula, watershed boundaries are formed by natural topographic divides or engineered structures that have altered natural drainage patterns, such as dams, engineered channels, and major roadways.

#### 5.16.1.2 Study Area Hydrology

The project sites are located within three watersheds, as shown on Figures 5.16-1 and 5.16-2, and as described below. The characteristics of the watersheds are summarized in Table 5.16-1.

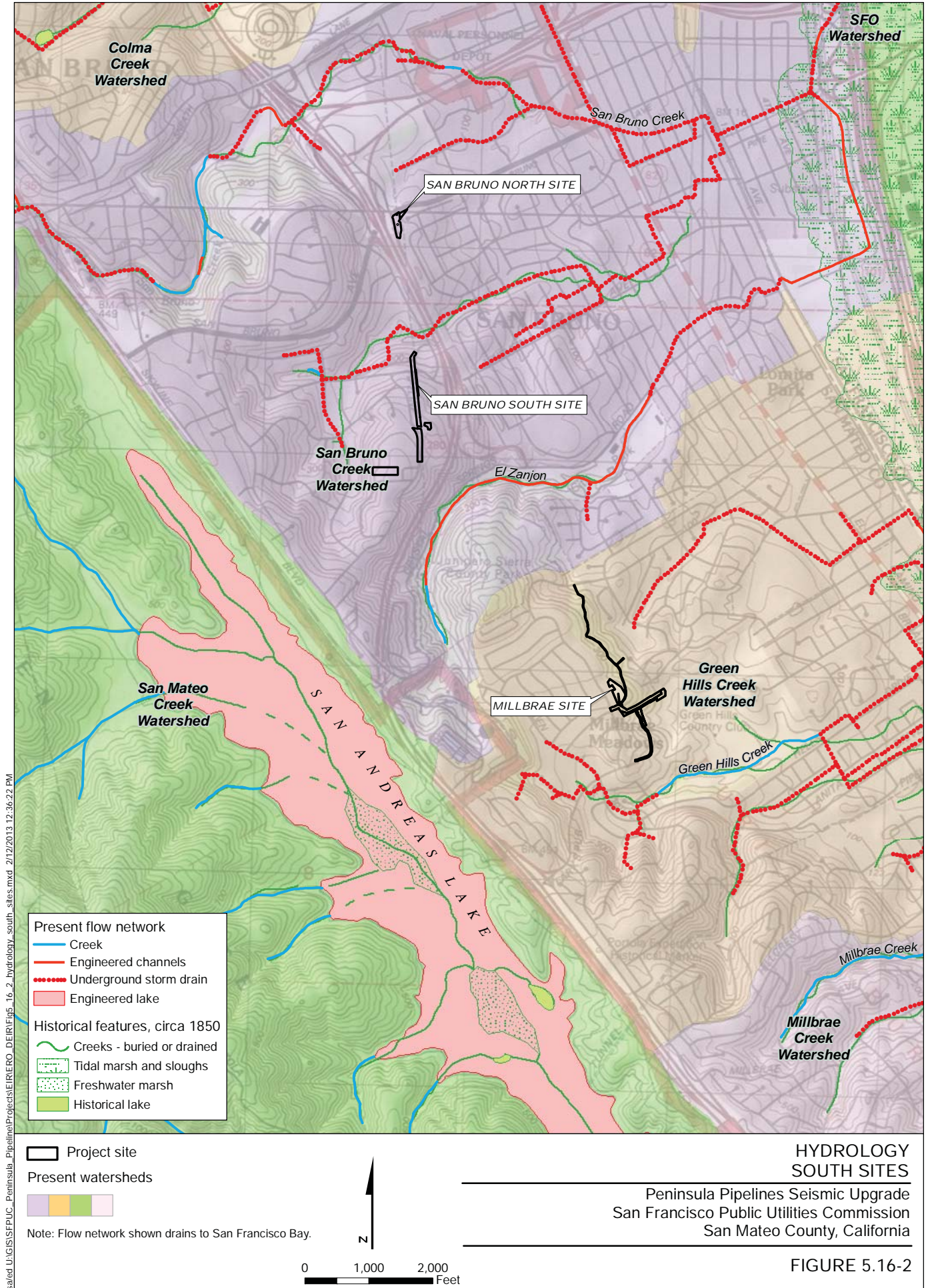
##### *Colma Creek Watershed*

The Colma and South San Francisco sites and the common staging area are located within the Colma Creek Watershed. The Colma Creek watershed includes portions of San Bruno Mountain, as well as urbanized areas of Daly City, Colma, and South San Francisco. Most of this urbanized creek is channelized and/or conveyed underground to allow for urban development. An unnamed culverted tributary to Colma Creek extends through the Colma site; and a culverted portion of Twelve Mile Creek, also a tributary to Colma Creek, extends through the South San Francisco site. Colma Creek is a flood control channel maintained by the San Mateo County Department of Public Works that discharges into San Francisco Bay north of the San Francisco International Airport. No creeks, wetlands, or other surface water features are present in the immediate vicinity of the common staging area (SF Planning, 2008).



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Source: Hydrologic Data, William Lettis and Associates, Inc., 2007.

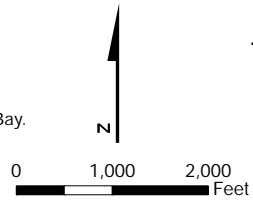


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- Present flow network**
- Creek
  - Engineered channels
  - ⋯ Underground storm drain
  - Engineered lake
- Historical features, circa 1850**
- Creeks - buried or drained
  - Tidal marsh and sloughs
  - Freshwater marsh
  - Historical lake

- Project site
- Present watersheds

Note: Flow network shown drains to San Francisco Bay.



**HYDROLOGY SOUTH SITES**  
 Peninsula Pipelines Seismic Upgrade  
 San Francisco Public Utilities Commission  
 San Mateo County, California

FIGURE 5.16-2

Sources: Topo Maps USA, 2011 (National Geographic Society); Hydrologic Data, William Lettits and Associates, Inc., 2007.

**Table 5.16-1  
 Creeks and Watersheds in the Study Area**

Creek Name	Watershed Area (square miles)	Unmodified Channel (miles)	Engineered Channel (miles)	Underground Culvert or Storm Drain (miles)	Channel Length (miles)	Surface Water Character near Project Site
Colma Creek	15.7	2.7	7.1	49.9	59.7	Underground culverts and storm drains
San Bruno Creek	4.6	0.8	3.9	9.1	13.8	Underground culverts and storm drains
Green Hills Creek	2.8	0.5	1.8	7.9	10.2	Underground culverts and storm drains

Sources: SMCWPPP, 2007; SFBAC, 2011.

***San Bruno Creek Watershed***

The San Bruno North and San Bruno South sites are located within the San Bruno Creek watershed. San Bruno Creek, including its tributaries, originally was an open, natural creek that flowed through the City of San Bruno to San Francisco Bay. As a result of urban development, the majority of the creeks within the watershed were placed in culverts, channels, and underground pipelines. Ultimately, the flow conveyed via the creek system discharges into San Francisco Bay north of San Francisco International Airport.

***Green Hills Creek Watershed***

The Millbrae site is located within the Green Hills Creek watershed, which is an urban watershed that includes natural creeks, engineered channels, and underground storm drains and culverts (see Table 5.16-1). Green Hills Creek and its tributaries drain via the Highline Canal to San Francisco Bay south of San Francisco International Airport.

Please refer to Section 5.14, Biological Resources, for information pertaining wetlands or waters of the United States or of the State of California.

**5.16.1.3 Surface Water Quality**

As described above, the project sites are located near urbanized creeks that drain into San Francisco Bay. Urban creeks of the San Francisco Bay Region are listed on the State Water Resources Control Board (SWRCB) 2002 Monitoring List for trash that could adversely affect water quality (SWRCB, 2003b). The amount of trash and litter in these urban creeks can vary greatly depending on nearby land uses and proximity to road overcrossings.

While San Mateo County monitors the water quality of some creeks in the county through the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), in compliance with its municipal National Pollutant Discharge Elimination System (NPDES) permit (as described



below), no detailed studies have been conducted for the Colma Creek, San Bruno Creek, or Green Hills Creek watersheds.

The San Francisco Bay Regional Water Quality Control Board (RWQCB), which regulates surface water quality in the study area, has established beneficial uses for surface water bodies and groundwater in the study area. These beneficial uses are described in the Water Quality Control Plan for the San Francisco Bay Region (Basin Plan). While the Basin Plan does not specify beneficial uses for Colma Creek, San Bruno Creek, or Green Hills Creek, existing beneficial uses for San Francisco Bay (to which these creeks ultimately discharge) include industrial service supply, commercial fishing, shellfish harvesting, estuarine habitat, fish migration, navigation, rare and endangered species preservation, wildlife habitat, and limited water contact recreation. Fish spawning is identified as a potential beneficial use. A detailed discussion of beneficial uses and water quality objectives can be found in the Basin Plan (RWQCB, 2010).

#### **5.16.1.4 Flood Potential**

The Flood Insurance Rate Maps (FIRMs) prepared by the Federal Emergency Management Agency (FEMA) for San Mateo County indicate that the study area is not located in FEMA-designated floodplains (FEMA, 1981a; FEMA, 1981b; Town of Colma, 1999; City of San Bruno, 2011).

Additionally, the project sites are not located within a mapped dam failure inundation area (ABAG, 2011).

#### **5.16.1.5 Groundwater**

The Westside Groundwater Basin has a surface area of approximately 45 square miles, and extends south from Golden Gate Park in the City of San Francisco to the City of Burlingame (DWR, 2006; SFPUC, 2010). The four major geologic units are the Jurassic-Cretaceous Franciscan Complex, Pliocene Merced Formation, Pleistocene Colma Formation, and the Pleistocene to recent Dune Sands. The primary water-producing aquifers are in the Merced and Colma formations. The cities of South San Francisco and San Bruno, among others, use groundwater from this basin for potable and nonpotable uses (SFPUC, 2010; WRIME, 2012).

The Colma and South San Francisco sites and the common staging area overlie the Westside Groundwater Basin. The San Bruno North and Millbrae sites are located on the boundary of the basin. The San Bruno South site is located west (i.e., outside of the basin).

The typical groundwater elevations within the Westside Groundwater Basin's primary production aquifer in the vicinity of the project sites are summarized in Table 5.16-2. Groundwater elevations noted during the recent geotechnical investigations conducted at the project sites are also provided in Table 5.16-2.

### **5.16.2 Regulatory Framework**

Applicable federal, State, and local laws and policies that govern hydrology, groundwater, and water quality in the study area are described below. For a list of specific permits required for implementation of the proposed project, refer to Section 3.10, Required Permits.

**Table 5.16-2  
 Groundwater Elevations and Depths in the Study Area**

<b>Project Site</b>	<b>Approximate Ground Surface Elevation<sup>1</sup> (feet)</b>	<b>Approximate Groundwater Elevation of Primary Production Aquifer (feet)</b>	<b>Approximate Depth Below Ground Surface of Primary Production Aquifer (feet)</b>	<b>Approximate Groundwater Elevation Encountered during Geotechnical Investigation<sup>1</sup> (feet)</b>	<b>Approximate Depth Below Ground Surface of Groundwater Encountered during Geotechnical Investigation (feet)</b>
Colma	115	-90	205	75	40
South San Francisco	55	-150	205	-4.5	59.5
San Bruno North <sup>2</sup>	217	-180	397	NA	NA
San Bruno South <sup>3</sup>	277 374	NA	NA	221 354	56 20
Millbrae <sup>2</sup>	279	-160	439	256	23
Common Staging Area	71	-160	231	43	28

Sources: SFPUC, 2008; SFPUC, 2010; Geotechnical Consultants, Inc., 2011a and 2011b.

Notes:

Elevations are per North American Vertical Datum of 1988.

<sup>1</sup> For the San Bruno South and Millbrae sites, data measured from piezometers installed during 2011 geotechnical investigations were used. For the Colma and South San Francisco sites, data measured from piezometers installed during 2010 geotechnical investigations were used. For the common staging area, data measured in 2006 during geotechnical investigations for the Baden Valve Lot were used.

<sup>2</sup> The San Bruno North and Millbrae sites are located on the Westside Groundwater Basin boundary.

<sup>3</sup> The San Bruno South site is located adjacent to, but not within, the Westside Groundwater Basin boundary.

NA = not available

### 5.16.2.1 Federal

#### *Clean Water Act*

The Clean Water Act of 1972 (CWA) (33 U.S. Code § 1257 et seq.) requires states to set standards to protect water quality. The objective of the federal CWA is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters. Specific sections of the CWA control discharge of pollutants and wastes into marine and aquatic environments. Section 101 specifies the goals and policies of the CWA. Title III (Standards and Enforcement) and Title IV (Permits and Licenses) provide further direction regarding the requirements for compliance with the objective of the CWA.

#### *Section 303—Impaired Water Bodies and Total Maximum Daily Loads*

Under Section 303(d) of the CWA, each state is required to develop effluent limitations for waters within its boundaries where water quality standards are not met. The state must establish

priority rankings for these waters and develop Total Maximum Daily Loads (TMDLs) to maintain its beneficial uses, and improve water quality. Seasonal variations in loading and a margin of safety are considered when TMDLs are established. In California, the SWRCB and RWQCBs prepare the CWA Section 303(d) List of Water Quality Limited Segments Requiring TMDLs.

None of the creeks within the study area are included in the SWRCB's 303(d) list (SMC and EOA, Inc., 2009; SWRCB, 2010). San Francisco Bay, however, is listed as impaired for pesticides (e.g., chlordane, dichlorodiphenyltrichloroethane, dieldrin, dioxin, and furan compounds), mercury, invasive species from ballast water, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, selenium, and trash (SWRCB, 2010).

### ***Section 401 – Clean Water Quality Certification***

Under Section 401 of the CWA, water quality certification is required from the State for any activity that requires a federal permit or license, and that may result in discharge into navigable waters. The certification must indicate that the activity will comply with the applicable State water quality standards. Under Section 401, states are required to establish water quality standards for all State waters. To receive certification under Section 401, an application must demonstrate that activities or discharges into waters will not cause concentrations of chemicals to exceed State standards. The authority to grant water quality certification has been delegated to the SWRCB; applications for certification under CWA Section 401 are processed by the San Francisco Bay RWQCB. If a Section 404 permit for discharge into waters subject to U.S. Army Corps of Engineers jurisdiction is needed for the project, a Section 401 Certification will also be necessary. Please refer to the Section 5.14, Biological Resources, for information pertaining to State or federal jurisdiction of features within the study area.

### ***Section 402 – NPDES Program***

Point source discharges to surface water are regulated by Section 402 of the CWA through requirements set forth in specific or general NPDES permits. Stormwater discharges associated with construction activities and certain categories of industrial activities, as well as incidental nonstormwater discharges associated with construction, fall under this act and are addressed through general NPDES permits. In California, requirements of the CWA regarding regulation of point source discharges and stormwater discharges are delegated to the SWRCB and administered by the nine RWQCBs. The San Francisco Bay RWQCB implements the statewide policy in the project area. Under California's NPDES program, any waste discharger subject to the NPDES program must obtain coverage under the appropriate general NPDES permit from the local RWQCB.

### ***NPDES Permit for the SFPUC Water Transmission System***

Discharges of altered<sup>1</sup> water from the SFPUC water transmission system are regulated by RWQCB Order No. R2-2008-0102 (RWQCB, 2008). This order regulates planned discharges from routine operations and maintenance that can be scheduled in advance, and unplanned or emergency discharges that may occur due to pipeline failures or natural disasters. During

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<sup>1</sup> All discharges authorized under Order R2-2008-0102 originate as potable water. Prior to planned discharges, the water is treated to remove chlorine and adjust the pH.

planned discharges, water is treated prior to discharge, and flow rates are controlled using best management practices (BMPs) to limit the potential for erosion in receiving waters. Planned discharges generally occur at low points along the transmission system. In the event of unplanned or emergency discharges, water is treated and BMPs are implemented subsequent to site stabilization for public safety. This order was issued pursuant to Section 402 of the CWA and Chapter 5.5, Division 7 of the California Water Code. It serves as the NPDES permit for point source discharges from, and as waste discharge requirements for, the SFPUC water transmission system.

### ***Flood Insurance Program***

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were passed to decrease the amount of federal spending on flood control structures and disaster relief, by restricting development within the floodplain. FEMA is responsible for determining flood elevations and developing the FIRMs, which are used in the National Flood Insurance Program (NFIP). Participation in the NFIP provides an opportunity for property owners in the community to purchase flood insurance, provided that the community complies with FEMA requirements for maintaining flood protection and managing development in the floodplain. Within designated floodplains, the community must not permit any development, new construction, or encroachment that would cause an increase in the 100-year (base) flood elevation. As described in Section 5.16.1.4, there are no FEMA-designated floodplains in the study area.

### **5.16.2.2 State**

#### ***Porter–Cologne Water Quality Control Act of 1969***

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) established the SWRCB and nine RWQCBs as the primary State agencies with regulatory authority over water quality and surface water rights allocation. Requirements of the Porter-Cologne Act are implemented by the SWRCB at the State level and the RWQCBs at the regional level.

The SWRCB, as authorized by the Porter-Cologne Act, promulgated regulations in the California Code of Regulations Subchapter 15, Title 23, designed to protect water quality from the effects of waste discharges to land. Under Subchapter 15, wastes that cannot be discharged directly or indirectly to waters of the State (and therefore must be discharged to land for treatment, storage, or disposal) are classified to determine specifically where such wastes may be discharged. This classification requirement would apply to dredged material or fill that would be disposed in an upland environment.

Applicable water quality protection regulations include SWRCB Resolution No. 68-16, “Statement of Policy with Respect to Maintaining High Quality of Water in California,” which generally restricts dischargers from reducing the water quality of surface water and groundwater. SWRCB Resolution No. 88-63, “Sources of Drinking Water Policy,” specifies that all groundwater occurrences in California are to be protected as existing or potential sources of municipal and domestic supply.

As described above, the study area is within the jurisdiction of the San Francisco Bay RWQCB, and the Basin Plan (RWQCB, 2010) is the applicable plan for the study area. The Basin Plan

designates beneficial uses for specific surface water and groundwater resources, establishes water quality objectives to protect those uses, and sets forth policies to guide the implementation of programs to attain the objectives.

Pursuant to the Porter-Cologne Act, the RWQCB is authorized to issue individual permits to allow for discharge of specified quantities and qualities of waste to land or surface waters. The limitations placed on the discharge are designed to ensure compliance with water quality objectives in the Basin Plan. To obtain a permit, the discharger must submit a Report of Waste Discharge, and the requirements of the California Environmental Quality Act must be met. All dischargers must submit monitoring reports. The RWQCB can use this approach to regulate any discharge to surface waters. The discharger would be responsible for providing enough information regarding the chemicals and volumes to be discharged and receiving waters to allow preparation of a permit.

### ***NPDES General Construction Stormwater Permit***

Construction activities that disturb one or more acres of land surface are regulated under the Statewide NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ) (SWRCB, 2009). This general permit also covers construction activities associated with Linear Underground/Overhead Utility Projects, such as installation of underground pipelines; concrete and asphalt cutting and removal; trenching, excavation, boring, and drilling; substructure installation; welding, concrete, and/or pavement repair or replacement; and stockpile/borrow locations.

To obtain coverage under the Construction General Permit, the legally responsible person must electronically file the Permit Registration Documents, which include a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), risk assessment, site map(s), and drawings, and the appropriate permit fee to the SWRCB and RWQCB.

### ***General Waste Discharge Requirements for Dewatering Activities***

The California SWRCB's Water Quality Order 2003-003-DWQ, Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality, addresses potential discharges of below-threat water quality discharges, which include construction dewatering discharges. In accordance with this permit, all dischargers must comply with all applicable provisions in the relevant Basin Plan, including any prohibitions and water quality objectives governing the discharge. In addition, the discharge of waste may not cause the spread of groundwater contamination. Discharges must be made to land owned or controlled by the discharger, unless the discharger has a written lease or agreement with the landowner. An NOI must be filed with the RWQCB prior to activities that would have below-threat water quality discharges (SWRCB, 2003a).

### ***Municipal Regional Stormwater NPDES Permit***

The RWQCB issued Order No. R2-2009-0074, NPDES Permit No. CAS612008 (RWQCB, 2009) for the discharge of stormwater runoff from the municipal separate storm sewer systems of jurisdictions and entities in the San Francisco Bay Area, including the SMCWPPP, which includes the Town of Colma and the cities of South San Francisco, San Bruno, and Millbrae. The Municipal

Regional Stormwater NPDES Permit prohibits nonstormwater discharges into storm drain systems and watercourses, as well as discharges that adversely affect beneficial uses of waters of the State. The permit requires the implementation of specific control measures such as BMPs to prevent construction site pollutant discharges, or impacts on beneficial uses of receiving waters. The proposed project is subject to the requirements of this permit, specifically Provision C.6 (construction site control) and Provision C.15 (exempted and conditionally exempted discharges).

### **5.16.2.3 Local**

#### ***San Mateo Countywide Water Pollution Prevention Program***

The SMCWPPP was established in 1990 to limit pollution from stormwater to receiving waters. SMCWPPP comprises San Mateo County and the incorporated cities and towns in the county. SMCWPPP prioritizes and develops methodologies for municipal maintenance activities, industrial and illicit discharge controls, public information and participation, new development and construction controls, and watershed assessment and monitoring. The participating municipalities share a common NPDES permit (NPDES Permit No. CAS0029921, issued by RWQCB Order No. 99-059 on July 21, 1999, amended by Order No. R2-2003-0023 on February 19, 2003, amended by Order Nos. R2-2004-0060 and R2-2004-0062 on July 21, 2004, and amended by Order R2-2007- 0027 on March 14, 2007) (RWQCB, 1999; 2003; 2004a; 2004b; 2007) that requires treatment controls for stormwater discharges to prevent adverse effects to water quality of runoff entering the storm drainage system and local water bodies, during both construction and operation. Measures to minimize, to the maximum extent practicable, impacts to water quality resulting from new development and redevelopment projects are described below.

Development or redevelopment projects that create or replace 10,000 square feet or more of impervious surface must incorporate site design measures, source control measures, and low-impact development treatment measures to minimize stormwater pollutant discharges. Commonly used treatment measures include vegetated buffer strips, infiltration trenches, and extended detention basins. Stormwater treatment measures will be engineered and hydraulically sized in accordance with the NPDES permit criteria (SMCWPPP, 2010). The PPSU project would not create or replace 10,000 square feet or more of impervious surface.

Projects that create and/or replace 1 acre or more of impervious surface and are located in an area susceptible to hydromodification are required to incorporate hydromodification management measures, pursuant to the Municipal Regional Stormwater NPDES Permit (NPDES Permit No. R2-2009-0074). Hydromodification management measures are design components that minimize the change in rate and flow of runoff at a project site when compared to pre-development conditions. All of the project sites are located in areas subject to hydromodification management; however, the permit excludes routine maintenance or repair activities, including pavement resurfacing, repaving, and road pavement structural section rehabilitation within the existing footprint, and any other reconstruction work within a public street or road right-of-way (ROW) where both sides of the ROW are developed. The PPSU project would not create or replace 1 acre or more of impervious surface; therefore, it would not be subject to the flow and volume reduction requirements.

As of December 1, 2011, stormwater treatment requirements must employ evapotranspiration, infiltration, and/or rainwater harvesting and reuse. Where infeasible, biotreatment, such as

landscape-based treatment with underdrains, may be substituted. The threshold for requiring stormwater treatment has been reduced from 10,000 to 5,000 square feet of impervious surface for projects involving uncovered parking areas, restaurants, auto service facilities, and retail gasoline outlets. The project would not create or replace impervious surfaces that would exceed the threshold; therefore, the project would not be subject to these stormwater treatment requirements.

### 5.16.3 Impacts and Mitigation Measures

#### 5.16.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to hydrology and water quality, but generally considers that implementation of the proposed project would have a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- 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);
- 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 or siltation on or off site;
- 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;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or FIRM or other authoritative flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- 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; or
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.

### 5.16.3.2 Approach to Analysis

Due to the nature of the proposed project, there would be no project impacts related to the following significance criteria. Therefore, an impact discussion is not provided for these topics for the reasons described below.

PPSU project operations would have no impacts related to the following significance criteria:

- **Violate water quality standards or waste discharge requirements, substantially alter the existing drainage pattern, exceed the capacity of stormwater drainage systems, substantially degrade water quality or increase flows due to discharges to surface water.** The project entails replacement of underground portions of existing pipelines. Once construction is complete, the sites would be restored to pre-construction conditions. There would be no substantial changes to grading or existing drainage patterns of the site or area. At the Colma site, a portion of the unnamed culverted creek that extends through the site would be removed for replacement of the pipeline and would be replaced in kind, so that there would be no change in flow conveyance and direction of this tributary to Colma Creek. The slight grade change at the South Bruno site would not substantially change drainage patterns. The project would not involve the construction of substantial new impervious surfaces that would increase the amount of runoff, result in erosion or siltation, or affect flooding on or off the site. In addition, the project does not involve any new discharge points along the pipeline (such as blow-off valves). Therefore, impacts on water quality or flooding due to project operations are not discussed further. These significance criteria are discussed below under Impact HY-1, HY-3, and HY-4 only as they apply to project construction activities.
- **Substantially deplete groundwater supplies or interfere with groundwater recharge.** The PPSU project would not use groundwater during operations and it would not create new impervious surfaces. The project operations would not deplete groundwater supplies or affect groundwater recharge. Therefore, the project would not have long-term impacts to groundwater, and this significance criterion is discussed below under Impact HY-2 only as it applies to project construction activities.

Both PPSU project construction and operations would have no impacts related to the following significance criteria:

- **Place structures within a 100-year flood hazard area that would impede or redirect flood flows or place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map.** The project sites are not located in areas mapped as 100-year flood hazard areas. The project would not include the construction of housing. Therefore, the significance criteria related to the 100-year flood hazard areas are not applicable to the proposed project and are not discussed further.
- **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, or inundation by seiche, tsunami, or mudflow.** The project sites are elevated approximately 50 feet to more than 370 feet above San Francisco Bay and the Pacific Ocean, and would not be susceptible to seiche or tsunami inundation. The project is not located near geologic or topographic conditions that would generate mudflows. There are no levees in the vicinity of the project,



and the project is not located in a dam inundation zone. Therefore, the significance criteria related to flooding, or inundation by seiche, tsunami, or mudflow, are not applicable to the proposed project and are not discussed further.

This analysis evaluates the proposed project's potential effects on hydrology and water quality during project construction. Construction-related effects on hydrology and water quality relate strictly to direct and indirect impacts that could occur during construction activities, including site preparation and clearing, excavation, dewatering, construction of improvements, and demobilization and site restoration. Due to the nature of the project, which entails replacement of underground portions of an existing pipeline and restoration of the sites to pre-construction conditions, there are no operational impacts associated with the project. There would be no new impervious surface areas, no substantial change in grading or drainage patterns, and no new discharges; therefore, operation-related effects on hydrology and water quality are not analyzed further.

### 5.16.3.3 Summary of Impacts

The proposed project's impacts on hydrology and water quality and the resulting significance determinations are summarized in Table 5.16-3.

**Table 5.16-3  
Summary of Impacts – Hydrology and Water Quality**

Impacts	Significance Determination
<b>Impact HY-1:</b> Project construction could substantially violate water quality standards or waste discharge requirements or degrade water quality as a result of erosion and sedimentation or an accidental release of hazardous chemicals.	LSM
<b>Impact HY-2:</b> Dewatering of excavated areas during project construction would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge.	LS <sup>1</sup>
<b>Impact HY-3:</b> Discharges of dewatering effluent from excavated areas during project construction would not substantially degrade water quality.	LS <sup>1</sup>
<b>Impact HY-4:</b> Discharges of treated water from existing and newly installed pipelines during project construction would not substantially degrade water quality.	LS <sup>1</sup>
<b>Impact C-HY:</b> Project construction could result in a cumulatively considerable contribution to cumulative impacts on hydrology and water quality.	LSM
Notes: <sup>1</sup> The significance determination for the common staging area is No Impact, as described below in the impact analysis. LS = Less-than-Significant impact, no mitigation required LSM = Less-than-Significant with Mitigation	

### 5.16.3.1 Construction Impacts and Mitigation Measures

*Impact HY-1: Project construction could substantially violate water quality standards or waste discharge requirements or degrade water quality as a result of erosion and sedimentation or an accidental release of hazardous chemicals. (Less than Significant with Mitigation)*

The project would include construction activities that involve soil disturbance that in the absence of proper controls could degrade the water quality of nearby creeks that flow to San Francisco Bay, particularly if these activities occur during the rainy season. These soil disturbance activities include vegetation removal, excavation, soil stockpiling, backfilling, compacting, grading, site restoration, and landscaping. While some construction activities are anticipated to occur during the spring/summer season, construction at the sites is anticipated to occur during the winter (rainy) season. The use of construction equipment could accidentally release oils, grease, and fuel that could degrade water quality. The project would use concrete and concrete washout water, which if released into waterways would be toxic to fish and aquatic organisms due to its high pH and metal constituents.

Open-trench construction techniques would be used at many of the PPSU project sites (except for the work at San Bruno North and for a portion of the work at South San Francisco), as described in Chapter 3, Project Description. The new pipeline would be installed in the same general location as the existing pipeline. Excavated soils, including topsoil, would be stockpiled during construction at each site, and may be reused as backfill, for restoration, and/or off-hauled for recycling or disposal. Spoils would be temporarily stored in the SFPUC ROW, either in the area designated as the construction zone or in the staging and spoils areas. Construction debris, including shoring materials, old pipe materials, and pavement, would be off-hauled as needed during construction and once construction is completed. In the absence of proper controls, these construction activities could result in erosion and sedimentation. BMPs would be implemented to prevent the offsite discharge of sediments and pollutants.

With the exception of the Colma site, there would be no construction activities in or adjacent to a water body. The box culvert that conveys waters of a tributary to Colma Creek across the Colma site is located above the existing San Andreas Pipeline No. 2 (SAPL2) pipe. To allow access to SAPL2 for construction activities, the portion of the culvert that is located within the trench area for SAPL2 may need to be demolished. Construction methods used to collect and discharge the water in the culvert during construction may include temporary piping around the demolished culvert section, or construction of a cofferdam. If temporary piping is used, flexible piping would be installed between the source of the water and a point of discharge—either a storm drain or another inlet to the culvert. If a cofferdam is used, a collection liner and shoring—such as sand bags or steel and wood—would be installed to collect the water in the culvert. The water would then be pumped out and discharged through temporary piping to a storm drain or another inlet to the culvert. In the absence of proper controls, these construction activities could result in erosion and sedimentation. BMPs would be implemented to prevent discharge of sediments and pollutants into the tributary. Once the new water transmission pipe is installed, the culvert would be replaced in kind.

At the South San Francisco site, construction activities could result in erosion and sedimentation if proper controls are not implemented. The jack-and-bore construction method would avoid

disturbance to the culverted creek by going approximately 10 feet below the bottom of the creek, as shown on Figure 3-8. Pits would be excavated at either end of the bore and would be situated away from the creek. In addition, BMPs would be implemented to prevent the offsite discharge of sediments and pollutants.

Construction activities at the San Bruno North site would include excavation of two access pits above the tunnel (approximately 10 feet wide by 10 feet in length), removal of portions of the tunnel roof to gain access to the tunnel, and either the injection of grout to fill the void around the pipeline within the tunnel, or the installation of pipe stabilization structures within the tunnel. New pipe supports, such as concrete, would be installed within the tunnel. In the absence of proper controls, these construction activities could result in erosion and sedimentation. There would be no open-trench construction, because there would be no pipeline replacement at this site. Although this site is not adjacent to a water body, BMPs would be implemented to prevent the offsite discharge of sediments and pollutants. The roof of the tunnel would be repaired once tunnel work is completed. The access pits would be backfilled and graded to restore soils to pre-construction conditions.

At each of the project sites, topsoil would be replaced in disturbed areas and re-vegetated with native plant seed mix. Vegetation would be monitored for up to a year to ensure it has become established.

No ground-disturbing activities related to the PPSU project are proposed within the common staging area, and this area is not adjacent to a water body. Construction materials would be temporarily stored, and good housekeeping measures would be implemented to prevent the offsite discharge of pollutants.

Table 3-1 summarizes the estimated construction work areas in acres for the project. With the exception of the San Bruno North site, the estimated construction work area for each of the project sites would exceed 1 acre. The combined construction work area for all project sites would be approximately 12.25 acres. Because the amount of land disturbance would exceed 1 acre, the requirements of the Construction General Permit would apply. For all of these reasons and in the absence of proper controls, impacts on water quality due to PPSU construction activities would be potentially significant.

**Mitigation Measure M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan** would address water quality impacts during construction activities by requiring the SFPUC or its contractor to prepare a SWPPP detailing the construction BMPs that would be implemented during construction to control erosion and sedimentation of receiving water bodies, and minimize the risk of hazardous material release to surface water bodies. Therefore, this impact would be *less than significant with mitigation*.

#### **Mitigation Measure M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan**

This mitigation measure applies to all project sites, as well as the common staging area. In accordance with the Construction General Permit, the SFPUC or its contractor(s) would submit the required notices, prepare a SWPPP, and implement site-specific BMPs to control and reduce discharges of sediments and pollutants associated with construction stormwater runoff that could discharge to storm drains or creeks.

BMPs would include, but are not limited, to the following.

#### *Scheduling*

- Schedule construction to minimize ground disturbance during the rainy season to the extent practicable.
- Install erosion and sediment control BMPs prior to the start of any ground-disturbing activities.
- Provide plans to stabilize soil with vegetation or physical means in the event that rainfall is expected. Stabilize all disturbed soils as soon as possible following the completion of soil-disturbing activities.

#### *Erosion and Sedimentation*

- Install silt fences or fiber rolls, or implement other suitable measures around the perimeters of the construction zone, staging areas, temporary stockpiles, and drainage features.
- Use filter fabric or other appropriate measures to prevent sediment from entering storm drain inlets.
- When dewatering, regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.
- Detain and treat water produced by construction site dewatering using sedimentation basins, sediment traps (when water is flowing and there is sediment), or other measures, to ensure that discharges to receiving waters meet applicable water quality objectives.
- Locate stockpiles a minimum of 50 feet away from concentrated flows of stormwater, water bodies, ditches, and inlets. Contain all stockpiles using perimeter controls such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers. Cover all stockpiles with visqueen or other impermeable materials.
- Preserve existing vegetation in areas where no construction activity is planned or where construction activity will occur at a later date.
- Stabilize and revegetate disturbed areas as soon as possible after construction by planting or seeding and/or using mulch (e.g., straw or hay, erosion control blankets, hydromulch, or other similar material).

#### *Nonstormwater Control*

- Prevent raw cement, concrete or concrete washings, asphalt, paint or other coatings, and oils or other petroleum products from entering watercourses or storm drains. If possible, all concrete waste and wash water should be returned with each concrete truck for disposal at the concrete batch plant.

- Locate the entrance and exit pit at each end of the jack-and-bore construction area at least 10 feet from the creek, ditch, or canal.
- Cofferdam materials used to create dams upstream and downstream of diversion should be erosion-resistant and could include materials such as steel plate, sheetpile, sandbags, continuous berms, inflatable or water bladders.
- Keep construction vehicles and equipment clean; do not allow excessive buildup of oil and grease.
- Check construction vehicles and equipment daily at startup for leaks, and repair any leaks immediately.
- To prevent run-on and runoff and to contain spills, do not refuel vehicles and equipment within 100 feet of surface waters.
- Conduct all refueling and servicing of equipment with absorbent material or drip pans underneath to contain spilled fuel. Collect any fluid drained from machinery during servicing in leak-proof containers and deliver to an appropriate disposal or recycling facility.
- Contain fueling areas to prevent run-on and runoff and to contain spills.

#### *Tracking Controls*

- Grade and stabilize construction site entrances and exits to prevent runoff from the site, and to prevent erosion.
- Employ street sweeping to remove any soil or sediment tracked off paved roads during construction.

#### *Waste Management and Hazardous Materials Pollution Controls*

- Control the discharge of pollutants in stormwater from vehicles and equipment by using drip pans, spill kits, berms, and secondary containment.
- Remove trash and construction debris from the project area regularly. Provide an adequate number of waste containers with lids or covers to keep rain out of the containers, and to prevent trash and debris from being blown away during high winds.
- Locate sanitary facilities a minimum of 200 feet from creeks.
- Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the stormwater drainage system or receiving water.
- Maintain sanitary facilities regularly.
- Store all hazardous materials in an area protected from rainfall and stormwater run-on, and prevent the offsite discharge of leaks or spills.

- Minimize the potential for contamination of surface water bodies by maintaining spill containment and cleanup equipment onsite, and by properly labeling and disposing of hazardous wastes.
- Inspect dumpsters and other waste and debris containers regularly for leaks, and remove and properly dispose of any hazardous materials and liquid wastes placed in these containers.
- Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures.

***BMP Inspection, Maintenance, and Repair***

- Inspect all BMPs on a regular basis to confirm proper installation and function.
- Inspect all stormwater BMPs daily during storms.
- Inspect sediment basins, sediment traps, and other detention and treatment facilities regularly throughout the construction period.
- Provide sufficient devices and materials (e.g., silt fence, fiber rolls, and erosion blankets) throughout project construction to enable immediate repair or replacement of failed BMPs.
- Inspect all seeded areas regularly for failures, and remediate or repair as soon as feasible.

***Permitting, Monitoring, and Reporting***

- Provide the required documentation for SWPPP inspections, maintenance, and repair requirements.
- Maintain written records of inspections, spills, BMP-related maintenance activities, corrective actions, and visual observations of any offsite discharge of sediment or other pollutants, as required by the RWQCB.
- Monitor water quality to assess the effectiveness of control measures.
- Notify the RWQCB and other agencies as required (e.g., California Department of Fish and Wildlife) if the criteria for turbidity, oil/grease, or foam are exceeded, and undertake corrective actions.
- Immediately notify the RWQCB and other agencies as required (e.g., California Department of Fish and Wildlife) of any spill of petroleum products or other organic or earthen materials, and undertake corrective action.

***Post-Construction BMPs***

- Revegetate all temporarily disturbed areas as required after construction activities are completed.
- Remove any remaining construction debris and trash from the project area and staging areas upon project completion.

- Phase the removal of temporary BMPs as necessary to ensure stabilization of the site.
- Maintain post-construction site conditions to avoid any unintended drainage channels, erosion, or areas of sedimentation.
- Correct post-construction site conditions as necessary to comply with the SWPPP and any other pertinent RWQCB requirements.

***Impact HY-2: Dewatering of excavated areas during project construction would not substantially deplete groundwater supplies or substantially interfere with groundwater recharge. (Less than Significant)***

During construction, dewatering may be required for groundwater, rainwater, or other water that enters the trenches and pits. Dewatering could lower the water table of shallow groundwater zones temporarily and deplete groundwater supplies.

Groundwater elevations and depths in the study area are summarized in Table 5.16-2. Groundwater associated with the primary production aquifer is more than 200 feet below the ground surface at all of the project sites; therefore, none of the construction activities, including dewatering, would be expected to impact the primary production aquifer.

Based on the approximate elevation and depth of groundwater encountered during geotechnical investigations and the anticipated excavation depths, substantial quantities of groundwater requiring dewatering would not be anticipated, because the expected maximum depth of excavation is generally less than the depth to the shallow groundwater (see Table 5.16-4). Of the five project sites, excavation at the South Bruno South site is most likely to encounter shallow groundwater. However, actual groundwater elevations at the sites may fluctuate depending on the time of the year (e.g., summer versus winter) and type of year (e.g., dry versus wet), as well as site-specific conditions. Groundwater extracted during construction of the project, if any, would be temporary and localized, and any effects from the lowering of groundwater levels or depletion of groundwater resources would be temporary, because once construction was completed, dewatering would cease.

**Table 5.16-4  
 Comparison between Depth to Shallow Groundwater and Expected Depth of Excavation**

<b>Project Site</b>	<b>Approximate Depth to shallow groundwater (feet bgs)<sup>1</sup></b>	<b>Expected Maximum Depth of Excavation (feet bgs)</b>
Colma	40	16
South San Francisco	59.5	30
San Bruno North	>217	10
San Bruno South	20 – 56	32
Millbrae	23	18

Sources: SFPUC, 2008; SFPUC, 2010; Geotechnical Consultants, Inc., 2011a and 2011b.

Notes:

<sup>1</sup> Based on elevations shown in Table 5.16-2.

bgs = below ground surface

At the South San Francisco Site, jack-and-bore techniques would be used to jack a steel casing underneath Westborough Boulevard, into which the new pipe would be installed. The pipeline would be installed at depths ranging from approximately 11 feet to 30 feet below ground surface (bgs), and would extend under the existing creek culvert. Because the depth to shallow groundwater at this site is expected to be approximately 59.5 feet bgs, groundwater dewatering would not be anticipated as part of the jack-and-bore installation.

There is an irrigation water supply well on California Golf Club of San Francisco property, near the South San Francisco site. This well is located north of Westborough Boulevard, and approximately 150 feet southwest of the project site. The screen interval of the well is more than 250 feet below ground surface (Fugro, 2012), which corresponds to the approximate depth of the primary production aquifer in this area (calculated as 205 feet below ground surface, as shown in Table 5.16-2). The screen interval of a well is the portion of the well that is open to groundwater inflow from the aquifer.

The regional groundwater flow direction in the vicinity of the project site is generally toward the east, based on February 2010 groundwater monitoring data for a former Standard Oil Substation site approximately  $\frac{1}{8}$  mile east of the South San Francisco site (CRA, 2010). Therefore, the golf course's well is located upgradient from the construction zone and would not be affected by activities associated with the South San Francisco site. Also, due to the depth of the primary production aquifer (205 feet bgs) in relation to the maximum depth of the project's tunneling (30 feet bgs), operation of the well would not be affected.

At the common staging area, the project would not entail excavation, and no dewatering would be associated with project activities at the site. Therefore, because the project would not cause any impacts related to this significance criterion, there would be *no impact* at the common staging area.

Therefore, groundwater dewatering would not be expected to substantially deplete groundwater resources or interfere substantially with groundwater recharge, and impacts related to the depletion of groundwater resources or interference with groundwater recharge would be *less than significant*.

***Impact HY-3: Discharges of dewatering effluent from excavated areas during project construction would not substantially degrade water quality. (Less than Significant)***

The proposed project would involve construction dewatering, with potential discharges to a surface water body, storm sewer system, or sanitary sewer system. During construction, trenches and pits would be open for short periods of time and would collect water, especially if left open during rain events. Dewatering may be required for groundwater, rainwater, or other water that enters the trenches and pits.

Water that is pumped out of the trench or pit would be stored, tested, and treated to meet required standards, then discharged to a nearby sanitary sewer, stormwater culvert, creek, or overland. Construction dewatering associated with the project would be temporary and have a short duration.



The construction contractor would be responsible for requesting a permit from the appropriate wastewater agency prior to discharge to the sanitary sewer. Discharge of water from dewatering activities must be performed in accordance with the requirements of the Statewide General Construction Permit for Stormwater Discharges Associated with Construction Activity issued by the SWRCB, the SWRCB's NPDES General Permit (Order 2003-0003 DWQ) for below-threat water quality discharges to land, and municipal stormwater permits (such as Provision C.15 of Order R2-2009-0074).

At the common staging area no excavation and no dewatering would be required. Therefore, because the project would not cause any impacts related to this significance criterion, there would be *no impact* at the common staging area.

With implementation of control measures in compliance with NPDES and local agency permitting requirements, potential water quality impacts related to construction discharges would be *less than significant*.

***Impact HY-4: Discharges of treated water from existing and newly installed pipelines during project construction would not substantially degrade water quality. (Less than Significant)***

Construction-related discharges of treated water would be required during pipeline shutdown and startup activities. Pipeline shutdown activities would primarily entail dewatering of pipeline sections, prior to pipeline construction activities. Pipeline startup activities, including hydrostatic testing and disinfection, would be completed prior to operation of the pipelines following installation. These discharges could adversely affect water quality of receiving water bodies.

The portions of the pipeline system to be replaced as part of the project contain water that has been chlorinated or chloraminated. Discharge of this treated water could degrade the quality of water bodies and affect aquatic organisms. In addition, the rate of the discharge could result in erosion in the receiving water.

During pipeline shutdown, water would be drained from sections of the pipelines and would be discharged to the nearest storm drain system, open channel, natural creek, or overland in accordance with the San Francisco RWQCB Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008), which stipulates requirements related to discharges of water from the SFPUC's water transmission system, including dechlorination requirements, flow rates, effluent limitations, and monitoring. For planned discharges such as for pipeline shutdown, water would be dechlorinated prior to discharge through the addition of treatment chemicals such as sodium bisulfite and calcium thiosulfate. As shown in Table 3-3, an estimated 5.4 million gallons of water would be discharged from the pipeline sections during dewatering. The shutdown of SAPL2 would occur simultaneously at the Colma, South San Francisco, San Bruno North, and San Bruno South sites. Project-related discharges would typically occur over an approximately 1-week period, and flow rates would be controlled (typically less than or equal to 3,500 gallons per minute) using BMPs to limit potential erosion and discharge of sediment to receiving waters. The water would be dispersed by an energy dissipation device to minimize erosion. Water discharged over land would be directed through containment structures such as straw bale structures and filter bags. The discharge rate would be regulated using valves, and the discharge would be monitored for residual materials being flushed from the tested pipe. The

discharges would occur at low spots along the transmission system and would be conducted in compliance with the effluent limitations, monitoring requirements, and reporting procedures of Order No. R2-2008-0102, the SFPUC's Erosion Control Standard Operating Procedure (RMC Water and Environment, 2008), and the SFPUC's Policies and Procedures for Transmission System Discharges (SFPUC, 2009a).

Prior to startup, the SFPUC would perform hydrostatic testing and disinfection of the pipes. Hydrostatic testing, which is used to verify the structural integrity of the pipeline, entails filling sections of the pipeline with clean water, maintaining a test pressure in excess of normal operating pressures for a specified period of time (typically 8 hours), and then discharging the water. The source of the water to be used for hydrostatic testing of the pipelines would be SFPUC potable water. The hydrostatic testing will be performed on new pipelines. No chemicals will be added to the test water for the purpose of the hydrostatic testing. As such, the expected quality of the test water will be similar to the quality of the source water, which will be the same water quality that would be discharged during shutdown operations.

Hydrostatic testing would be completed independently for each segment of pipeline replaced, except for SAPL2 at both the San Bruno North and San Bruno South sites, which would be tested concurrently. An estimated total of 0.6 million gallons of hydrostatic test water would be used and discharged. The hydrostatic test water would be discharged to the nearest storm drain system, open channel, natural creek, or overland in accordance with the San Francisco RWQCB's Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008) or with the SWRCB's NPDES General Permit (Order 2003-0003 DWQ) for low-threat water quality discharges to land. BMPs to limit potential erosion and discharge of sediment to receiving waters would be implemented, and would be similar to those described above for pipeline shutdown discharges. After hydrostatic testing, and prior to distribution of water through the pipelines, disinfection would be completed. Disinfection of the pipeline typically requires 1 week and includes filling, disinfecting, flushing, dechlorinating, and taking water samples from the disinfected pipelines for bacteriological analysis and residuals management, in compliance with the SFPUC's Sanitary Work Practices and Disinfection (SFPUC, 2009b). Water from the disinfection process would then be discharged from the pipe sections in a similar manner and in accordance with the same requirements as described above for discharges associated with pipeline shutdown and hydrostatic testing.

For the common staging area, there would be no construction-related discharges of treated water from pipe shutdown, hydrostatic testing, or disinfection. Therefore, there would be *no impact* at the common staging area.

Discharges of treated water from existing and newly installed pipelines during project construction would not exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Water quality impacts related to these construction discharges would be *less than significant* with implementation of control measures in compliance with NPDES permit requirements and the requirements of other regulatory agencies.

### 5.16.3.2 Operational Impacts and Mitigation Measures

As summarized in Section 5.16.3.2, due to the nature of the project, which entails replacement of underground portions of an existing pipeline and restoration of the sites to pre-construction conditions, there would be *no impact* associated with operation of the project.

### 5.16.3.3 Cumulative Impacts and Mitigation Measures

*Impact C-HY: Project construction could result in a cumulatively considerable contribution to cumulative impacts on hydrology and water quality. (Less than Significant with Mitigation)*

The geographic scope for potential cumulative hydrology and water quality impacts consists of the five project sites, the common staging area, and the watersheds in which these sites are located. As described above, the proposed project is located in the Colma Creek, San Bruno Creek, and Green Hills Creek watersheds. The development projects considered for the cumulative impact analysis are summarized in Section 5.1.3, Cumulative Impacts, and listed in Table 5.1-1.

#### Violate Water Quality Standards or Waste Discharge Requirements

Other reasonably foreseeable development projects could also result in temporary and permanent impacts to water quality, and potentially exceed applicable water quality standards. Temporary impacts may result from land clearing, site disturbance, and grading associated with construction activities. Typical construction impacts include increased erosion, sediment transport, siltation, and onsite storage and use of lubricants and fuels. Temporary construction impacts could be minimized through use of project-specific BMPs and applicable federal, State, and local construction mitigation guidelines. Permanent water quality impacts could result from stormwater runoff from newly constructed impervious surfaces associated with developments.

The Regional Groundwater Storage and Recovery (GSR) project includes drilling of new groundwater wells within the vicinity of the PPSU Colma and South San Francisco sites and the common staging area. Currently it is anticipated that there will be overlap in the construction schedules between the GSR and PPSU projects. Both the GSR project and the PPSU project have the potential to degrade water quality as a result of construction-related soil erosion, discharge of dewatering water, or accidental discharges of hazardous materials into receiving water bodies. Together, these projects could contribute to significant cumulative construction-related impacts from violations of water quality standards and discharge requirements.

The PPSU project is located within San Mateo County, and would be subject to mandatory adherence to the NPDES General Construction Permit Requirements and the Waste Discharge Requirements for the SFPUC Drinking Water Transmission System (RWQCB Order No. R2-2008-0102), as well as with implementation of **Mitigation Measure M-HY-1: Preparation and Implementation of a SWPPP**. The waste discharge requirements specify that water is discharged in a manner that does not harm natural ecosystems: that the water is treated prior to planned discharges to remove chemicals harmful to natural environments; flow rates are controlled using BMPs to limit the potential for erosion in receiving waters; and monitoring to ensure requirements are achieved. In addition, preparation and implementation of a SWPPP would protect water quality during

construction, through implementation of BMPs at the project sites to control erosion and limit sedimentation of receiving water bodies, as well as minimize the risk of hazardous material release to surface water bodies. Therefore, the project's residual contribution to surface water quality impacts would not be cumulatively considerable, and impacts would be *less than significant with mitigation*.

#### **Deplete Groundwater Supplies/Interfere with Groundwater Recharge**

Construction of the cumulative projects may entail dewatering required for groundwater that enters excavations, trenches, and pits, which could have a cumulatively significant impact related to the depletion of groundwater resources. The GSR project—which entails the construction of multiple groundwater wells on the San Francisco Peninsula, with operation of the project increasing groundwater storage during wet and normal rainfall years and pumping groundwater during dry years—could affect groundwater supplies. In addition, projects that create substantial amounts of impervious surfaces could interfere with groundwater recharge. For example, additional impervious surfaces resulting from the Harry Tracy Water Treatment Plant Long-Term Improvements project or the construction of 599 Cedar Avenue (14 single-family homes) could potentially limit groundwater recharge.

As discussed under Impact HY-2, groundwater dewatering for the PPSU project would not be expected to substantially deplete groundwater resources or interfere substantially with groundwater recharge. Groundwater extracted during construction, if any, would be temporary and localized, and any effects from the lowering of groundwater levels or depletion of groundwater resources would be temporary, because once construction was completed, dewatering would cease. The PPSU project would not prevent groundwater recharge, because it would not result in the construction of substantial amounts of additional impervious surfaces. Therefore, the PPSU project's contribution to impacts related to the depletion of groundwater resources would not be cumulatively considerable (*less than significant*).

#### **Discharge of Dewatering Effluent or Treated Water that Degrades Water Quality**

Construction of the cumulative projects would entail discharge of dewatered effluent such as rainwater or groundwater that enters project excavations. Projects such as 599 Cedar Avenue, Parkside Intermediate School, and the Millbrae Safeway Store may require dewatering of groundwater, rainwater, or other water that enters excavations, trenches and pits. The discharge of this groundwater extracted during construction of these projects could degrade water quality of the receiving water body. However, it is expected that existing programs, policies, and regulatory requirements would prevent and/or minimize the potential cumulative water quality impacts. Most of the cumulative projects would be subject to the Construction General Permit requirements, and would be required to implement BMPs to protect water quality during construction, including measures to avoid water quality impacts related to dewatering discharges from excavated areas. It is assumed that the sponsors of cumulative projects would comply with applicable requirements of the Construction General Permit. As discussed under Impact HY-3 and Impact HY-4, discharge of groundwater or treated water from the PPSU project would not be expected to adversely impact water quality.

The PPSU discharges would be completed in accordance with the San Francisco RWQCB's Waste Discharge Requirements of Order No. R2-2008-0102 (RWQCB, 2008) and with the SWRCB's

NPDES General Permit (Order 2003-0003 DWQ) for below-threat water quality discharges to land. Water quality impacts related to PPSU construction discharges would be reduced with implementation of control measures in compliance with NPDES permit requirements and the requirements of other regulatory agencies. Therefore, potential cumulative impact on water quality due to discharges of water from the cumulative projects would be *less than significant*.

### 5.16.4 References

ABAG (Association of Bay Area Governments), 2011. Dam Failure Inundation Hazard Map for South San Francisco/Brisbane/San Bruno; Dam Failure Inundation Hazard Map for Burlingame/Millbrae/Hillsborough. Available online at: <http://www.abag.ca.gov/cgi-bin/pickdamx.pl>. Accessed May 16, 2011.

City of San Bruno, 2011. Flood Zone Information for Entire City Based on Panel Number 06326B Dated March 30, 1981. Available online at: [http://sanbruno.ca.gov/comdev\\_planningMain.html](http://sanbruno.ca.gov/comdev_planningMain.html). Accessed May 11, 2011.

CRA (Conestoga-Rovers & Associates), 2010. Well Installation Report and First Quarter 2010 Groundwater Monitoring Report, former Standard Oil Substation 30-9379, 972 El Camino Real, South San Francisco, California, San Mateo County Site #550196. March 9.

DWR (California Department of Water Resources), 2006. California's Groundwater, Bulletin 118. Updated January 20.

FEMA (Federal Emergency Management Agency), 1981a. Flood Insurance Rate Map (FIRM) for City of Millbrae, San Mateo County, California. Community Panel Number 0650450002. September 30.

FEMA (Federal Emergency Management Agency), 1981b. Flood Insurance Rate Map (FIRM) for City of South San Francisco, San Mateo County, California. Community Panel Number 0650620001B. September 2.

Fugro, 2012. TM 10-7, SFPUC Regional Groundwater Storage and Recovery Project; South Westside Basin Third-Party Well Survey and Well Interference Analysis. April.

Geotechnical Consultants, Inc., 2011a. Final Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade (CS-101), San Mateo County, California. March.

Geotechnical Consultants, Inc., 2011b. Final Addendum to the Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade (CS-101), CS-101, SF10016C. November.

RMC Water and Environment, 2008. Water Transmission NPDES Technical Support Services, Erosion Control Standard Operating Procedure. Technical Memorandum Reference No. 0092-004.09. July 16.

RWQCB (Regional Water Quality Control Board), 1999. San Francisco Bay Region, San Mateo Countywide NPDES Municipal Stormwater Permit Amendment, Order No. R2-1999-059, NPDES Permit No. CAS0029921. July 21.

RWQCB (Regional Water Quality Control Board), 2003. San Francisco Bay Region, San Mateo Countywide NPDES Municipal Stormwater Permit Amendment, Order No. R2-2003-0023, Amending Order No. 99-059, NPDES Permit No. CAS0029921. February 19.

RWQCB (Regional Water Quality Control Board), 2004a. San Francisco Bay Region, San Mateo Countywide NPDES Municipal Stormwater Permit Amendment, Order No. R2-2004-0060, Amending Order No. 99-059, NPDES Permit No. CAS0029921. July 21.

RWQCB (Regional Water Quality Control Board), 2004b. San Francisco Bay Region, San Mateo Countywide NPDES Municipal Stormwater Permit Amendment, Order No. R2-2004-0062, Amending Order No. 99-059, NPDES Permit No. CAS0029921. July 21.

RWQCB (Regional Water Quality Control Board), 2007. San Francisco Bay Region, San Mateo Countywide NPDES Municipal Stormwater Permit Amendment, Order No. R2-2007-0027, Amending Order No. 99-059, NPDES Permit No. CAS0029921. March 14.

RWQCB (Regional Water Quality Control Board), 2008. Order No. R2-2008-0102, NPDES No. CA0038857, Waste Discharge Requirements for the San Francisco Public Utilities Commission Drinking Water Transmission System, December.

RWQCB (Regional Water Quality Control Board), 2009. San Francisco Bay Region, Municipal Regional Stormwater NPDES Permit Order R2-2009-0074, NPDES Permit No. CAS612008. October 14.

RWQCB (Regional Water Quality Control Board), 2010. Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region. December 31.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

SFBAC (San Francisco Bay Area Creeks), San Bruno Creek Watershed and Green Hills Creek Watershed Maps. 2011. Available online at: <http://www.museumca.org/creeks>. Accessed: May 8, 2011.

SFPUC (San Francisco Public Utilities Commission), 2008. 2007 Annual Groundwater Monitoring Report, Westside Basin, San Francisco and San Mateo Counties, California. April.

SFPUC (San Francisco Public Utilities Commission), 2009a. Water Supply and Treatment Division Policies and Procedures Transmission System Discharges. Last revision August 21.

SFPUC (San Francisco Public Utilities Commission), 2009b. Technical Specifications Division 01: General Requirements 01565: Sanitary Work Practices And Disinfection. October 1.

SFPUC (San Francisco Public Utilities Commission), 2010. Final – 2009 Annual Groundwater Monitoring Report, Westside Basin, San Francisco and San Mateo Counties, California. May.

SMC (San Mateo County) Environmental Health and EOA, Inc., 2009. San Mateo Countywide Water Pollution Prevention Program, Fiscal Year 2008/2009 Annual Report. August 31.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program), 2007. San Mateo County Watershed Data in GIS, July 16.

SMCWPPP (San Mateo Countywide Water Pollution Prevention Program), 2010. C.3 Stormwater Technical Guidance. October 20.

SWRCB (State Water Resources Control Board), 2003a. Water Quality Order NO. 2003- 003-DWQ, Statewide General Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality. April 30.

SWRCB (State Water Resources Control Board), 2003b. Monitoring List 2002. July. Available online at: [http://www.swrcb.ca.gov/water\\_issues/programs/tmdl/docs/2002\\_mon\\_list\\_020403.pdf](http://www.swrcb.ca.gov/water_issues/programs/tmdl/docs/2002_mon_list_020403.pdf). Accessed: May 17, 2011.

SWRCB (State Water Resources Control Board), 2009. NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities. Order NO. 2009-0009-DWQ, NPDES NO. CAS000002. September 2. Available online at: [http://www.swrcb.ca.gov/water\\_issues/programs/stormwater/constpermits.shtml](http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml). Accessed: May 19, 2011.

SWRCB (State Water Resources Control Board), 2010. 2010 California 303(d) List of Water Quality Limited Segments. Available online at: [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/2010state\\_ir\\_reports/category5\\_report.shtml](http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010state_ir_reports/category5_report.shtml). Accessed: May 11, 2011.

Town of Colma, 1999. Town of Colma General Plan. Adopted June 1999. Available online at: [www.colma.ca.gov/index.php?option=com\\_docman&Itemid=147](http://www.colma.ca.gov/index.php?option=com_docman&Itemid=147). Accessed: October 24, 2011.

WRIME, 2012. South Westside Basin Groundwater Management Plan. July.

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## 5.17 Hazards and Hazardous Materials

This section describes the assessment of potential impacts related to hazards and hazardous materials that might be present within the vicinity of the Peninsula Pipelines Seismic Upgrade (PPSU) project and evaluates the potential hazards and hazardous materials impacts of the proposed PPSU project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate. Potential hazards addressed in this section include public and construction worker exposure to chemical contamination in subsurface soil and groundwater, naturally occurring asbestos (NOA), release of hazardous materials during construction, and fires.

### 5.17.1 Setting

#### 5.17.1.1 Hazardous Materials in Soil and Groundwater

This section assesses the potential for hazardous materials to be present in the soil or groundwater for the PPSU project, based on site reconnaissance, historical land use, and a review of the regulatory database for potentially hazardous sites as provided by Environmental Data Resources Inc. (EDR) for the Colma Site (EDR, 2011a), South San Francisco Site (EDR, 2011b), San Bruno North Site (EDR, 2011c), San Bruno South Site (EDR, 2011d), and Millbrae Site (EDR, 2011e) and, for the common staging area, information contained in the Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration (SF Planning, 2008). Copies of the topographic maps, aerial photographs, and Sanborn maps are presented in Appendix G. Because the environmental conditions on the Baden Valve Lot remain substantially as described in the 2008 mitigated negative declaration, and because no new information is available that would change the findings of the mitigated negative declaration, the findings and the studies referenced therein are applicable to the common staging area for the PPSU project.

#### *Colma Site*

##### **Site Reconnaissance**

The Colma site is located on vacant land that extends through Serra Shopping Center. Proposed laydown staging areas during construction of the project include a portion of the Kohl's Department Store parking lot, and a vacant portion of land located within the San Francisco Public Utilities Commission (SFPUC) right-of-way (ROW) south of Collins Avenue. Vegetation on the project site includes grasses that are cut and maintained by SFPUC.

One piezometer<sup>1</sup> was identified within the Colma site, completed with a flush-mounted well box. The piezometer was recently installed for a geotechnical investigation at the time of the reconnaissance, and three soil drums marked with soil cuttings were located next to it.

An aboveground well box surrounded by four bollards was also identified within the Colma site. The well box contains a group of monitoring wells used for the Westside Basin groundwater

<sup>1</sup> A piezometer is a small-diameter observation well used to measure the hydraulic head of groundwater in aquifers, or measure the pressure of a fluid at a specific location in a column.

quality program. A large-diameter underground storm drain culvert was identified that transects the Colma site. The depth to groundwater is approximately 40 feet below ground surface (bgs), based on the water level measurements collected within the piezometer (GTC, 2011).

No indication of the presence of underground storage tanks was observed, and no adverse environmental conditions (e.g., large areas of ground surface staining or odors) were observed on the Colma site or on properties immediately adjacent to the site. Based on the site reconnaissance, no major recognized environmental concerns were identified within the Colma study area.

### **Historical Land Use**

Historical land uses within the Colma study area were evaluated, based on a review of historical topographic maps<sup>2</sup> and aerial photographs,<sup>3</sup> to establish a chronological history of development in the study area. Copies of the topographic maps and aerial photographs are presented in Appendix G. The EDR search for Sanborn Fire Insurance Maps did not reveal any maps for the Colma site. Following is a summary of developments at the Colma study area, as shown in the historical topographic maps and aerial photographs.

- The 1899 topographic map shows the Colma study area to be sparsely populated. A Southern Pacific railroad line and a roadway were identified near the present-day location of El Camino Real. Cemeteries were identified in the region of the study area.
- No topographic maps or aerial photos were available for dates between 1900 and 1942. The 1940s and 1950s aerial photograph and topographic maps show the undeveloped project site. Colma Creek transected the project site in a west-east orientation. The 1943 aerial photograph shows a pipeline oriented in a north-south direction within the project site. Regional land uses within the study area appear to be agricultural, commercial development, and cemeteries.
- The 1960s aerial photograph and topographic map no longer show Colma Creek on the project site, which indicates that the creek was filled in some time in the late 1950s and early 1960s. The project site remained undeveloped. New roadways were identified within the study area on the east side of the project site, which indicated further commercial development within the study area.
- The 1977 aerial photograph identifies an apparent culvert or ditch in the location of the Colma Creek within the project site. Further expansion of commercial land use and a decrease in agricultural use within the study area was identified during this year.
- The 1980 aerial photograph and topographic map indicate the development of the Serra Shopping Center within the study area.

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<sup>2</sup> Historical topographic maps from the following years were reviewed: 1899, 1947, 1950, 1956, 1968, 1973, 1980, 1993, and 1995.

<sup>3</sup> Historical aerial photographs from the following years were reviewed: 1943, 1956, 1965, 1977, 1982, 1993, 1998, 2005, and 2006.

- No significant land use changes were observed from the available aerial photographs and topographic maps from the 1990s.
- The aerial 2005 and 2006 photographs show a small paved auto parking lot on the project site. The parking area appears to be accessed from behind the Kohl's Department Store near the southern end of the store.

Based on a review of the historical aerial photographs and topographic maps, no recognized environmental concerns due to historical land uses were identified within the Colma study area.

### Regulatory Agency Database Review

The findings of the EDR report for the Colma study area are described in this section. The Colma site is not listed on any of the databases reviewed. However, within the ¼-mile radius study area, listed sites were identified, as summarized below.

- **Leaking Underground Storage Tank Lists (LUST).** Seven sites were listed in the LUST database. The status of these seven sites is "*Completed – Case Closed.*"
- **Spills, Leaks, Investigations and Cleanup Cases.** One site was listed in the Spills, Leaks, Investigations, and Cleanup (SLIC) database and the status of the site is "*Completed – Case Closed.*"
- **Historical Hazardous Waste & Substance Site List.** Five sites were listed in the HIST CORTESE database and are also listed in the LUST database, which describes the status of the sites as "*Completed – Case Closed.*"
- **California Hazardous Material Incident Report System (CHMIRS).** One site was listed in the CHMIRS database. A 720-gallon sewage spill due to blockage of a sewer main was reported at 1351 El Camino Real in San Bruno, located between ⅓ and ¼ mile from the project site. The release was contained and flushed out by the Town of Colma Public Works.

Based on the remedial status of the listed sites for the LUST, SLIC, and HIST CORTESE databases, and because the sewage spill listed in the CHMIRS database was contained, it is unlikely that these sites would affect soil and groundwater at the Colma site.

### South San Francisco Site

#### Site Reconnaissance

A dense grove of trees and shrubs is present in the western portion of the project site, and a landscaped area of grass and trees adjacent to the California Golf Club of San Francisco is present in the eastern portion of the project site.

One piezometer and two soil borings were identified within the project site. The piezometer and borings appeared to have been recently installed, and soil storage drums marked with soil cuttings were located next to the piezometer and boring location. The piezometer and borings are associated with a recently completed geotechnical investigation conducted on the South San Francisco site. The depth to groundwater is approximately 59 feet bgs, based on the water level measurements collected from the piezometer (GTC, 2011).

No indication of the presence of underground storage tanks was observed, and no adverse environmental conditions (e.g., large areas of ground surface staining or odors) were observed on the South San Francisco site or properties immediately adjacent to the South San Francisco site. Based on the site reconnaissance, no recognized environmental concerns were identified within the South San Francisco study area.

### **Historical Land Use**

Historical land uses within the South San Francisco study area were evaluated, based on a review of historical topographic maps,<sup>4</sup> aerial photographs,<sup>5</sup> and Sanborn Fire Insurance Maps (years 1956 and 1970), to establish a chronological history of development in the study area. Copies of the topographic maps, aerial photographs, and Sanborn maps are presented in Appendix G. A summary of developments at the South San Francisco study area is provided below.

- The 1899 topographic map shows the South San Francisco study area to be sparsely populated. A Southern Pacific railroad line and a roadway were identified near the present-day location of El Camino Real.
- No topographic maps or aerial photos were available for dates between 1900 and 1942. The 1940s aerial photograph and topographic maps show the project site undeveloped. The 1943 aerial photograph shows a pipeline oriented in a north-south direction within the project site. Regional land use within the study area appears to have been an agricultural and residential development.
- The 1950s and 1960s aerial photographs and topographic maps showed the presence of Twelve Mile Creek, transecting the study area in a west-to-east orientation. The California Golf Club of San Francisco was present in the 1956 aerial photograph and topographic map. The 1956 Sanborn Fire Insurance map indicated the presence of a gas and oil station at the southeast corner of Arroyo Drive and Camaritas Avenue, approximately 200 feet east of the project site. Expansive residential development in the vicinity of the study area was identified in these decades.
- The 1970s aerial photograph and topographic map identified the presence of Westborough Boulevard, built over the former location of Twelve Mile Creek in the study area, and the completion of Interstate 280 (I-280). The gas and oil station identified in the 1956 Sanborn Fire Insurance map is present at the same location.
- The 1980s aerial photograph did not show the presence of the gas and oil station identified in the 1956 Sanborn Fire Insurance map.
- No significant land use changes were observed from the available aerial photographs and topographic maps from the 1990s through 2000.

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<sup>4</sup> Historical topographic maps from the following years were reviewed: 1899, 1947, 1950, 1956, 1968, 1973, 1980, 1993, and 1995.

<sup>5</sup> Historical aerial photographs from the following years were reviewed: 1943, 1956, 1965, 1973, 1982, 1993, 1998, 2005, and 2006.

Because a gas and oil station was previously located approximately 200 feet from the project site, additional review was conducted to assess the regional groundwater flow direction in order to evaluate whether any potential historical releases from the gas station may have affected the project site. Based on a review of the groundwater flow direction, described below under Regulatory Agency Database Review for the Former Standard Oil Substation, groundwater flow direction at the historical gas station is interpreted to be toward the east, and away from the project site. Therefore, it is presumed that the historical gas station would not have affected soil or groundwater within the South San Francisco site.

Based on the review of the historical aerial photographs and topographic maps, no recognized environmental concerns due to historical land uses were identified within the South San Francisco study area.

### Regulatory Agency Database Review

The findings of the EDR report for the South San Francisco study area are described in this section. The South San Francisco site is not listed on any of the databases reviewed. However, within the ¼-mile radius study area, listed sites were identified, as summarized below.

- **Federal Emergency Response Notification System (ERNS).** Two sites were listed in the ERNS database. One site reported a 10-gallon gasoline release due to an equipment failure, and the other site reported a spill of milk from a loading dock. Both cases reported containment and cleanup by the respective responding agencies. Both sites are located between ⅛ and ¼ mile from the project site.
- **Leaking Underground Storage Tank Lists.** Fourteen sites were listed in the LUST database, and the status of 13 of these sites is “*Completed – Case Closed.*” The status of one of the sites (Former Standard Oil Substation) was listed as “*Open – Verification Monitoring.*” Additional information for this site is presented below.
- **Historical Hazardous Waste & Substance Site List.** Three sites were listed in the HIST CORTESE database. These three sites are also listed in the LUST database, which describes the status of the sites as “*Completed – Case Closed.*”
- **California Hazardous Material Incident Report System.** Four sites were listed in the CHMIRS database. The four reported incidents included a sewage release, a small 10-gallon gasoline spill, a milk spill, and smoke from a malfunctioning pressure washer. Local agencies responded to the releases to assist in each of the cleanup efforts.

Sites listed as “*Completed – Case Closed*” in the LUST and HIST CORTESE databases are unlikely to affect soil or groundwater at the South San Francisco site, because the cleanup of these sites has been completed. In addition, the cleanup efforts of the sites listed in the CHMIRS database indicate that these sites would not affect soil and groundwater at the South San Francisco site.

Additional file review was undertaken for the one site listed in the LUST database as “*Open – Verification Monitoring.*” AEW Engineering, Inc. reviewed available electronic files for the site obtained from the SWRCB Geo Tracker database and San Mateo County Environmental Health (SMCEH). The identified site and a brief description of the findings for this site are summarized below.

- **Former Standard Oil Substation, 972 El Camino Real, South San Francisco, CA (MAP ID F56 of the EDR Report in Appendix G).** A former Standard Oil Substation is located at 972 El Camino Real, South San Francisco, California, at a distance approximately  $\frac{1}{8}$  mile east of the South San Francisco site. According to the LUST database, the status of the site is “*Open – Verification Monitoring.*” Current environmental information for the former Standard Oil Substation was obtained from Conestoga-Rovers & Associates (CRA, 2010). The primary chemicals of concern in soil at the site are total petroleum hydrocarbons as gasoline (TPH-gas), total petroleum hydrocarbons as diesel (TPH-diesel), benzene, and naphthalene. The primary chemicals-of-concern in groundwater at the site are TPH-gas and TPH-diesel. Currently there are three groundwater monitoring wells at the site, which are sampled on a quarterly sampling schedule. A summary of the most recent groundwater data (February 2010) is presented below.
  - TPH-gas and TPH-diesel were detected at maximum concentrations of 340 micrograms per liter ( $\mu\text{g/L}$ ) and 210  $\mu\text{g/L}$ , respectively. According to the report, the dissolved hydrocarbons appear to be adequately delineated at this time.
  - Groundwater flow direction in the well field for the February 2010 groundwater monitoring event is to the east, with a hydraulic gradient of 0.01 vertical feet per horizontal foot. The groundwater flow direction is away from the project site.

Because the groundwater flow direction is to the east, away from the South San Francisco site, the dissolved hydrocarbons appear to be adequately delineated, and as the site is greater than approximately  $\frac{1}{8}$  mile from the South San Francisco site, it is unlikely that this site would affect soil and groundwater at the South San Francisco site.

### ***San Bruno North Site***

#### **Site Reconnaissance**

The San Bruno North site consists of open space covered with grasses, shrubs, and trees, and is located adjacent to a residential neighborhood. The approximate elevation of the primary aquifer is -180 feet below mean sea level. No indication of the presence of underground storage tanks was observed, and no adverse environmental conditions (e.g., large areas of ground surface staining or odors) were observed on the San Bruno North site or on properties immediately adjacent to the San Bruno North site.

Based on the site reconnaissance, no recognized environmental concerns were identified within the San Bruno North study area.

#### **Historical Land Use**

Historical land uses within the San Bruno North study area were evaluated, based on a review of historical topographic maps<sup>6</sup> and aerial photographs,<sup>7</sup> to establish a chronological history of

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<sup>6</sup> Historical topographic maps from the following years were reviewed: 1899, 1947, 1949, 1956, 1968, 1973, 1980, 1993, 1995, and 1997.

<sup>7</sup> Historical aerial photographs from the following years were reviewed: 1943, 1956, 1965, 1973, 1982, 1993, 1997, 2005, and 2006.

development in the study area. Copies of the topographic maps and aerial photographs are presented in Appendix G. The EDR search for Sanborn Fire Insurance Maps did not reveal any maps for the San Bruno North site. A summary of developments at the San Bruno North study area is provided below.

- The 1899 topographic map showed the San Bruno North study area to be sparsely populated.
- No topographic maps or aerial photos were available for dates between 1900 and 1942. The 1940s aerial photograph and topographic maps showed the study area as predominantly undeveloped. The 1949 topographic map identified a pipeline oriented in a north-south direction within the San Bruno North site.
- The 1950s and 1960s aerial photographs and topographic maps showed the expansion of residential development within the study area, including the neighborhood adjacent to the San Bruno North site.
- The 1970s aerial photograph and topographic map identified the completion of I-280, continued residential expansion west of the San Bruno North site, and the presence of the Bayhill Shopping Center to the north of the San Bruno North site.
- No significant land use changes were observed for the available aerial photographs and topographic maps from the 1980s through 2000.

Based on the review of the historical aerial photographs and topographic maps, no recognized environmental concerns due to historical land uses were identified within the San Bruno North study area.

### Regulatory Agency Database Review

The findings of the EDR report for the San Bruno North study area are described below in this section. The San Bruno North site is not listed on any of the databases reviewed. However, within the ¼-mile radius study area, listed sites were identified, as summarized below.

- **Federal Emergency Response Notification System.** One site was listed in the ERNS database as having had a reported 3-gallon spill of acetone. The incident was cleaned up by the respective responding agencies. The site is located between ⅛ and ¼ mile from the San Bruno North site.
- **California Hazardous Material Incident Report System.** Three sites were listed in the CHMIRS database. Two of the three incidents involved a sewage release resulting from blockage by roots, while the third incident involved a release of wastewater from a wastewater plant. Local agencies responded to the releases to assist in each of the cleanup efforts.

Based on the cleanup efforts of the sites listed in the ERNS and CHMIRS databases, it is unlikely that these sites would affect soil and groundwater at the San Bruno North site.

## *San Bruno South Site*

### **Site Reconnaissance**

Condominiums are located on the east and west sides of the SFPUC easement. The southern portion of the construction zone is located along a vacant hillside. Vegetation on the hillside includes grasses and brush. An apartment complex is located adjacent to the west boundary of the SFPUC easement near Whitman Way, and single family houses are located along the remaining western boundary of SFPUC easement.

The depth to groundwater ranges from 20 to 56 feet bgs at the San Bruno South site. No indication of the presence of an underground storage tank was observed. No adverse environmental conditions (e.g., large areas of ground surface staining or odors) were observed on the San Bruno South site or on properties immediately adjacent to the project site.

Based on the site reconnaissance, no recognized environmental concerns were identified within the San Bruno South study area.

### **Historical Land Use**

Historical land uses at and adjacent to the San Bruno South site were evaluated, based on a review of historical topographic maps<sup>8</sup> and aerial photographs,<sup>9</sup> to establish a chronological history of development in the study area. Copies of the topographic maps and aerial photographs are presented in Appendix G. The EDR search for Sanborn Fire Insurance Maps did not reveal any maps for the San Bruno South site. A summary of developments at the San Bruno South site, as shown in the historical topographic maps and aerial photographs, is provided below.

- The 1899 topographic map shows the San Bruno South site as undeveloped. A roadway along the eastern side of San Andreas Reservoir was identified near the present-day location of Skyline Boulevard. A road leading to the City of San Bruno near the present-day location of Crystal Springs Road was identified in the vicinity of the San Bruno South site. Scattered home sites are indicative of a sparse population near the current-day city boundaries.
- No topographic maps or aerial photos were available for dates between 1900 and 1942. The 1943 aerial photograph and 1947 and 1949 topographic maps show the San Bruno South site as undeveloped. A linear feature on the ground surface in the aerial photograph may represent the location of the San Andreas Pipeline No. 2 (SAPL2). A "Pipe Line" appeared in the same orientation and location of SAPL2 for the first time on the 1949 topographic map.
- The 1956 aerial photograph and topographic map show major expansion of residential development to the east and north of the San Bruno South site. Junipero Serra Boulevard was identified as a major roadway just east of the project site. The aerial photograph shows large-scale grading and construction in the vicinity of the project site for future residential development.

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<sup>8</sup> Historical topographic maps from the following years were reviewed: 1899, 1947, 1949, 1956, 1968, 1980, 1993, and 1997.

<sup>9</sup> Historical aerial photographs from the following years were reviewed: 1943, 1956, 1965, 1973, 1982, 1993, 1998, and 2005.



- The 1965 aerial photograph and 1969 topographic map identify the completion of Peninsula High School and residential development along Courtland Drive. Whitman Way was present and intersects Junipero Serra Boulevard. I-280) was present on the 1968 topographic map. The SFPUC easement remained undeveloped, with the exception of apparent walking trails leading from Whitman Way to Peninsula High School.
- The 1973 aerial photograph shows the completion of the Shelter Creek Condominium complex north of Whitman Way. The SFPUC easement remained undeveloped south of Whitman Way.
- No significant land use changes were observed for the available aerial photographs and topographic maps for the decades of 1980, 1990, and 2000, with the exception of the San Bruno Chinese Church, completed in the late 1990s or early 2000s.

Based on a review of the historical aerial photographs and topographic maps, no recognized environmental concerns due to historical site uses were identified at or adjacent to the San Bruno South study area.

### **Regulatory Agency Database Review**

The findings from the EDR report for the San Bruno South study area are described in this section. The San Bruno South site is not listed on any of the databases reviewed. Databases listed no other sites within the ¼-mile radius study area that may affect soil and groundwater at the San Bruno South site. Results of the database search, including site names, addresses, and maps showing identified locations within the search area, are presented in the EDR report.

### ***Millbrae Site***

#### **Site Reconnaissance**

A dense grove, primarily of eucalyptus and oak trees, covers a major portion of the easement within the construction zone; this grove is planned to be removed as part of the construction activities. Miscellaneous golf course maintenance equipment (irrigation pipes, signs, mowers, etc.) were located near the vicinity of the construction zone.

A concrete foundation and remnants of a former water storage tank were identified along the trail that extends through the City of Millbrae open space area from Lomita Avenue to the SFPUC ROW (access route to the project site). No indications of the presence of underground fuel storage tanks were observed, and no adverse environmental conditions (e.g., large areas of ground surface staining or odors) were observed on the Millbrae site or on properties immediately adjacent to the site.

Based on the site reconnaissance, no recognized environmental concerns were identified within the Millbrae study area.

## Historical Land Use

Historical land uses within the Millbrae study area were evaluated, based on a review of historical topographic maps<sup>10</sup> and aerial photographs,<sup>11</sup> to establish a chronological history of development in the study area. Copies of the topographic maps and aerial photographs are presented in Appendix G. The EDR search for Sanborn Fire Insurance Maps did not reveal any maps for the Millbrae site. A summary of developments at the Millbrae site, as shown in the historical topographic maps and aerial photographs, is provided below.

- The 1899 topographic map showed the Millbrae site as undeveloped. A roadway along the eastern side of San Andreas Reservoir was identified near the present-day location of Skyline Boulevard. Scattered home sites are indicative of a sparse population near the current-day City of Millbrae;
- No topographic maps or aerial photos were available for dates between 1900 and 1942. The 1943 aerial photograph and 1947 and 1949 topographic maps showed the Millbrae site as undeveloped. Regional land use development included the expansion of residential development to the east of the Millbrae site. A large expanse of land labeled “Borrow Pit” was identified on the 1949 topographic map near the present-day location of Helen Drive, west of the Millbrae site. The identification of a borrow pit may be indicative that quarrying operations may have taken place at that location. Green Hills Country Club appeared for the first time on the 1949 topographic map;
- The 1956 aerial photograph and topographic map showed further expansion of residential development to the west of the Millbrae site, and the completion of Helen Drive and Larkspur Drive at their present-day locations. The area described as “Borrow Pit” on the 1949 topographic map appeared to have been filled in for the expansion of residential development. A water tank was identified adjacent to the Millbrae site next to the potential construction access route through Junipero Serra County Park;
- The 1965 aerial photograph and 1969 topographic map identified continued expansion of residential development to the north and south of the Millbrae site. I-280 was present on the 1968 topographic map; and
- No significant land use changes were observed for the available aerial photographs and topographic maps for decades of 1970, 1980, 1990 and 2000, with the exception of the dense tree groves within the City of Millbrae open space area.

Based on a review of the historical aerial photographs and topographic maps, no recognized environmental concerns were identified within the Millbrae study area.

## Regulatory Agency Database Review

The findings from the EDR report for the Millbrae study area are described in this section. The Millbrae site is not listed in any of the databases reviewed. Databases listed no other sites within

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<sup>10</sup> Historical topographic maps from the following years were reviewed: 1899, 1947, 1949, 1956, 1968, 1980, 1993, and 1997.

<sup>11</sup> Historical aerial photographs from the following years were reviewed: 1943, 1956, 1965, 1974, 1982, 1993, 1998, and 2005.

the ¼-mile radius study area that may affect soil and groundwater at the Millbrae site. Results of the database search, including site names, addresses, and maps showing identified locations within the search area, are presented in the EDR report.

### *Common Staging Area*

At the common staging area located on the northern portion of the SFPUC's Baden Value Lot, existing water supply operations, facility maintenance activities, and water quality monitoring involve the use, storage, and generation of hazardous materials as described in the Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration (SF Planning, 2008). In accordance with requirements of the City and County of San Francisco and San Mateo County, the SFPUC possesses hazardous materials use permits for the use and storage of flammable and combustible liquids at the Baden Valve Lot, and has prepared a hazardous materials business plan to provide facility operators with step-by-step procedures for the use, storage, and handling of hazardous materials during routine and emergency operations. No records of violations related to the improper use, storage, or disposal of hazardous materials at the Baden Valve Lot were identified in environmental databases (SF Planning, 2008). However, based on the information described in the Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration, petroleum hydrocarbons such as diesel and motor oil have been identified in the soil at concentrations greater than environmental screening levels and criteria for unrestricted disposal, and the concentrations of soluble nickel and chromium may exceed hazardous waste criteria in the common staging area (SF Planning, 2008).

#### **5.17.1.2 Hazardous Building Materials**

There are no existing buildings located within the project construction zones<sup>12</sup> and, based on the historical land uses described above, no buildings previously existed within the construction zones. While the existing pipelines are not expected to contain hazardous materials, depending upon the construction methods and materials used, there may be internal coatings or material lining the pipelines that could contain hazardous substances.

#### **5.17.1.3 Naturally Occurring Asbestos**

Asbestos is a common name for a group of naturally occurring fibrous silicate minerals that are made up of thin but strong, durable fibers. Asbestos is a known carcinogen and presents a public health hazard if it is present in the friable (easily crumbled) form. Naturally occurring asbestos would most likely be encountered in Franciscan ultramafic rock<sup>13</sup> (primarily serpentinite<sup>14</sup>), or as an inclusion in Franciscan mélange.<sup>15</sup> As described in Section 5.15, Geology and Soils, the underlying

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<sup>12</sup> One existing structure, a gazebo, is located within the SFPUC ROW in the side yard of the single family home at 1094 Ridgewood Drive, and would be removed for the proposed project.

<sup>13</sup> Ultramafic rocks are formed in high-temperature environments well below the surface of the earth.

<sup>14</sup> Serpentine is a naturally occurring group of minerals that can be formed when ultramafic rocks are metamorphosed during uplift to the earth's surface. Serpentinite is a rock consisting of one or more serpentine minerals. This rock type is commonly associated with ultramafic rock along earthquake faults. Small amounts of chrysotile asbestos, a fibrous form of serpentine minerals, are common in serpentinite.

<sup>15</sup> Mélange is a mixture of rock materials of differing sizes and types typically contained within a sheared matrix.

geology of the project sites consists primarily of the Colma Formation and Merced Formation, with areas of alluvium deposits, slope wash/ravine fill/colluvium, and artificial fill. The Merced Formation overlies or is in fault contact with the Franciscan Complex. The Franciscan Complex rock found along the Serra Fault zone in and south of the study area consists principally of sheared rock and clay (mélange) with tectonic inclusions of greywacke, chert, and greenstone, and minor serpentinite. However, Franciscan ultramafic rock, including serpentinite, was not observed in the vicinity of the proposed project sites. Therefore, NOA is not expected to be encountered.

#### **5.17.1.4 Wildfire Hazards**

The California Department of Forestry and Fire Protection (CAL FIRE) provides statewide information pertaining to wildfire hazards and prevention. Land within the state is designated as either a State Responsibility Area (lands for which the state has financial responsibility with respect to preventing and suppressing fires) or as a Local Responsibility Areas (areas for which local agencies have the financial responsibility to prevent and suppress fires). Within each responsibility area, lands are categorized as either Very High Fire Hazard Severity Zones (VHFHSZ) or Non-Very High Fire Hazard Severity Zones (non-VHFHSZ). New buildings within areas categorized as VHFHSZs are required by California Building Code (Chapter 7A) to use ignition resistant construction methods and materials. The PPSU project sites are located in Local Responsibility Areas (CAL FIRE FRAP, 2012) and are categorized as Non-Very High Fire Hazard Severity Zones (CAL FIRE, 2008).

#### **5.17.1.5 Airports**

The San Mateo County Comprehensive Airport Land Use Plan (San Mateo County Airport Land Use Commission, 1996) identifies airspace obstruction criteria for public use airports in San Mateo County. The closest public airport to the project sites is the San Francisco International Airport (SFO), which is located approximately 1 mile from the Millbrae Site (the closest project site to SFO) and approximately 4 miles from the Colma site (the farthest site to SFO).

A review of private airport listing information from Federal Aviation Administration (FAA) indicated that there are no private airstrips in the vicinity of the proposed project sites (FAA, 2012). The closest private airports to the project sites are located in Half Moon Bay and San Carlos.

### **5.17.2 Regulatory Framework**

Hazardous materials and hazardous wastes are subject to numerous federal, State, and local laws and regulations intended to protect public health and safety and the environment. The United States Environmental Protection Agency (U.S. EPA), California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC), and Regional Water Quality Control Board (RWQCB) are the major federal, State, and regional agencies that enforce these regulations.<sup>16</sup> These laws and regulations are summarized below.

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<sup>16</sup> Bay Area Air Quality Management District regulations are discussed in the Air Quality Technical Report.

### 5.17.2.1 Federal

#### *Hazardous Materials*

The U.S. EPA is the lead agency responsible for enforcing federal laws and regulations regarding hazardous materials that affect public health or the environment. The major federal laws and regulations enforced by U.S. EPA include Resource Conservation Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and Superfund Amendment Reauthorization Act (SARA).

In 1974, RCRA was enacted to provide a general framework for the U.S. EPA to regulate hazardous waste from the time it is generated until its ultimate disposal. In accordance with RCRA, facilities that generate, treat, store, or dispose of hazardous waste are required to ensure that the wastes are properly managed from “cradle to grave.”

In 1976, TSCA was enacted to provide U.S. EPA the authority to regulate the production, importation, use, and disposal of chemicals that pose a risk of adversely impacting public health and the environment, such as polychlorinated biphenyls (PCBs), asbestos-containing materials (ACMs), and lead-based paint. TSCA also gives U.S. EPA the authority to regulate the cleanup of sites contaminated with specific chemicals, such as PCBs.

In 1980, CERCLA, commonly known as Superfund, was enacted to ensure that a source of funds was available for the U.S. EPA to clean up uncontrolled or abandoned hazardous materials release sites that pose a risk of adversely affecting public health and the environment. Prohibitions and requirements regarding closed or abandoned hazardous waste sites, and liability standards for responsible parties were also established by CERCLA. In 1986, SARA amended CERCLA to increase the Superfund budget, modify contaminated cleanup criteria and schedules, and revise settlement procedures.

#### *Worker Health and Safety*

Worker health and safety is protected by federal and State laws and regulations. The U.S. Occupational Safety and Health Administration (Fed-OSHA) is the federal administering agency for worker health and safety regulations. Fed-OSHA is responsible for enforcement and implementation of federal laws and regulations pertaining to worker health and safety. Under Fed-OSHA jurisdiction, the Hazardous Waste Operations and Emergency Response regulations in 29 Code of Federal Regulations (CFR) 1210.120 require training and medical supervision for workers at hazardous waste sites. Additional regulations have been developed for construction workers regarding exposure to lead (29 CFR 1926.62) and asbestos (29 CFR 1926.1101) during construction activities.

#### *Airports/Airspace*

The FAA has jurisdiction over airspace in the United States, and the FAA requirements as they relate to land uses near the San Francisco International Airport are described below.

The Federal Aviation Regulations (FAR) provide criteria for evaluating the potential effects of obstruction on the safe and efficient use of navigable airspace within approximately 2 to 3 miles

of airport runways and approximately 9.5 miles from the end of high-traffic runways that have a precision instrument approach. FAA requires notification of proposed construction or alteration projects identified by the following airspace obstruction criteria provided in FAR Part 77:

- Any construction or alteration of more than 200 feet in height above the ground level within navigable airspace as defined above.
- Any construction or alteration of greater height than an imaginary surface extending outward 100 feet and upward 1 foot for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet of actual length; and
- Any construction or alteration of greater height than an imaginary surface extending outward 50 feet and upward 1 foot for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of an airport with its longest runway no more than 3,200 feet of actual length.

Under the California State Aeronautics Act, local governments have the authority to protect airspace as defined by criteria provided in FAR Part 77. The City/County Association of Governments of San Mateo is the Airport Land Use Commission and has adopted the San Mateo County Comprehensive Airport Land Use Plan, which incorporates and in some cases exceeds the criteria provided in FAR Part 77 (San Mateo County Airport Land Use Commission, 1996). Other airspace protection concerns described in FAR Part 77 include avoiding land uses in the airport vicinity that would create hazards to flight such as electrical interference, lighting, glare, smoke, and bird strikes.

### **5.17.2.2 State**

In California, the U.S. EPA has granted most enforcement authority over federal hazardous materials regulation to Cal/EPA. The mission of Cal/EPA is to restore, protect, and enhance the environment to ensure public health, environmental quality, and economic vitality. Under the authority of Cal/EPA, DTSC and the San Francisco Bay RWQCB are responsible for overseeing the cleanup of contaminated sites. DTSC implements the State Superfund Act, which focuses on the protection of public health and the environment from the threats posed by releases or threatened releases of hazardous materials. The RWQCB implements the Porter-Cologne Act, which focuses on the preservation and protection of water quality and the beneficial uses of waters of the State.

#### ***Hazardous Materials Sites***

Known or suspected contaminated sites under DTSC or RWQCB oversight are identified by Cal/EPA pursuant to Government Code 65962.5. The provisions of Government Code 65962.5, which are commonly referred to as the Cortese List, require the DTSC, the RWQCB, the Department of Health Services, and the California Integrated Waste Management Board to submit information pertaining to sites associated with solid waste disposal, hazardous waste disposal, and/or hazardous materials releases to the Secretary of Environmental Protection.

#### ***Naturally Occurring Asbestos and Asbestos-Containing Materials***

Under the Clean Air Act, the U.S. EPA established the National Emissions Standard for Hazardous Air Pollutants to protect the public from hazardous air pollutants, such as asbestos.

The regulations for asbestos require protocols to minimize the release of asbestos fibers during activities involving the processing, handling, and disposal of ACMs. General requirements of these emissions standards include adequate wetting of ACMs and no visible emissions.

The California Air Resources Board established an Asbestos Airborne Toxic Control Measure that requires the employment of the best available dust mitigation measures during construction and grading operations in areas where NOA rock is likely to be encountered. For sites larger than 1 acre, the Bay Area Air Quality Management District, which implements this measure in the Bay Area, would require that an asbestos dust mitigation plan be prepared and submitted for approval.

### ***Wildlands Fire Hazards***

State policies regarding wildland fire safety are administered by the office of the State Fire Marshall and CAL FIRE. CAL FIRE also staffs the San Mateo County Fire Protection Services program, which provides firefighting personnel and equipment in response to wildland fires in unincorporated areas of San Mateo County.

State lands are classified by CAL FIRE into Fire Hazard Severity Zones (FHSZ) to assist responsible state and local agencies identify measures to reduce the potential for losses of life, property, and resources from wildland fire. FHSZ are classified by the CAL FIRE Director in accordance with California Public Resource Code (PRC) sections 4201 through 4204 for state responsibility areas and in accordance with Government Code sections 51176 through 51189 in local responsibility areas. FHSZ mapped by CAL FIRE for state and local responsibility areas are classified as Medium, High, or Very High based on fire hazards; however, the law only requires identification of Very High Fire Hazard Severity Zones in local responsibility areas.

New buildings and development projects located in any FHSZ in the state responsibility area, and any Very High Fire Hazard Severity Zone in a local responsibility area, are required to comply with the materials and construction methods for exterior wildfire exposures and vegetation management practices described in Chapter 7A of the 2007 California Building Code (CBC) and Chapter 47 in the California Fire Code (CFC). When required by the San Mateo County Fire Protection Service Program, a fire Protection Plan for new developments in Wildland-Urban Interface Fire Areas that describes ways to minimize and mitigate potential for loss from wildland fire exposure must be prepared in accordance with the 2007 CBC and CFC.

Construction contractors are required to comply with the following requirements during construction activities at sites with any forest, brush, or grass-covered land:

- Earthmoving and portable equipment with internal combustion engines shall be equipped with a spark arrestor to reduce the potential for igniting a wildland fire;
- Appropriate fire suppression equipment shall be maintained during the highest fire danger period – from April 1 to December 1;
- On days when a burning permit is required, flammable material shall be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor shall maintain the appropriate fire suppression equipment; and

- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines shall not be used within 25 feet of any flammable materials.

As of January 1, 2009, Section 4291 of the PRC also requires anyone who owns, leases, controls, operates, or maintains any building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material within a state responsibility area to comply with the following conditions:

- Maintain any combustible materials, such as vegetation and petroleum-based products, within 100 feet of a structure in a condition so that a wildfire burning under average weather conditions would not likely ignite the structure;
- Implement the most intense fuel management within the first 30 feet around the structure. Beyond that, the intensity of fuels management may vary within the 100-foot perimeter of the structure;
- Maintain any tree, shrub, or other plant adjacent to or overhanging a structure to keep it free of dead or dying wood; and
- Remove leaves, needles, or other vegetative material from the roof structure.

### ***Worker Health and Safety***

California Department of Industrial Relations, Division of Occupational Safety and Health, enforces State regulations and supervision of workplaces in California that are not under direct federal jurisdiction. State worker health and safety regulations applicable to construction workers include training requirements for hazardous waste operations and emergency response (8 California Code of Regulations [CCR] 5192), lead (8 CCR 1532.1), and asbestos (8 CCR 1529) regulations that equal or exceed federal counterparts.

### **5.17.2.3 Local**

#### ***Hazardous Materials Sites***

In San Mateo County, the SMCEH Division, or in some instances the RWQCB and/or the DTSC, perform oversight during the remediation of contaminated sites. At sites where contamination is suspected or known to have occurred, the site owner is required to perform a site investigation and perform site remediation, if necessary. Site remediation or development may also be subject to regulations by other agencies if the construction activities require dewatering operations. The project sponsor might be required to obtain a permit from the municipal sewer agency before discharging the water to the sewer system, or a National Pollutant Discharge Elimination System permit from the RWQCB before discharging to the stormwater collection system. Refer to Section 5.16, Hydrology and Water Quality, for regulations pertaining to waste discharge requirements for dewatering activities.



## 5.17.3 Impacts and Mitigation Measures

### 5.17.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to hazards and hazardous materials, but generally considers that implementation of the proposed project would have a significant impact on hazards if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- 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;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
- 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, result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

### 5.17.3.2 Approach to Analysis

Due to the nature of the proposed activities at the project sites, there would be no impacts related to the following significance criteria. Therefore, an impact discussion is not provided for the reasons below.

PPSU project operations would have no impacts related to the following significance criteria:

- **Create a significant hazard through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions.** Following completion of project construction, operation of the pipelines would be essentially the same as existing operations, and scheduled maintenance and repairs would occur as necessary. While the pipelines would be inspected regularly in accordance with the standard inspection

schedule, the type of inspection or maintenance activities would not substantially change from current practices. Operation and maintenance of the upgraded pipelines would not require increased use of hazardous materials or result in any other hazards. Therefore, project operations would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, these significance criteria are discussed below under Impact HZ-1 and Impact HZ-2 only as they apply to project construction activities.

- **Emit hazardous materials, substances, or waste within 0.25 mile of a school.** As described previously, project operations would not result in significant hazards from the routine transport, use or disposal of hazardous materials, or through the reasonably foreseeable upset or accident conditions involving the release of hazardous materials. Project operations and maintenance activities would be similar to existing activities and would include pipe inspections and maintenance activities. Although there are schools located within the project vicinity, project operations would not result in emissions or handling of hazardous materials within 0.25 mile of a school. Therefore, this significance criterion is not applicable to project operations and is discussed below under Impact HZ-3 only as it applies to project construction activities.
- **Result in a safety hazard in the vicinity of a public airport.** During project operations, project site conditions would generally be similar to existing site conditions. The pipeline segments to be replaced are underground and customer service connections are generally a few feet above ground. There is no lighting associated with project operations. As described above, the closest airport to the project sites is SFO, located approximately 1 mile from the Millbrae site (the site closest to the airport). Therefore, this significance criterion is not applicable to project operations and is discussed below under Impact HZ-4 only as it applies to project construction activities.
- **Impair implementation of or physically interfere with an emergency response plan or emergency evacuation plan.** During project operations, the site conditions would generally be similar to existing conditions, and emergency access in the vicinity of the project sites would not be impaired by the yearly inspections or other operations and maintenance activities. As described in Section 5.6, Transportation and Circulation, PPSU project operations would not permanently change the existing or planned transportation network and would not affect emergency vehicle access in the vicinity of the project sites. The operation of the project would not impair or interfere with implementation of the San Mateo County Emergency Operations Plan (San Mateo County Sheriff's Office of Emergency Services and Homeland Security, 2011). Therefore, this significance criterion is discussed below under Impact HZ-5 only as it pertains to project construction activities.

Both PPSU project construction and operations would have no impacts related to the following significance criteria:

- **Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.** This criterion is related to the identification of hazardous waste and substance sites as compiled by the RWQCB, the Integrated Waste Board, and the DTSC. As discussed in Section 5.17.1, the results of the Phase I Environmental

Site Assessment (ESA) for the project sites did not identify any sites within the study areas that are listed pursuant to Government Code Section 65962.5. Therefore, this significance criterion is not applicable to the proposed project and is not discussed further.

- **Result in safety hazards in the vicinity of a private airstrip.** As described above in Section 5.17.1.5, private airports are not located within the vicinity of the project sites. Therefore, the significance criterion that addresses potential aviation hazards from private airports is not applicable to the proposed project, and is not discussed further.
- **Risk involving wildland fires.** As described above in Section 5.17.1.4, none of the proposed project sites is located within a designated fire hazard severity zone. Therefore, the significance criterion that addresses potential wildland fires is not applicable to the proposed project and is not discussed further.

This analysis focuses on the potential to encounter hazardous substances in soil and groundwater during construction and is based on: (1) the regulatory database review conducted to identify hazardous materials uses and environmental cases that could affect soil and groundwater within the PPSU projects (EDR 2011a, 2011b, 2011c, 2011d, and 2011e), and (2) review of chemical data for the common staging area (SF Planning, 2008). The analysis also addresses the potential for a release of hazardous materials from construction equipment during construction.

As described in Chapter 3, Project Description, project operation and maintenance would be similar to existing operations and maintenance of the pipelines. As described above, project operation would not result in significant hazards pertaining to the applicable significance criteria. Therefore, there would be no project operations impacts.

### 5.17.3.3 Summary of Impacts

Table 5.17-1 lists the proposed project's hazards and hazardous materials impacts and significance determination.

### 5.17.3.4 Construction Impacts and Mitigation Measures

***Impact HZ-1: Project construction 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)***

Hazardous materials may be encountered during soil excavation, and would be trucked to an appropriate disposal facility. In addition, construction materials typically include varying amounts of hazardous materials. The materials expected to be transported to and used at the project sites include fuels (diesel and gasoline), lubricants, paints, solvents, and flammable gases for welding.

Numerous laws and regulations ensure the safe transportation, use, storage, and disposal of hazardous materials as presented in the Regulatory Framework (Section 5.17.2). Routine transport of hazardous materials to and from project sites could indirectly result in an incremental increase in the potential for accidents; however, the California Department of

**Table 5.17-1  
 Summary of Impacts – Hazards and Hazardous Materials**

<b>Impacts</b>	<b>Significance Determination</b>
<b>Impact HZ-1:</b> Project construction would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LS
<b>Impact HZ-2:</b> Project construction could 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.	LSM
<b>Impact HZ-3:</b> Project construction would not result in emissions or use of hazardous materials or substances within 0.25 mile of a school during construction.	LS
<b>Impact HZ-4:</b> Project construction would not result in public airport-related aviation hazards during construction.	LS
<b>Impact HZ-5:</b> Project construction would not impair implementation of, or physically interfere with, an emergency response plan or emergency evacuation plan.	LS
<b>Impact C-HZ:</b> Construction of the proposed project could result in a cumulatively considerable contribution to cumulative impacts related to hazards and hazardous materials.	LSM
Notes: LS = Less than significant. LSM = Less than significant with mitigation.	

Transportation and the California Highway Patrol regulate the transportation of hazardous materials and wastes, including container types and packaging requirements, as well as licensing and training for truck operators, chemical handlers, and hazardous waste haulers. Worker safety regulations under the jurisdiction of Fed-OSHA and the California Department of Industrial Relations, Division of Occupational Safety and Health, cover hazards related to the prevention of exposure to hazardous materials, release to the environment from hazardous materials use, and emergency response. Compliance with laws and regulations under the jurisdiction of the U.S. EPA, Cal/EPA, and DTSC would ensure disposal of hazardous materials at an appropriate landfill. Because the SFPUC and all service providers would be required to comply with existing and future hazardous materials laws and regulations for the transport, use, and disposal of hazardous materials, the impacts associated with the potential to create significant hazards to the public or the environment would be *less than significant*.

***Impact HZ-2: Project construction could 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)***

As described above, the Phase I ESA for the five project sites did not identify any hazardous materials uses or environmental sites within the study areas that could adversely impact soil and groundwater quality. Additionally, as described above, NOA is not anticipated to be encountered during construction; therefore, NOA is not considered to be a hazard at the project sites. Consequently, it is anticipated that there is a low potential to encounter hazardous materials in the soil and groundwater during construction. Based on the information described in the Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration (SF Planning, 2008), petroleum hydrocarbons such as diesel and motor oil have been identified in the soil at concentrations greater than environmental screening levels and criteria for unrestricted disposal, and the concentrations of soluble nickel and chromium may exceed hazardous waste criteria in the common staging area. However, activities proposed at the common staging area would involve installation of offices and worker parking. Related construction activities include the placement of offices (trailers) and minor site improvements, such as gravel laydown. Therefore, there is low potential to encounter adversely impacted soil and groundwater at the common staging area, because soil and groundwater would likely not be disturbed.

However, for all of the project sites it cannot be determined with certainty whether excavated materials would contain potentially hazardous soil and/or groundwater wastes. In addition, construction materials typically used during construction activities include varying amounts of hazardous materials. The materials expected to be used and stored at the project sites and staging areas include fuels (diesel and gasoline), lubricants, paints, solvents, and flammable gases for welding. If an accident occurred involving such hazardous materials during construction, exposure to hazardous materials could potentially pose a health risk to construction workers through ingestion, inhalation, or dermal contact; or to the public if unauthorized access to the materials occurred. Such an impact would be considered potentially significant.

Implementation of the mitigation measures described below would reduce hazards to construction workers, the public, or the environment related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment during construction. **Mitigation Measures M-HZ-2a: Prepare and Implement a Hazardous Material Handling and Disposal Plan, M-HZ-2b: Prepare and Implement a Hazardous Material Business Plan, and M-HZ-2c: Develop and Implement a Health and Safety Plan**, would reduce impacts through compliance with applicable laws and regulations for testing, handling, transporting, and disposing of hazardous waste; through implementation of site-specific, construction best management practices for use, disposal and transport of hazardous materials; and through protections for workers. **Mitigation Measure M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan** (see Section 5.16, Hydrology and Water Quality), would reduce impacts through measures to control erosion and sedimentation of receiving water bodies, and minimize the risk of hazardous material release to surface water bodies. Therefore, this impact would be *less than significant with mitigation*.

### **Mitigation Measure M-HZ-2a: Prepare and Implement a Hazardous Material Handling and Disposal Plan**

This mitigation measure applies to all project sites, as well as the common staging area. The contractor shall prepare, submit to SFPUC, and implement a Hazardous Material Handling and Disposal Plan during construction of the project. The Hazardous Material Handling and Disposal Plan shall include, but would not be limited to, the following information:

- Results of the pre-construction hazardous assessment and descriptions of potential hazardous wastes to be generated.
- Onsite waste management protocols, which will require that all excavated materials suspected of being hazardous be inspected prior to initial stockpiling, and that excavated materials that are visibly stained, have noticeable odor, and/or are known or suspected to contain contaminants be stockpiled separately, to minimize the amount of material that may require special handling.
- Hazardous waste characterization protocols, and waste profiling and acceptance criteria. To properly evaluate suspected contaminated soil, a qualified professional will collect a representative sample and submit it to a California-certified laboratory for analysis of contaminants-of-concern. The analytical results will be used to classify the spoils as hazardous or nonhazardous waste, in accordance with applicable federal and state laws and regulations for offsite disposal at an appropriate disposal facility or for onsite reuse.
- Transportation and disposal for hazardous wastes in accordance with applicable federal and state regulations.
- Hazardous waste management documentation and reporting.

### **Mitigation Measure M-HZ-2b: Develop and Implement a Hazardous Material Business Plan**

This mitigation measure applies to all project sites, as well as the common staging area. A Hazardous Material Business Plan (HMBP) shall be required when any of the following conditions are met:

- 55 gallons or more of liquid hazardous material, such as fuel products, are present on site at any one project site;
- 500 pounds of solid hazardous material are present at any one project site;
- 200 cubic feet of compressed gases including flammable gases for welding are present at any one project site;
- Any amount of an extremely hazardous substance is present, as specified in 40 CFR Part 355, Appendix A or B; or

- Any amount of radiological materials that are present in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40, or 70.

In the event that the above criteria are applicable to the construction activities, the contractor will prepare, submit to SFPUC, and implement a HMBP for the construction. The HMBP shall be certified by a qualified professional (such as a California-licensed civil engineer) from the contractor, and will include step-by-step procedures for the use, storage, and handling of hazardous materials during construction. The HMBP shall include, but not be limited to, the following elements:

- Descriptions of planned operation for which the HMBP is applicable;
- Procedures for handling, transporting, storing, and disposing all hazardous materials used for the project component activities;
- Location where the hazardous materials are stored;
- Spill prevention protocols;
- Protocols including response equipment to address any accidental spill and releases of hazardous materials to be used during the operation;
- Personnel training requirement to implement the HMBP; and
- Emergency response and spill contingency protocols to address any emergencies and contingencies resulting from hazardous chemicals or waste from the project components.

The HMBP will be prepared in compliance with the requirements of the local environmental department (San Mateo County, SMCEH Division).

#### **Mitigation Measure M-HZ-2c: Develop and Implement a Health and Safety Plan**

This mitigation measure applies to all project sites, as well as the common staging area. This mitigation measure will be applicable when any of the following conditions is observed:

- Handling of hazardous materials during construction is required;
- Visual signs of hazardous wastes are observed during construction; or
- Potential presence of hazardous wastes is anticipated for the construction activities.

Prior to the start of any construction activities, the contractor shall prepare, submit to SFPUC, and implement a Health and Safety Plan (HASP) to address chemical hazards identified for the construction. The contractor shall not start any construction activities until the contractor receives SFPUC's notification that all submittal requirements regarding the health and safety plan have been fulfilled in accordance with the project contract bid and specification documentation.

The HASP shall be consistent with all applicable CCR Title 8 or other applicable regulations and SFPUC's health and safety requirements. The HASP shall establish, in

detail, the protocols necessary for the recognition, evaluation, and control of all hazards associated with the construction activities performed by the contractor and its subcontractors. The HASP will include, but not be limited to, the following major elements:

- Chemicals to be encountered, handled, or used;
- Chemical hazard analyses to identify potential health and safety hazards associated with the chemicals identified for the project;
- Chemical action levels for site worker safety;
- Name and qualifications of all the site health and safety personnel designated for the project;
- Health and safety organization for the project including, but not limited to, lines of authority, responsibility, and communication protocols
- Worker safety monitoring requirement and protocols;
- Confined space entry permit and plan, if applicable;
- Crane critical lift plan, if applicable;
- Fall protection and prevention plan;
- Personal protective equipment;
- Emergency response and contingency planning procedures, including emergency and first aid equipment; and information on the nearest emergency room, including address, phone number, and routing from each of the project sites; and
- Inspection, incident investigation, and reporting requirements, including documentation and record keeping procedures.

***Impact HZ-3: Project construction would not result in emissions or use of hazardous materials or substances within 0.25 mile of a school during construction. (Less than Significant)***

Seven schools are identified within 0.25 mile of the proposed project sites as measured from the nearest location of the school property to the proposed project sites. The schools within the project vicinity are:

- Baden High School, 825 Southwood Drive, South San Francisco, located approximately 0.15 mile from the common staging area;
- Los Cerritos Elementary School, 210 West Orange Avenue, South San Francisco, located approximately 0.19 mile from the common staging area;
- Ponderosa Elementary School, 295 Ponderosa Road, South San Francisco, located approximately 0.25 mile from the common staging area;



- St. Veronica Catholic School, 434 Alida Way, South San Francisco, located approximately 0.22 mile from the common staging area;
- Peninsula High School including Crayon College (daycare), 300 Piedmont Avenue, San Bruno, which would be adjacent to the project staging area at the San Bruno South Site;
- Meadows Elementary School, 1101 Helen Drive, Millbrae, located approximately 0.18 mile from the Millbrae Site; and
- Glen Oaks/Millbrae Montessori School, 797 Santa Margarita Avenue, Millbrae, located approximately 0.11 mile from the Millbrae Site.

Previous uses of hazardous materials at the PPSU project sites were not identified, nor were environmental sites identified within the study areas that could adversely impact soil and groundwater quality. Additionally, NOA is not anticipated to be encountered during construction. Consequently, it is anticipated that there is a low potential to encounter hazardous materials in the soil and groundwater during construction.

Project construction activities would include the use of hazardous materials such as fuels, lubricants, degreasers, paints and solvents. These materials are commonly used during construction, are not acutely hazardous, and would be used in small quantities. The U.S. EPA, Cal/EPA, DTSC, RWQCB, and the SMCEH Division mandate compliance with laws and regulations to ensure the safe transportation, use, storage, and disposal of hazardous materials, as presented in Section 5.17.2, Regulatory Framework. Additionally, due to the nature of these materials and the small quantities that would be required, an accidental spill or release would be unlikely to result in significant impacts to the above-listed schools. Therefore, because the SFPUC and its contractors would be required to comply with hazardous materials laws and regulations covering the transport, use, and disposal of hazardous materials; and because of the nature and quantity of the hazardous materials, impacts from emissions or use of hazardous materials or substances within 0.25 mile of a school during construction would be *less than significant*.

***Impact HZ-4: Project construction would not cause public airport related aviation hazards during construction. (Less than Significant)***

The FAA has jurisdiction over the airspace in the United States, and the FAA requirements as they relate to land uses near the San Francisco International Airport (SFO). FAA requires notification of proposed construction or alteration projects identified by the following airport obstruction criterion related to the project sites:

Any construction or alteration of greater height than an imaginary surface extending outward 100 feet and upward 1 foot for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than 3,200 feet of actual length.

Due to the elevation of the project sites and relative proximity to SFO, proposed construction activities may be subject to the above notification requirements related to navigable airspace at SFO (Chang, 2012). Compliance with these notification requirements would ensure that construction equipment and other temporary structures such as earth-moving equipment and stockpiles of equipment do not pose a hazard to navigable airspace. The SFPUC would comply with FAA regulations and would complete applicable notifications for the PPSU project, including FAA Form 7460-1 (Notice of Proposed Construction or Alteration), as described in the San Mateo County Comprehensive Airport Land Use Plan for FAA review. Pending response

from FAA on the notification regarding compliance with FAA recommendations, the contractor may be required to use appropriate lighting and flagging on equipment, which would minimize the potential to create impacts. With compliance of the FAA notification requirement, the potential impact of aviation hazards during project construction would be *less than significant*.

***Impact HZ-5: Project construction would not impair implementation of, or physically interfere with, an emergency response plan or emergency evacuation plan. (Less than Significant)***

Impact TR-2, described in Section 5.6, Transportation and Circulation, describes emergency access during project construction. As described under this impact, project construction would occur within or near the SFPUC ROW, and generally would not be located within the travel lanes of adjacent roadways, with the exception of staging at the San Bruno North site, and construction across Whitman Way at the San Bruno South site. Project construction activities would not require full closures of any streets, except for intermittent temporary closures associated with large truck and equipment maneuvering; emergency vehicles would have continuous access to all public roadways. Therefore, the project would not impair implementation of or physically interfere with an emergency response plan or an emergency evacuation plan, and project impacts would be *less than significant*.

#### **5.17.3.5 Operational Impacts**

As summarized in Section 5.17.3.2, due to the nature of the project, which entails replacement of underground portions of an existing pipeline and restoration of the sites to pre-construction conditions, there would be *no impacts* associated with project operations.

#### **5.17.3.6 Cumulative Impacts and Mitigation Measures**

***Impact C-HZ: Construction of the proposed project could result in a cumulatively considerable contribution to cumulative impacts related to hazards and hazardous materials. (Less than Significant with Mitigation)***

The geographic scope for cumulative impacts associated with hazards and hazardous materials includes the project area and a 1,000-foot buffer zone of the project area. With respect to hazardous materials in the environment, effects are generally limited to site-specific conditions.

The Groundwater Storage and Recovery (GSR) project areas in Colma and South San Francisco is the only cumulative project within the 1,000-foot buffer zone of the PPSU project, and therefore is the one project considered for the cumulative impact analyses.

#### **Create a Significant Hazard to the Public or the Environment**

Cumulative impacts related to exposure to hazards and hazardous materials in soil and groundwater could occur if the cumulative project construction activities entailed the excavation and/or groundwater dewatering within contaminated areas. In addition, construction of the cumulative projects could result in accidental release of hazardous construction materials. These releases could occur in proximity to schools. Therefore, cumulative impacts related to the accidental release of hazardous construction chemicals into the environment or upset of

contaminated soils or groundwater and release of hazardous materials during construction of the PPSU project and the GSR project is considered potentially significant.

As discussed under Impact HZ-1, the construction of the PPSU project would use hazardous materials, including petroleum fuels and lubricants for earth-moving equipment, and flammable gases for welding. Use of these substances would be reduced to less-than-significant levels by compliance with regulations. As discussed under Impact HZ-2, there is a low potential to encounter hazardous materials in the soil and groundwater during construction activities for the PPSU project, because the environmental database reviews completed for the project did not identify any permitted hazardous materials uses or environmental cases in the vicinity that are likely to have adversely impacted soil and groundwater quality. However, unknown hazardous soils or groundwater could be excavated or released from the sites, or accidents could result in a release of hazardous materials used during construction. Therefore, the PPSU project together with the GSR could result in a significant cumulative impact.

As discussed under Impact HZ-3, the use of hazardous materials during construction would be similar to standard construction practices, and would be required to comply with hazardous materials laws and regulations covering the transport, use, and disposal of hazardous materials. Therefore, the PPSU project's contribution to cumulative impacts pertaining to emissions or use of hazardous materials or substances within 0.25 mile of a school would be de minimis and less than significant.

The proposed project's contribution to cumulative impacts pertaining to hazards to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be reduced with the implementation of **Mitigation Measure M-HZ-2a: Prepare and Implement a Hazardous Material Handling and Disposal Plan; Mitigation Measure M-HZ-2b: Develop and Implement a Hazardous Material Business Plan; Mitigation Measure M-HZ-2c: Develop and Implement a Health and Safety Plan; and Mitigation Measure M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan** (see Section 5.16, Hydrology and Water Quality), and through compliance with applicable federal, state, and local laws and regulations. Together, these measures and requirement for compliance with applicable laws and regulations would ensure that impacts related to exposure to hazardous materials are minimized and/or avoided. (Similar types of effects that could occur on the GSR project at Colma and South San Francisco sites would be mitigated through site-specific mitigation measures appropriate for that project, and the GSR project would also be required to comply with applicable laws and regulations.) Therefore, the project's contribution to the identified cumulative impacts would not be cumulatively considerable (*less than significant with mitigation*).

### **Cause Public Airport Related Aviation Hazards**

The PPSU project and GSR project areas in Colma and South San Francisco are located within an area subject to compliance with FAA regulations. The PPSU project and GSR project would be in compliance with FAA requirements through completion of notifications, including FAA Form 7460-1 (Notice of Proposed Construction or Alteration), as applicable. FAA will identify whether site-specific requirements would be needed to avoid aviation hazards related to public airports, based on the review of the notification from each project. With compliance with site-specific FAA requirements, if any, the PPSU project and GSR project areas in Colma and South

San Francisco are not anticipated to pose aviation hazards to the public airport (i.e. San Francisco International Airport). Therefore, potential cumulative impacts would be *less than significant*.

#### **Impair Implementation of or Physically Interfere with an Emergency Response Plan or Emergency Evacuation Plan**

At the Colma site, a portion of the adjacent Kohl's department store site would be used as a staging area for both the GSR project and the PPSU project. This would allow for installation of a construction trailer to be used for both projects, and would occupy only a small portion of the rear of the Kohl's site next to the SFPUC ROW, displacing approximately 40 parking spaces. The SFPUC would coordinate traffic control plans for each project to ensure that emergency vehicle access to the rear of the building would be maintained. Cumulative impacts at Colma would therefore be *less than significant*.

Project construction activities for the GSR project and the PPSU project would occur within or near the SFPUC ROW in South San Francisco, and would not impede access through travel lanes of adjacent roadways. Therefore, there would be no cumulative interference with emergency response plans or emergency evacuation plans at this location, and cumulative impacts would be *less than significant*.

There would be no cumulative impacts relating to interference with an emergency response plan or emergency evacuation plan at the San Bruno or Millbrae sites, because there are no cumulative projects that could combine with each other or the PPSU project to cause this type of impact. Therefore, there would be *no impact*.

#### **5.17.4 References**

CAL FIRE (California Department of Forestry and Fire Protection), 2008. San Mateo County, Very High Fire Hazard Severity Zones in LRA, as recommended by CAL FIRE, November 24. Available online at: [www.fire.ca.gov/fire\\_prevention/fhsz\\_maps/fhsz\\_maps\\_sanmateo.php](http://www.fire.ca.gov/fire_prevention/fhsz_maps/fhsz_maps_sanmateo.php).

CAL FIRE (California Department of Forestry and Fire Protection), 2007. San Mateo County, Fire Hazard Severity Zones in SRA, adopted by CAL FIRE on November 7. Available online at: [www.fire.ca.gov/fire\\_prevention/fhsz\\_maps/fhsz\\_maps\\_sanmateo.php](http://www.fire.ca.gov/fire_prevention/fhsz_maps/fhsz_maps_sanmateo.php).

Chang, Randy, 2012. Personal communication between Randy Chang, FAA San Francisco Airport District Office Lead Program Manager, and Randy Young, AEW Engineering, Inc. October 5.

CRA (Conestoga-Rovers & Associates), 2010. Well Installation Report and First Quarter 2010 Groundwater Monitoring Report, former Standard Oil Substation 30-9379, 972 El Camino Real, South San Francisco, California, San Mateo County Site #550196. March 9.

EDR (Environmental Data Resources Inc.), 2011a. The EDR Radius Map™ Report with GeoCheck dated October 20, 2011, Colma Project Site and the EDR-City Directory Abstract, October 26, 2011.

EDR (Environmental Data Resources Inc.), 2011b. The EDR Radius Map™ Report with GeoCheck dated October 20, 2011, South San Francisco Project Site and the EDR-City Directory Abstract, October 26, 2011.

EDR (Environmental Data Resources Inc.), 2011c. The EDR Radius Map™ Report with GeoCheck dated October 21, 2011, San Bruno North Site and the EDR-City Directory Abstract, October 26, 2011.

EDR (Environmental Data Resources Inc.), 2011d. The EDR Radius Map™ Report with GeoCheck dated May 31, 2011, PPSU San Bruno and the EDR-City Directory Abstract, June 14, 2011.

EDR (Environmental Data Resources Inc.), 2011e. The EDR Radius Map™ Report with GeoCheck dated May 31, 2011, PPSU Millbrae and the EDR-City Directory Abstract, June 20, 2011.

GTC (Geotechnical Consultants, Inc.), 2011. Draft Addendum to the Geotechnical Data Report, SFPUC Peninsula Pipelines Seismic Upgrade Project. August.

FAA (U.S. Department of Transportation, Federal Aviation Administration), 2012. General Aviation Airports: A National Asset. May.

San Mateo County Airport Land Use Commission, 1996. San Mateo County Comprehensive Airport Land Use Plan, Half Moon Bay Airport Land Use Plan, San Carlos Airport Land Use Plan, San Francisco International Airport Land Use Plan. December.

San Mateo County Sheriff's Office of Emergency Services and Homeland Security, 2011. San Mateo County Emergency Operations Plan. January 28.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Baden and San Pedro Valve Lots Improvement Project Mitigated Negative Declaration. Case No. 2006.1314E. September.

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## 5.18 Mineral and Energy Resources

This section describes existing mineral and energy resources in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project and evaluates the potential mineral and energy impacts of the proposed project. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.18.1 Setting

#### 5.18.1.1 Mineral Resources

Based on the geologic units underlying the PPSU project sites and vicinity, no known mineral resources are located in or adjacent to the project sites (Rice, 2012).

#### 5.18.1.2 Energy Resources

This section provides an overview of the existing energy supply in the state, region and at the PPSU site.

##### *State Overview*

California's electricity is supplied by several sources. Data for 2010 indicate these sources include natural gas (41.9 percent), coal (7.7 percent), large hydroelectric plants (10.8 percent), nuclear (13.9 percent), and renewables (13.7 percent), with 12 percent coming from unspecified sources (CEC, 2012a). Despite California's policies aimed at diversifying the state's electrical supply, natural gas continues to be an important source of the state's energy, from 45.2 percent in 2007 and 53.4 percent in 2008 to 41.0 percent in 2010 (CEC, 2009; CEC, 2012a).

Public Utilities Code Section 399.11 – 399.19, established in 2002 under Senate Bill 1078 and modified in 2006 under Senate Bill 107, required investor-owned utilities, electric service providers and community choice aggregators regulated by the California Public Utilities Commission to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent is reached, by no later than 2010. Revised estimates by the California Public Utilities Commission indicate that investor-owned utilities will meet the 20 percent Renewable Portfolio Standard by 2013 to 2014. The state's load serving entities are required to meet a 33 percent renewable energy target by 2020 (CEC, 2012b).

##### *Regional Overview*

##### **Energy Providers**

**San Francisco Public Utilities Commission (SFPUC) Power Enterprise.** The SFPUC Power Enterprise (formerly Hetch Hetchy Water and Power System) provides a long-term annual average of 1.7 billion kilowatt-hours (kWh) of electrical power, which is generated by the SFPUC's hydroelectric facilities in the Hetch Hetchy system. The Hetch Hetchy project comprises 400 megawatts of hydroelectric power generation plants on the Tuolumne River, and 150 miles of high-voltage transmission lines linking Hetch Hetchy power to California's electricity grid at

Newark (SF Planning, 2008). The SFPUC Power Enterprise provides electricity to all City and County of San Francisco (CCSF) facilities (including tenants), the San Francisco International Airport and its tenants, Norris Industries (a federal facility), and the Modesto and Turlock Irrigation Districts (for municipal and agricultural pumping). While the quantity of power produced exceeds San Francisco's municipal power needs on an annual basis, CCSF must supplement its power sources to meet municipal demand and its contractual obligations during the summer and fall months, when power generation is reduced so that water can be stored.

**Pacific Gas & Electric Company (PG&E).** PG&E provides natural gas and electricity to most of northern California. It provides SFPUC Power Enterprise with transmission and distribution services from Newark to the west, pursuant to an interconnection agreement regulated by the Federal Energy Regulatory Commission. Under this agreement, PG&E transmits and distributes electricity to SFPUC Power Enterprise customers. PG&E is the primary provider of electrical power to the Town of Colma (Town of Colma, 1999) and the cities of South San Francisco (City of South San Francisco, 2011), San Bruno, (City of San Bruno, 2009), and Millbrae (City of Millbrae, 1998).

### **Energy Use**

The SFPUC customer base and generation base are distinguishable from other power supplies, and its load profile is relatively flat (i.e., not dramatically higher in the summer), because the milder climate does not drive increased demand that is typical of air-conditioning usage. Despite the overall surplus of energy produced, CCSF typically supplements its power supply with PG&E-produced power during fall and summer months in order to allow uninterrupted SFPUC operations (i.e., water storage) to occur while continuing to meet its municipal demand and contractual obligations for power supply.

The SFPUC's energy demand for operation of water facilities between Oakdale in the San Joaquin Valley and San Francisco is nearly 44 million kWh per year, which is less than 4 percent of the historical low production rate of the Hetch Hetchy system and less than 3 percent of the long-term annual average production rate (SF Planning, 2008). The SFPUC Power Enterprise (through connections with PG&E) provides power in the San Francisco Peninsula region, where existing SFPUC power usage is 24.4 million kWh (SF Planning, 2008). Electricity is distributed in both San Mateo County and San Francisco County via local lines that are owned and operated by PG&E.

## **5.18.2 Regulatory Framework**

### **5.18.2.1 Federal**

There are no federal regulations governing mineral resources that apply to the proposed project.

#### ***National Energy Policy Act of 2005***

The National Energy Policy Act of 2005 sets equipment energy-efficiency standards, and seeks to reduce reliance on nonrenewable energy resources and provide incentives to reduce current demand on these resources. For example, under the act, consumers and businesses can attain federal tax credits for: purchasing fuel-efficient appliances and products, including hybrid vehicles; constructing energy-efficient buildings; and improving the energy efficiency of



commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

### 5.18.2.2 State

#### *Surface Mining and Reclamation Act of 1975*

Pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA), the California Geological Survey has evaluated areas of California for mineral resource potential and has classified the land accordingly. One of the objectives of SMARA is to identify areas of the state that contain significant mineral resources so these lands can be set aside for uses that are compatible with possible future mining. Natural resources that are identified include air, minerals, water, sand and gravel, timber, energy, and other resources used for construction and operation. Under SMARA, protected mineral resources include construction materials, industrial and chemical mineral materials, metallic and rare minerals, and nonfluid mineral fuels. Non-fuel mineral resources include metals such as gold, silver, iron, and copper; industrial minerals such as boron compounds, rare-earth elements, clays, limestone, gypsum, salt, and dimension stone; and construction aggregate, which include sand, gravel, and crushed stone.

In the land classification scheme adopted by the California Geological Survey, four types of Mineral Resource Zones (MRZs) are identified:

- MRZ-1 for areas of no mineral resource significance;
- MRZ-2 for areas identified as having mineral resource significance; and
- MRZ-3 for areas containing mineral resources that cannot be classified as significant because of inadequate data; and
- MRZ-4 for to areas where no known minerals occur, and where geologic data do not provide sufficient information to support a definite determination as to the area's mineral potential.

No known mineral resources are located in the project area as designated by SMARA.

#### *California 2008 Energy Action Plan*

The State of California 2008 Energy Action Plan Update is the state's principal energy planning and policy document (State of California, 2008). The updated document examines the state's ongoing actions in the context of global climate change. The 2008 Energy Action Plan updates previous action plans, including the 2005 Energy Action Plan II which continues the goals of the original 2003 Energy Action Plan. The Plan describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy resources are adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first-priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy demand and transmission capacity needs, clean and efficient fossil fuel-fired generation is supported.

The Energy Action Plan II included the following energy efficiency action specific to water supply systems:

Identify opportunities and support programs to reduce electricity demand related to the water supply system during peak hours, and opportunities to reduce the energy needed to operate water conveyance and treatment systems.

The California 2008 Energy Action Plan Update examines policy changes in the areas of energy efficiency, demand response, renewable energy, electricity reliability and infrastructure, electricity market structure, natural gas supply and infrastructure, research and development, and climate change.

### ***Building Energy Efficiency Standards***

The Energy Efficiency Standards for Residential and Nonresidential Buildings, as specified in Title 24, Part 6, of the California Code of Regulations (CCR), were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The most recent update of the standards was adopted on April 23, 2008 and went into effect August 1, 2009.

Compliance with these standards is mandatory when new building permits are issued by city and county governments. These standards also promote cost-effective means to reduce energy use for new development relative to business-as-usual-conditions. California's building efficiency standards (including standards for energy-efficient appliances) have saved more than \$56 billion in electricity and natural gas costs since 1978 (CEC, 2009). It is estimated that an additional \$23 billion will be saved by 2013.

In addition, amendments to Title 24 CCR called the Green Building Standards Code (24 CCR 11) are currently in the rulemaking process. These largely voluntary standards would encourage building techniques that would substantially reduce energy consumption and water use below Title 24 standards.

### **5.18.2.3 Local**

Applicable City of San Francisco energy policies are provided below. There are no applicable mineral or energy policies in San Mateo County, the Town of Colma, or the cities of South San Francisco, San Bruno, or Millbrae.

#### ***San Francisco Plans***

##### **Sustainability Plan for San Francisco**

The Sustainability Plan for San Francisco contains a set of general goals and specific objectives and actions for San Francisco to ensure that the city's current energy needs are met without sacrificing the ability of future generations to meet their own needs (SFDE, 1996). The major energy goals expressed in the plan are to reduce overall power use by maximizing energy efficiency; to maintain an energy supply based on renewable, environmentally sound resources; to eliminate climate-changing and ozone-depleting emissions and toxic contaminants associated

with energy production and use; and to base energy decisions on the goal of creating a sustainable society.

### **Electricity Resource Plan**

The 2002 Electricity Resource Plan for San Francisco presented the initial action plan to meet the city's growth in demand for electricity using renewable energy resources. Goals included in the 2002 Electricity Resource Plan included the following: assure reliable power, maximize energy efficiency, develop renewable power, increase local control, affordable electric bills, improve air quality, support environmental justice and promote economic opportunities. The 2011 Updated Electricity Resource Plan reaffirms the on-going goals of the 2002 Electricity Resource Plan and details the next steps to help San Francisco achieve its goal of generating all of its energy needs from renewable and zero-greenhouse gas (GHG) electric energy sources by 2030. The updated plan is designed to cover all electrical energy needs in San Francisco, not just the electrical energy needs provided by the SFPUC to serve municipal facilities. The updated plan proposes three broad strategies to reduce GHG emissions from electricity:

1. Empower San Francisco citizens and businesses to cost-effectively reduce GHG emissions associated with their own electric energy usage;
2. Increase the amount of zero-GHG electricity supplied to the City of San Francisco's customers from the wholesale energy market; and
3. Continue and expand SFPUC electric service to guarantee reliable, reasonably-priced, and environmentally sensitive service to its customers. The 2011 Updated Electricity Resource Plan includes recommendations for implementation of each of these strategies.

## **5.18.3 Impacts and Mitigation Measures**

### **5.18.3.1 Significance Criteria**

CCSF has not formally adopted significance standards for impacts related to mineral and energy resources, but generally considers that implementation of the proposed project would have a significant impact on mineral and energy resources if it would:

- 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;
- 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; or
- Encourage activities that resulted in the use of large amounts of fuel, water, or energy, or used these resources in a wasteful manner.

### **5.18.3.2 Approach to Analysis**

Because of the nature of the proposed project, there would be no impacts related to the following significance criteria. Therefore, an impact discussion is not provided for these topics for the reasons described below.

PPSU project operations would have no impacts related to the following significance criterion:

- **Encourage activities that would result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner.** Project operations would require a limited amount of fuel, water and energy use, consistent with existing operations and maintenance activities. These uses of resources would not be wasteful and would not be in excess of standard construction and operations practices. This significance criterion is discussed below under Impact ME-1 only as it applies to project construction activities.

Both PPSU project construction and operations would have no impacts related to the following significance criterion:

- **Result in the loss of availability of a known mineral resource of value to the region or state or of a locally important mineral resource recovery site.** The proposed project would be located within the existing SFPUC right-of-way in the same location as the existing SFPUC water transmission pipelines. The proposed project sites are not located on lands with a known mineral resource or an area with a locally important mineral resource recovery site. Therefore, these significance criteria are not applicable to the proposed project and are not analyzed further.

### 5.18.3.3 Impact Analysis

Table 5.18-1 summarizes the proposed project’s impacts on minerals and energy, and the resulting significance determination.

**Table 5.18-1  
 Summary of Impacts – Mineral and Energy Resources**

Impacts	Significance Determination
<b>Impact ME-1:</b> Project construction would not encourage activities that would result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner.	LS
<b>Impact C-ME:</b> Project implementation would not result in a cumulatively considerable contribution to the use of fuel, water, or energy resources in a wasteful manner.	LS
Notes: LS = Less-than-Significant impact	

### 5.18.3.4 Construction Impacts and Mitigation Measures

*Impact ME-1: Project construction would not encourage activities that would result in the use of large amounts of fuel, water, or energy, or use these resources in a wasteful manner. (Less than Significant)*

Construction of the proposed project would require the use of fuel, water, and energy during construction. Fuel would include gas, diesel, and motor oil to operate a variety of construction equipment listed in Table 3-6 of the Project Description. In addition, fuel would be required for

construction worker commuting, but this would be minor in comparison to the fuel used by construction equipment. Energy would be used to operate mobile office facilities, lighting, and some equipment. Construction activities requiring fuel and energy would vary at each project site, ranging from 1 month to 9 months, with a total duration of 12 months for the entire PPSU project.

Water would be used for dust control and other purposes, including dewatering, hydrostatic testing, and disinfection of the pipeline, as described in Section 5.16, Hydrology and Water Quality. The total amount of water to be discharged during construction activities would be approximately 13.5 million gallons, as described in Chapter 3, Project Description.

The use of fuel, energy, and water would be a short-term use of these resources, consistent with current construction practices. Such construction-related uses of resources are typical of construction practices for projects of a similar nature, and these resources would not be used in a wasteful manner. In addition, the use of these resources would not encourage subsequent use of resources in a wasteful manner.

Policies and plans as well as mitigation measures described in this Environmental Impact Report would require or encourage fuel and energy efficiency. Exhaust controls and reduction of idling times—as well as equipment maintenance required by the Bay Area Air Quality Management District, described in Section 5.8, Air Quality—would support fuel efficiency. Implementation of the Greenhouse Gas Measures described in Chapter 3, Project Description, and energy efficiency programs by the SFPUC, including those described in San Francisco’s Sustainability, Electricity, Resource, and Climate Action Plans (i.e., greening vehicle fleets and increasing energy efficiency), would further reduce the potential for the wasteful use of fuels. Therefore, construction impacts related to mineral or energy resources would be *less than significant*.

#### 5.18.3.5 Operation Impacts and Mitigation Measures

As described above, implementation of the proposed project operation would result in *no impact* related to mineral or energy resources. Therefore, no mitigation measures related to this resource topic are necessary.

#### 5.18.3.6 Cumulative Impacts and Mitigation Measures

***Impact C-ME: Project implementation would not result in a cumulatively considerable contribution to the use of fuel, water, or energy resources in a wasteful manner. (Less than Significant)***

Construction of the PPSU project and other reasonably foreseeable projects listed in Table 5.1-1, Cumulative Project List, would require the use of fuel, water, and energy during construction and operations. Each of the projects would require fuel and energy to operate construction equipment, and could use water during construction activities. However, construction-related uses of resources would be typical of standard construction practices, and would not be anticipated to use or encourage the use of resources in a wasteful manner.

Therefore, the cumulative impact to fuel, water, and energy resources would be *less than significant*.

## 5.18.4 References

CEC (California Energy Commission), 2009. Net System Power Report, July 2009. Online: [www.energy.ca.gov/2009publications/CEC-200-2009-010/CEC-200-2009-010-CMF.PDF](http://www.energy.ca.gov/2009publications/CEC-200-2009-010/CEC-200-2009-010-CMF.PDF). Accessed July 7, 2012.

CEC (California Energy Commission), 2012a. Energy Almanac Total Electricity System Power. Online: [energyalmanac.ca.gov/electricity/total\\_system\\_power.html](http://energyalmanac.ca.gov/electricity/total_system_power.html). Accessed July 7, 2012

CEC (California Energy Commission), 2012b. Climate Action Team Energy Working Group Near-Term Implementation Plan. Online: [climatechange.ca.gov/climate\\_action\\_team/reports/catnip/energy/Energy%2020Renewables%20CATNIP.pdf](http://climatechange.ca.gov/climate_action_team/reports/catnip/energy/Energy%2020Renewables%20CATNIP.pdf). Accessed July 7, 2012.

City of Millbrae, 1998. City of Millbrae General Plan, 1998-2015. Adopted November 24, 1998.

City of San Bruno, 2009. City of San Bruno General Plan. Adopted March 24.

City of South San Francisco, 2011. General Plan. October 13.

Rice, Ray. 2012. Personal correspondence between Alissa Stillman, URS and Ray Rice, Principal Engineering Geologist, URS. July 12, 2012.

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. Program Environmental Impact Report on the San Francisco Public Utilities Commission's Water System Improvement Program, San Francisco Planning Department File No. 2005.0159E. October 2008.

San Mateo County, 1999. Environmental Services Agency Planning and Building Division. Zoning Regulations. July.

SFDE (San Francisco Department of the Environment), 1996. Sustainability Plan for San Francisco. Online at: [www.sfenvironment.com/aboutus/policy/sustain/](http://www.sfenvironment.com/aboutus/policy/sustain/). October 1996.

State of California, 2008. 2008 Energy Action Plan Update. February. Online: [www.energy.ca.gov/2008publications/CEC-100-2008-001/CEC-100-2008-001.PDF](http://www.energy.ca.gov/2008publications/CEC-100-2008-001/CEC-100-2008-001.PDF). Accessed June 1, 2012.

## 5.19 Agriculture and Forest Resources

This section describes existing agricultural and forest resources in the vicinity of the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project, and analyzes the potential for project implementation to adversely affect such resources. Mitigation measures to avoid or reduce adverse impacts are identified, as appropriate.

### 5.19.1 Setting

As described in Section 5.2, Land Use and Land Use Planning, the PPSU project sites are located in urban developed areas and are generally surrounded by commercial, residential, recreation and open space uses. The project sites are primarily located within the San Francisco Public Utilities Commission (SFPUC) right-of-way (ROW), which can be generally characterized as open vegetated lands within the project vicinity.

#### 5.19.1.1 Agricultural Resources

##### *Farmland Mapping and Monitoring Program*

The California Department of Conservation, Division of Land Resource Protection, maps important farmlands throughout California. Important farmlands are classified into the categories listed below on the basis of soil conditions (their suitability for agriculture) and current land use.

- **Prime Farmland.** This category represents farmland with the best combination of physical and chemical characteristics for long-term agricultural production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed. In addition, the land must have been used for irrigated agricultural production in the last 4 years to qualify under this category.
- **Farmland of Statewide Importance.** Farmland of Statewide Importance is similar to Prime Farmland in that it has a good combination of physical and chemical characteristics for crop production, but with minor shortcomings, such as greater slopes and less ability to store moisture.
- **Unique Farmland.** This land does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but is land that has been used for the production of the state's leading agricultural crops. This land is usually irrigated but may include nonirrigated orchards or vineyards, as found in some climatic zones of California. Unique Farmland must have been cropped at some time during the 4 years prior to the mapping date.
- **Farmland of Local Importance.** This category applies to land of importance to the local agricultural economy as determined by the county. This land is either currently producing crops or has the capability of production, but does not meet the criteria of the preceding categories.

- **Grazing Land.** Grazing Land is land on which the vegetation is suited to the grazing of livestock.
- **Urban and Built-up Land.** This land is occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures on a 10-acre parcel. This land generally provides unfavorable conditions for agricultural production.
- **Other Land.** This is land that is not included in any of the categories above and may include brush, timber, wetlands, confined livestock areas, strip mines, and gravel pits, among other land types.

In San Mateo County, the mapped areas of important farmland are concentrated along the Pacific coast and coastal valleys. Designations in the vicinity of the PPSU project consist of Urban and Built-up Land and Other Land, and there are no important mapped farmlands or existing agricultural resources in the project vicinity (CDC, 2008).

### 5.19.1.2 Forest Resources

Section 12220(g) of the California Public Resources Code defines forest land as “land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.” Timberland is land (other than land owned by the federal government and land designated by the California Board of Forestry and Fire Protection as experimental forest land) that is available for and capable of growing a crop of trees of any commercial species used to produce lumber and other forest products.

The project site is located in an urban area and there are no lands classified as forest land or timberland within the vicinity (California Department of Forestry and Fire Protection, 2003). See Section 5.11, Recreation, for a description of recreational resources and Section 5.14, Biological Resources, for a description of biological habitats in the project area.

## 5.19.2 Regulatory Framework

### 5.19.2.1 Federal

The Farmland Protection and Policy Act requires an evaluation of the relative value of farmland that could be affected by decisions sponsored in whole or part by the federal government. The Farmland Protection and Policy Act would not apply to the proposed project because the project is not a federal government action or program.

### 5.19.2.2 State

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, provides financial incentives, through reduced property taxes, to deter the conversion of farmland and open space preserves to other land uses. The act enables local governments to enter into contracts with private landowners to ensure that specific parcels are kept in agricultural or



open space use as agricultural preserves. There are no agricultural resources in the project area under a Williamson Act contract; therefore, this State regulation is not applicable.

### 5.19.2.3 Local

Agriculture and forest policies for jurisdictions within the project areas are provided below for San Mateo County and the Town of Colma. There are no applicable agriculture or forestry regulations for the cities of San Bruno, South San Francisco, or Millbrae.

Objective 6.12 of the Park and Recreation Resource Policies in the San Mateo County General Plan was established to minimize agricultural land use conflicts. This was established to “Preserve the best agricultural land for agricultural uses. On other lands capable of supporting agriculture, permit the location of park and recreation facilities when efforts are made to lease land not needed for recreational purposes to farm operations, and clearly defined buffer areas such as strips of land are established between these two uses to minimize land use conflicts” (San Mateo County, 1986). The proposed project would not be located on agricultural lands; therefore, this policy would not apply to the project.

The Open Space and Conservation Element of the Town of Colma General Plan (Section 5.04.125) was established to aid in continuing nursery and greenhouse operations. Additionally, agricultural land is located on privately maintained open space, which is commonly under lease from cemetery owners who are holding land that will, one day, be needed for gravesites. The proposed project would not be located on open space land used for agricultural uses; therefore, this policy would not apply to the project within the Town of Colma (Town of Colma, 2000).

## 5.19.3 Impacts and Mitigation Measures

### 5.19.3.1 Significance Criteria

The City and County of San Francisco has not formally adopted significance standards for impacts related to agricultural or forestry resources, but generally considers that implementation of the proposed project would have a significant impact on agricultural or forestry resources if it would:

- 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 nonagricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- 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);
- Result in the loss of forest land or the conversion of forest land to nonforest use; or
- Involve other changes in the existing environment, which, due to their location or nature, could result in the conversion of farmland to nonagricultural use or forest land to nonforest use.

### 5.19.3.2 Approach to Analysis

Due to the nature of the proposed project, there would be no construction or operations impacts related to the significance criteria for agriculture and forestry for the reasons described below:

- **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 nonagricultural use or Conflict with Zoning for Agricultural Use or with a Williamson Act Contract.** The proposed project would be located within the existing SFPUC ROW in the same location as the existing water transmission pipeline. The proposed project sites are not located on lands designated as farmland by the Farmland Mapping and Monitoring Program, nor are the sites zoned for agricultural uses or subject to a Williamson Act contract. Therefore, the proposed project would not convert farmland to nonagricultural uses or conflict with zoning for agricultural uses or a Williamson Act contract. These significance criteria are not applicable to the proposed project and are not analyzed further.
- **Conflict with existing zoning for forest land or timberland, or result in the loss of forest land or the conversion of forest land to nonforest use.** The proposed project is not located on lands zoned as forest land or timberland, nor are there forestry uses on the project sites. As described above, the project sites are located in urban areas, within the existing SFPUC ROW. The proposed project would not change the existing land uses in on the sites. Therefore, these significance criteria related to forest lands and timberlands are not applicable to the proposed project and are not analyzed further.
- **Involve other changes in the existing environment, which, due to their location or nature, could result in the conversion of farmland to nonagricultural use or forest land to nonforest use.** As described above, the proposed project would not result in changes to the existing land uses at the project sites. Because the character of the project area is urban/developed, the sites are located within existing communities, and farmland and forest land resources are not located within the vicinity, the proposed project would not directly or indirectly cause the conversion of farmland to nonagricultural use or forest land to nonforest use. Therefore, this significance criterion is not applicable to the proposed project and is not analyzed further.

### 5.19.3.3 Construction and Operational Impacts and Mitigation Measures

As described above, implementation of the proposed project would not result in impacts related to agriculture or forest resources. Therefore, no mitigation measures related to this resource topic are necessary, and there would be *no impact*.

### 5.19.3.4 Cumulative Impacts and Mitigation Measures

Implementation of the proposed project would not result in cumulative impacts related to agriculture or forest resources because the project would not cause any project-specific impacts related to this resource topic, and there would be *no impact*.

## 5.19.4 References

CDC (California Department of Conservation), 2008. Division of Land Resource Protection, San Mateo County Important Farmland 2006. Published February 2008.

California Department of Forestry and Fire Protection, 2003. Fire and Resource Assessment Program Land Cover Map. Available online at: [www.frap.cdf.ca.gov/data/frapgismaps/select.asp?theme=3](http://www.frap.cdf.ca.gov/data/frapgismaps/select.asp?theme=3). Accessed May 31, 2012.

San Mateo County, Department of Environmental Management Planning and Building Division, 1986. General Plan Policies. November.

Town of Colma, 2000. General Plan – Open Space and Conservation Element. April.

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# CHAPTER 6

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## Other CEQA Issues

This chapter addresses the growth-inducement potential, cumulative impacts, significant environmental effects that cannot be avoided if the project is implemented, and significant irreversible impacts of the San Francisco Public Utilities Commission's (SFPUC) proposed Peninsula Pipelines Seismic Upgrade (PPSU) project.

### 6.1 Growth Inducement

This section analyzes the growth-inducement potential of the proposed project, as required by the California Environmental Quality Act (CEQA). CEQA Guidelines Section 15126.2(d) requires that an environmental impact report (EIR) evaluate the growth-inducing impacts of a project. A growth-inducing impact is defined as follows:

[T]he ways in which the project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth.... It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

The environmental effects of project-induced growth are secondary or indirect impacts of the project. Growth can result in a variety of indirect environmental impacts, including increased demand on community services and public service infrastructure; increased traffic and noise; and degradation of air and water quality.

#### 6.1.1 Approach to Analysis

Based on the CEQA definition above, assessing the growth-inducement potential of the proposed project involves determining whether or not construction and/or operation of the proposed seismic upgrades to San Andreas Pipeline No. 2, San Andreas Pipeline No. 3, and Sunset Supply Branch Pipeline remove an obstacle to growth and therefore directly or indirectly support more economic or population growth or residential construction in the surrounding environment.

#### 6.1.2 Growth Inducement Analysis

The San Francisco Planning Department prepared a detailed analysis of the growth-inducement potential of the SFPUC's current water supply strategy as part of the Program Environmental

Impact Report (PEIR) for the Water System Improvement Program (WSIP) (SF Planning Department, 2008). The PPSU project was not identified as a WSIP project, and was not evaluated in the PEIR. The need for the project was identified only as a result of geotechnical investigations for the Harry Tracy Water Treatment Plant Long-Term Improvements project, which is a WSIP facility improvement project. As described in Section 2.2.2, this project has “independent utility” from the overall WSIP program. While the project would contribute to the overall improved system reliability provided by the WSIP, its primary purpose is to reduce the risk of pipeline failure at locations along the San Andreas Pipeline No. 2, San Andreas Pipeline No. 3, and Sunset Supply Branch Pipeline that are susceptible to liquefaction, ground shaking, and landslides during a seismic event. The project would not contribute to the growth-inducement effects of the WSIP for the following reasons:

- The project is necessary and would serve its intended purpose irrespective of any other WSIP project;
- The project proposes replacement and stabilization of segments of the existing pipelines, and would not increase the normal operating capacity of the regional water system;
- The project would not change the manner in which water is dispersed, increase the storage capacity of the regional system, or increase or alter the nature of the treatment capacity of the system;
- Potential cumulative impacts associated with the project are adequately addressed by the cumulative impact analysis in this EIR; and
- Proceeding with the project does not commit the SFPUC to any other project, including the WSIP facility improvement projects.

The proposed project would minimize interruptions of water delivery during and following a seismic event by minimizing seismic vulnerabilities at the Serra Fault crossing locations and at the liquefaction-susceptible zones. As discussed above and in Chapter 3, Project Description, the pipeline sizing and design capacity of the proposed improvements would be the same as those of the existing pipelines and associated infrastructure. The project would not increase the overall operating capacity of the regional water system; and project implementation would not facilitate an increase in water deliveries in the SFPUC’s service area. In addition, the project would not directly foster economic or population growth or the construction of housing. Therefore, for the reasons listed above, implementation of the project would not remove an obstacle to growth (in the form of increased capacity to convey additional water supplies), and would not have a direct growth-inducing impact.

## 6.2 Summary of Cumulative Impacts

The potential cumulative impacts of the proposed project are described in each environmental resource section in Chapter 5, and are summarized in Table 6-1 on the following page.

**Table 6-1  
Summary of Cumulative Impacts**

Impact	Significance of Project's Contribution to Impact Before Mitigation	Significance Determination After Mitigation
<b>Impact C-LU:</b> Cumulative disruption or displacement of existing land uses, and effects on the existing character of the project vicinity.	S	LSM
<b>Impact C-AE:</b> Cumulative impacts on scenic resources, visual character, and new sources of light and glare.	LS	LS
<b>Impact C-PH:</b> Cumulative impacts on population and housing.	NI	NI
<b>Impact C-CP:</b> Cumulative impacts on historical, archaeological, and paleontological resources.	S	LSM
<b>Impact C-TR:</b> Cumulative impacts related to increases in traffic and traffic hazards, access, and parking.	S	LSM
<b>Impact C-NO:</b> Cumulative impacts related to increases in noise and vibration.	S	LSM
<b>Impact C-AQ:</b> Cumulative impacts related to violations of air quality standards, increases in emissions of criteria air pollutants, and exposure of sensitive receptors to pollutants.	S	LSM
<b>Impact C-GHG:</b> Cumulative impacts related to increases in greenhouse gas emissions.	LS	LS
<b>Impact C-WS:</b> Cumulative impacts related to increases in wind and shadow.	NI	NI
<b>Impact C-RE:</b> Cumulative impacts on recreational facilities.	LS	LS
<b>Impact C-UT:</b> Cumulative impacts related to disruption or relocation of utilities, landfill capacity, and compliance with solid waste statutes and regulations.	S	LSM
<b>Impact C-PS:</b> Cumulative impacts related to effects on public services.	NI	NI
<b>Impact C-BI:</b> Implementation of the proposed project would result in a cumulatively considerable contribution to cumulative impact on biological resources during project construction.	S	LSM
<b>Impact C-GE:</b> Cumulative impacts related to seismic hazards, soil erosion, unstable geologic units, expansive soils, and changes to topography.	S	LSM
<b>Impact C-HY:</b> Cumulative impacts related to degradation of water quality, depletion of groundwater resources, and flooding.	S	LSM
<b>Impact C-HZ:</b> Cumulative impacts related to a release of hazardous materials into the environment and impairment of or interference with implementation of an adopted emergency plan.	S	LSM
<b>Impact C-ME:</b> Cumulative impacts related to the use of large amounts of mineral or energy resources or wasteful use of these resources.	LS	LS
<b>Impact C-AF:</b> Cumulative impacts related to agricultural and forest resources.	NI	NI
Source: PPSU project analysis, URS.		
Notes:		
NI = No Impact or Not Applicable		
LS = Less-than-Significant impact		
LSM = Less-than-Significant impact with Mitigation		
S = Significant impact		

### **6.3 Significant Environmental Effects that Cannot Be Avoided if the Proposed Project is Implemented**

In accordance with Section 21067 of CEQA, and with Sections 15126(b) and 15126.2(b) of the CEQA Guidelines, the purpose of this section is to identify project-related environmental impacts that could not be eliminated or reduced to a less-than-significant level with the implementation of all identified mitigation measures. The findings in this chapter are subject to final determination by the San Francisco Planning Commission as part of its certification of this EIR.

This section identifies project-related impacts that would remain potentially significant or significant, even with the implementation of all identified mitigation measures. Chapter 5, Environmental Setting and Impacts, describes the potential environmental impacts of the proposed project, and identifies mitigation measures to reduce those impacts. Most impacts associated with the project would occur during the construction phase as opposed to the operations phase. Although construction impacts would be temporary, some of these impacts could be significant, as described in Chapter 5. With the exception of the significant and unavoidable impacts described below, all other significant construction impacts would be eliminated or reduced to less-than-significant levels by the identified mitigations measures.

The four significant and unavoidable impacts associated with construction of the project are:

- Daytime construction noise associated with heavy equipment (Impact NO-1);
- Nighttime construction noise associated with heavy equipment (Impact NO-2);
- Generation of noise levels in excess of standards established in the local general plan or noise ordinance (Impact NO-3); and
- Generation of excessive groundborne vibration from use of heavy equipment (Impact NO-4).

Mitigation measures would reduce construction noise and vibration adjacent to receptors; however, noise levels would exceed the speech interference criterion at houses within 50 feet of construction activities, even after implementation of mitigation measures, and vibration levels would exceed the nighttime annoyance threshold at houses with 190 feet of nighttime construction activities, even after implementation of mitigation measures, resulting in a significant and unavoidable impact related to noise and vibration (Impacts NO-1, NO-2, NO-3, and NO-4).

### **6.4 Significant Irreversible Environmental Changes**

In accordance with Section 21100(b)(2)(B) of the CEQA, and with Sections 15126(c) and 15126.2(c) of the CEQA Guidelines, the purpose of this section is to identify significant irreversible environmental changes that would be caused by implementation of the project. Construction impacts associated with implementation of the project would result in an irretrievable and irreversible commitment of natural resources through the use of fossil fuels and construction materials. Project construction would involve only minor, incremental use of nonrenewable



irreversible commitment of natural resources through the use of fossil fuels and construction materials. Project construction would involve only minor, incremental use of nonrenewable resources, and would affect facilities located entirely on lands already committed to water supply purposes. Furthermore, because the SFPUC would implement the mitigation measures identified in this EIR in concert with other ongoing stewardship and watershed protection activities, implementation of the project would not result in significant irreversible environmental changes.

## 6.5 References

SF Planning (City and County of San Francisco, San Francisco Planning Department), 2008. San Francisco Public Utilities Commission Water System Improvement Program. Final EIR (Case No. 2005.0159E, State Clearinghouse No. 200509206). San Francisco Planning Commission. Motion No. 17734, October 30.

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# CHAPTER 7

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## Alternatives

### 7.1 Introduction

This chapter describes alternatives to the proposed Peninsula Pipelines Seismic Upgrade (PPSU) project. Section 7.2 presents the objectives of the project and a summary of its significant environmental impacts, along with an analysis of the two alternatives evaluated, including the No Project Alternative. A comparison of the two alternatives to the proposed project is provided and the environmentally superior alternative is identified in Section 7.3.2, with the process used to identify and screen the alternatives described in Section 7.4. Alternatives considered but rejected from further consideration are described in Section 7.5.

The California Environmental Quality Act (CEQA) Guidelines, Section 15126.6(a), state that an Environmental Impact Report (EIR) must describe and evaluate a reasonable range of alternatives to the proposed project that would feasibly attain most of the project's basic objectives and would avoid or substantially lessen any significant adverse environmental effects of the project. An EIR need not consider every conceivable alternative to the proposed project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. The EIR must evaluate the comparative merits of the alternatives and include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.

Specifically, the CEQA Guidelines set forth the following criteria for selecting alternatives:

- **Identifying Alternatives.** The discussion of alternatives shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly (Section 15126.6[b]).
- **Range of Alternatives.** The range of potential alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (Section 15126.6[c]). The specific alternative of "No Project" (referred to as the No Project Alternative) shall also be evaluated along with its impacts (Section 15126.6[e][1]).
- **Evaluation of Alternatives.** The alternatives should be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed so

as to foster meaningful public participation and informed decision-making (Section 15126.6[f]). An EIR is not required to consider alternatives that are infeasible (Section 15126.6[a]).

## 7.2 Alternatives Analysis

This section describes the project-specific alternatives that were selected and analyzed according to CEQA Guidelines Section 51526.6(a). These alternatives, including the No Project Alternative, represent a reasonable range of alternatives to the proposed project that would feasibly attain most of the project's basic objectives and would avoid or substantially lessen significant adverse environmental effects of the project. The selected alternatives were based on engineering options previously considered by the SFPUC as described in Section 7.4, as well as an assessment of ways to reduce significant impacts of the proposed project. Section 7.5 describes alternatives considered but rejected from further analysis.

The two alternatives selected for detailed analysis in this EIR include the No Project Alternative and one alternative related to construction methods. These alternatives are:

- Alternative 1: No Project Alternative
- Alternative 2: Sliplining of Pipeline Segments at Selected Project Sites. These sites are in South San Francisco (San Andreas Pipeline 2 [SAPL2]), San Bruno South (San Andreas Pipeline 2 [SAPL2] and San Andreas Pipeline 3 [SAPL3]), and Millbrae (Sunset Supply Branch Pipeline [SSBPL]). At the two remaining PPSU sites, the Colma and San Bruno North sites, the PPSU project as proposed would be implemented under this alternative.

Table 7-1 provides a brief description of these alternatives, describes how each alternative differs from the proposed project, and lists the impact areas the alternative is intended to address.

**Table 7-1  
Selected Alternatives for CEQA Analysis**

Alternative		Differs from Proposed Project	Impact Areas Addressed
1	No Project Alternative. No pipeline repair/replacement unless pipeline failure (assumed).	No construction unless pipeline failure (assumed), does not meet any of the project objectives. Leaves pipelines susceptible to failure.	All impact areas.
2	Sliplining of Pipeline Segments at Selected Project Sites. Relies on pushing smaller new pipe inside existing pipe to reduce noise along length of construction area.	Eliminates open-trench construction at South San Francisco, San Bruno South, and Millbrae sites.	All impact areas, with specific focus on significant and unavoidable noise impacts during construction.

Sources: Manders, 2012b; G&E/GTC Joint Venture, 2011.

## 7.2.1 Project Objectives

As described in Section 3.3 of Chapter 3, Project Description, the goal of the proposed project is to improve the seismic reliability of transmission pipelines between the Harry Tracy Water Treatment Plant and the Capuchino, Baden, and San Pedro Valve Lots in the event of a major earthquake on the San Andreas Fault. Objectives would be achieved by completing proposed improvements designed to prevent the failure of SAPL2, SAPL3, and SSBPL to maintain reliability during a major seismic event.

The objectives of the proposed project are as follows:

- Upgrade segments of the SAPL2, SAPL3, and SSBPL to meet current seismic standards in locations where they cross the Serra Fault, so that they can withstand the ground displacements potentially caused by a fault offset. This is intended to preserve water flow from the HTWTP to downstream facilities after a major San Andreas earthquake, and to achieve WSIP seismic reliability level of service goals.
- Minimize interruptions of water delivery during and following a seismic event by minimizing seismic vulnerabilities at the Serra Fault crossing locations, and by minimizing vulnerabilities at the liquefaction-susceptible zones.
- Reduce the physical, social, and economic impacts associated with the potential rupture of the existing SAPL2, SAPL3, and SSBPL during a major earthquake.

## 7.2.2 Overview of the Project's Potentially Significant and Significant Impacts

As described in Chapter 5, Environmental Setting and Impacts, of this EIR, implementation of the project would result in potentially significant or significant impacts on the following resources before mitigation:

**Land Use and Land Use Planning:** Indirect impacts from noise could result in substantial disruption of land uses at residences near the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites. Project construction could have a substantial temporary direct or indirect impact on the existing character of the vicinity, and could substantially impact or disrupt existing land uses or land use activities. Project impacts would be reduced to less than significant with mitigation.

**Aesthetics:** Potential light and glare impacts could occur at the San Bruno North site from nighttime lighting for construction activities. Project impacts would be reduced to less than significant with mitigation.

**Cultural and Paleontological Resources:** Potential impacts on historical or unique archaeological resources could occur during construction at the Colma, South San Francisco, San Bruno South, and Millbrae sites. Implementation of the project, including excavation, trenching, grading, and the movement of heavy construction vehicles and equipment, could expose and disturb or damage previously unrecorded archaeological resources at these sites, which could result in a

substantial adverse change in the potential significance of a historical or unique archaeological resource. Project construction could have a substantial adverse effect on paleontological resources based on the potential for fossils to be present at all projects sites except San Bruno North site. Potential impacts regarding the disturbance of human remains at the Colma, South San Francisco, San Bruno South and Millbrae sites could occur. Project impacts would be reduced to less than significant with mitigation.

**Transportation and Circulation:** The proposed project would have the potential to decrease the safety of public roadways for vehicles, bicyclists, and pedestrians. Temporary hazards for cyclists and pedestrians, and impaired emergency access during construction, have the potential to occur. In addition, lane closures would result in a decrease in level of service at the San Bruno Avenue West intersection, a potentially significant impact. Project impacts would be reduced to less than significant with mitigation.

**Noise:** Potential impacts as a result of construction activities would include a substantial temporary increase in ambient noise levels that could interfere with nearby land uses at the Colma, South San Francisco, San Bruno North, San Bruno South, and Millbrae sites. Construction activities could potentially result in exposure of sensitive land uses to noise levels in excess of standards established in the local general plan or noise ordinance at the Colma, San Bruno North, and Millbrae sites, as well as the common staging area. Potential vibration impacts could occur at sensitive land uses at the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites. Even with implementation of mitigation measures, project impacts would remain significant and unavoidable at sensitive receptors at the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites.

**Recreation:** Potential impacts from construction could temporarily degrade existing recreational facilities at the Millbrae site. The driving range and, potentially one hole at the Green Hills Country Club golf course could temporarily be closed during construction activities. Project impacts would be reduced to less than significant with mitigation.

**Utilities and Service Systems:** Construction activity could potentially disrupt utility operations or cause accidental damage to existing utilities at the proposed project sites. The proposed project could also potentially cause adverse impacts related to compliance with federal, state, and local statutes in regards to solid waste. Project impacts would be reduced to less than significant with mitigation.

**Biological Resources:** The proposed project has the potential to adversely affect special-status wildlife species during construction activities at all project sites. Potential impacts to riparian habitat may occur at the South San Francisco site. Construction activities could have a substantial adverse impact on jurisdictional waters at the Colma, South San Francisco, San Bruno South, and Millbrae sites. At the Colma site, the proposed project would remove and replace a concrete creek culvert to allow for pipeline replacement, resulting in impacts to jurisdictional waters. Due to the fixed location of the culvert and existing pipeline, it was determined to be the only feasible construction option at the site. Construction activities at the South San Francisco and San Bruno North sites have the potential to conflict with local tree protection ordinances. Project impacts would be reduced to less than significant with mitigation.

**Geology and Soils:** The project has the potential to result in substantial soil erosion or loss of topsoil at project sites. The removal of the topsoil during site preparation and excavation activities could result in the permanent loss of these soils. Project impacts would be reduced to less than significant with mitigation.

**Hydrology and Water Quality:** Project construction could substantially violate water quality standards or waste discharge requirements, or degrade water quality, as a result of erosion and sedimentation or an accidental release of hazardous chemicals. The project would include construction activities that involve soil disturbance that could degrade the water quality of nearby creeks, particularly if these activities occur during the rainy season. Project impacts would be reduced to less than significant with mitigation.

**Hazards and Hazardous Materials:** There is a low potential to encounter hazardous materials in the soil and groundwater during construction at the five project sites. However, it cannot be determined with certainty that excavated materials would not contain potentially hazardous soil and/or groundwater wastes. Project construction activities could 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. Project impacts would be reduced to less than significant with mitigation.

## 7.2.3 Alternative 1 – No Project Alternative

### 7.2.3.1 Description of Alternative 1

CEQA Guidelines Section 15126.6(e)(3)(B) describes the “No Project” Alternative as the circumstance under which the proposed project does not proceed. Consideration of the No Project Alternative is required under Section 15126(f) of the CEQA Guidelines. The purpose of describing and analyzing a No Project Alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (CEQA Guidelines Section 15126.6[e][1]).

The No Project Alternative includes those activities that would reasonably be expected to occur in the foreseeable future if the proposed project were not approved. These activities include the following:

- Continued operation and maintenance of SAPL2, SAPL3, and SSBPL as they are currently operated and maintained; and
- Emergency repairs to SAPL2, SAPL3, and SSBPL in the event of a pipeline failure resulting from a major earthquake or other unforeseeable event.

In the absence of a major earthquake along the San Andreas Fault, future operations and maintenance under the No Project Alternative would be the same as under existing conditions. Normal maintenance activities include yearly visual inspections and discharge of water from the manholes as required by other SFPUC projects or inspections. Additionally, physical inspection of the pipelines by entering the manholes would occur approximately every 10 to 15 years.

In the event of pipeline failure resulting from a seismic event or other cause, SFPUC would use existing valves in the project vicinity to shut off flow of water to failed pipelines. Pipeline shutdown would disrupt service to customers for the duration of the emergency pipeline repairs.

Depending on the severity of the rupture, the construction period for emergency repairs may be shorter or longer than that for the proposed project. Emergency pipeline repairs would require approximately 2 weeks for construction of temporary piping, and an additional 3 to 5 months for construction activities associated with permanent repairs to the existing pipelines (Manders, 2012b). Emergency repairs could require 24-hour construction to restore water service, necessitating nighttime and weekend construction.

The Working Group on California Earthquake Probabilities has estimated that during the 30-year time period between 2003 and 2032, there is a 21 percent probability of a large earthquake (magnitude 7.0 or higher) occurring on the San Francisco Peninsula segment of the San Andreas Fault earthquake (G&E/GTC Joint Venture, 2011). Based on geotechnical studies performed for the PPSU project, if a magnitude 7.0 earthquake were to occur on the San Andreas Fault, SAPL2 may experience up to 4 inches of differential settlement at the Colma and South San Francisco sites; at the San Bruno South site, SAPL2 and SAPL3 may experience up to 24 inches of displacement; and at the Millbrae site, SSBPL may experience up to 12 inches of displacement (GTC, 2010 and GTC, 2011). In their current condition, the Peninsula Pipelines would not be able to withstand these estimated values of displacement and settlement, and either the pipelines themselves and/or their connection piping to customer turnouts would most likely break due to their inability to withstand the imposed strain (G&E/GTC Joint Venture, 2011). Pipeline failure would release water and result in localized flooding, damage to adjacent infrastructure and residences, public safety hazards, and a disruption in water delivery services to downstream SFPUC customers. Because of the likelihood of occurrence, such a seismic event is assumed to occur in this analysis.

If all pipelines at the San Bruno South and Millbrae sites (SAPL2, SAPL3, and SSBPL) failed, supply from HTWTP would be lost (approximately 160 million gallons per day [mgd]). If a break were only to occur on SSBPL at the Millbrae site there would be a loss in supply of 80 mgd to the customers in Hillsborough, Cal Water Mid-Peninsula District, Burlingame, Millbrae, San Francisco International Airport, Foster City, San Bruno, Brisbane, Daly City, and South San Francisco. If a break were to occur only on SAPL2 and SAPL3 at the San Bruno South site, there would be a loss of supply of 13 to 19 mgd to the North Coast Water Department, Daly City, South San Francisco, and City of San Bruno customers. Similarly, a break at the Colma or South San Francisco sites would result in a loss in supply to downstream customers of each site. Additionally, the supply redundancy<sup>1</sup> feeding San Francisco, which represents approximately 73 mgd, would be lost; and San Francisco would only be serviced through the low pressure zone pipelines (Sunset Supply Pipeline and Crystal Springs Pipelines 1 and 2).

There are no feasibility issues or constraints associated with this alternative, other than the increasing risks associated with potential pipeline failure. However, the No Project Alternative would not achieve any of the project objectives.

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<sup>1</sup> Supply redundancy is intended to ensure water delivery in the event that one delivery method fails. For the SFPUC water transmission system, supply redundancy is achieved through several pipelines on the San Francisco Peninsula.



### 7.2.3.2 Impact Analysis for Alternative 1

#### *Land Use and Land Use Planning*

Under the No Project Alternative, land use impacts could be greater than under the proposed project as the result of potential pipeline failure during a seismic event. In the absence of a pipeline failure, ongoing operations and maintenance activities could include tree removal, consistent with the SFPUC ROW Integrated Vegetation Management Policy (SFPUC, 2007); this could result in temporary noise and traffic impacts on land uses, similar to those described for tree removal under the proposed project. In the event of a pipeline failure, which could occur during a seismic event as described above, localized flooding could occur and water service could be disrupted, resulting in increased disruptions to existing land uses. Emergency repairs to portions of the pipelines would be necessary, and could entail tree removal and construction activities similar to those described for the proposed project. However, given the emergency nature of these repairs, which could require intensive 24-hour construction periods, and given the potential direct impacts from flooding and indirect impacts from disruption of water service, impacts to land uses from construction activities could be greater than those associated with the proposed project (**Impact LU-1: greater**). Land use impacts could be significant and unavoidable, and unlike the proposed project, mitigation may not be feasible or available to reduce impacts because of the uncontrolled nature of impacts. However, similar to the proposed project, these short-term impacts would not be anticipated to result in permanent impacts on the existing character of the vicinity or long-term disruptions to existing land uses (**Impact LU-2: similar**).

Overall, the No Project Alternative would have **greater** impacts, which could be significant and unavoidable, because it could result in impacts for which mitigation would not be available, such as flooding, interruptions to water service, and emergency construction activities, and which would result in greater short-term disruptions to existing land uses and land use activities.

#### *Aesthetics*

Under the No Project Alternative, impacts on aesthetics could be greater than the proposed project in the event of pipeline failure during a seismic event. In the absence of a pipeline failure, ongoing operations and maintenance activities could result in the removal of trees along the pipelines at the project sites (primarily South San Francisco and Millbrae sites), which could result in minor changes in the views as seen from public vantage points in the area. Similar to the proposed project, these changes would not substantially degrade the visual character of the site or its surroundings, and the impact would be less than significant (**Impact AE-1: similar and AE-3: similar**).

In the event of pipeline failure, repairs to the pipeline could occur on an accelerated schedule in order to restore water supply to customers; and additional nighttime work (beyond that proposed for the PPSU project at San Bruno North) may be required, which could result in new sources of light and glare during construction, a potentially significant impact (**Impact AE-2: greater**). Similar to the proposed project, potential light and glare impacts could be reduced by measures that require that lighting be shielded and directed specifically onto work areas to minimize light spillover. However, due to the emergency nature of such repairs, it may be unlikely that such controls could be initially implemented.

Overall, impacts on visual resources under the No Project Alternative could be **greater** than the proposed project, because the additional nighttime lighting for emergency construction could create temporary new sources of light and glare for adjacent to residences. However, these impacts could likely be reduced to less than significant with mitigation.

### ***Population and Housing***

The No Project Alternative would not have impacts to population and housing, similar to the proposed project. It would not result in an influx of construction workers, remove or create housing units, or directly remove existing constraints to growth in the study area. In the event of pipeline failure and the need for emergency repairs, this work would be performed by the existing labor force in the study region, and would not attract new residents to the area. Therefore, this alternative would have no impacts on population or housing, **similar** to the proposed project.

### ***Cultural Resources***

Under the No Project Alternative, impacts on cultural resources could be greater than the proposed project. In the absence of pipeline failure, ongoing operations and maintenance activities—including tree removal—would not cause a substantial adverse change in the significance of historical or unique archaeological resources, because the soils above the existing pipelines were previously disturbed during pipeline installation. However, if a seismic event were to result in pipeline failure, the uncontrolled release of water could result in extensive disturbance to archaeological and/or paleontological resources, and to human remains. Such disturbance could result in greater impacts than those identified for the proposed project, because mitigation may not be feasible given the uncontrolled nature of impacts (**Impact CP-2, CP-3, and CP-4: greater**). These impacts could be significant and unavoidable. Emergency construction activities would require excavation and shoring along the area of the pipeline break, which could also cause adverse impacts to historical or unique archaeological resources at the Colma, South San Francisco, San Bruno South, and Millbrae sites, similar to the proposed project. Temporary pipeline repair activities at the Millbrae site would likely result in less-than-significant impacts to the Green Hills Country Club, identified as a historical resource for CEQA, similar to the proposed project (**Impact CP-1: similar**).

Overall, impacts on cultural resources under the No Project Alternative could be **greater** than the proposed project, because of the potential for disturbance to cultural resources during both pipeline rupture and repair. Impacts would likely be significant and unavoidable because of the potential irretrievable loss of cultural resources from release of water during pipeline rupture and the resulting erosion of soils, and because implementation of mitigation may not be feasible during emergency repairs.

### ***Transportation and Circulation***

Under the No Project Alternative, impacts on transportation and circulation would be similar to impacts under the proposed project. In the absence of pipeline failure, continued operation and maintenance of the pipelines and SFPUC ROW would generate a limited number of vehicle trips, which would not substantially conflict with applicable congestion management programs, similar to the proposed project (**Impact TR-4: similar**). If tree removal were to occur, the

associated construction vehicle trips would not substantially change typical operation and maintenance activities.

However, in the event of a pipeline failure, emergency repairs could require construction activities and construction vehicle trips greater than those described for the proposed project. The duration of construction activity could be shorter (or longer) than for the proposed project, but could likely entail 24-hour construction periods, resulting in a greater number of trips per day. Additionally, the removal of debris could require an increased number of truck trips. Unlike the proposed project, the No Project Alternative could result in significant conflicts with applicable transportation plans and inadequate emergency access (**Impacts TR-1 and TR-2: greater**). Public safety on roadways for vehicles, bicyclists, and pedestrians could be decreased during the emergency response and repairs (**Impact TR-3: greater**).

In the event of a significant seismic event, the effect of pipeline rupture on emergency response and repair would be compounded by other upset conditions such as roadway damage, response to first aid, and emergency needs, or fires. These conditions would further hamper emergency access in the project area.

Overall, the No Project Alternative would have **greater** impacts on transportation and circulation compared to the proposed project, because of the emergency response and subsequent emergency repairs. Impacts would be significant and unavoidable because implementation of mitigation during emergency response may not be feasible.

### *Noise*

Under the No Project Alternative, noise and vibration impacts could be greater than impacts under the proposed project, depending on the need for emergency repairs. Under nonemergency conditions, continued operation and maintenance of the pipelines would occur as described above, and could entail the removal of trees in the SFPUC ROW. If tree removal were to occur, noise and vibration impacts to sensitive receptors at the South San Francisco and Millbrae sites would be similar to the tree removal phase of the proposed project.

Construction activities for emergency repairs in the event of a pipeline failure could have greater noise and vibration impacts than the proposed project. Depending on the site and the severity of the rupture, the construction period for emergency repairs may be shorter or longer than that for the proposed project; however, emergency repairs would likely require intensive 24-hour construction to restore water service, resulting in additional nighttime and weekend construction noise and vibration impacts, as well as additional impacts related to conflicts with local ordinance time limits (**Impact NO-3: greater**). Due to the immediate need for emergency repairs, construction would likely not initially include the same noise controls specified for the proposed project, and could result in greater substantial temporary increases in ambient noise levels that could interfere with nearby sensitive receptors (**Impacts NO-1 and NO-2: greater**), as well as increased exposure of persons or structures to excessive groundborne vibration (**Impact NO-4: greater**). These impacts could be significant and unavoidable.

In addition to the noise impacts associated with the pipeline repairs, under the No Project Alternative there would be significant noise associated with emergency response activities and construction activities required to repair damaged structures and roadways.

Overall, the No Project Alternative would have even **greater** significant and unavoidable noise impacts compared to the proposed project, and feasible mitigation likely would not be initially available because of the nature of emergency pipeline repairs.

### *Air Quality*

Under the No Project Alternative, impacts on air quality would be similar to the proposed project, based on the likelihood of pipeline failure. In the absence of a pipeline failure, this alternative would result in less criteria air pollutants than the proposed project. Limited emissions could result from tree removal activities that may occur during ongoing operations and maintenance of the pipeline.

In the event that emergency repairs are required due to pipeline failure, initial temporary repairs would be made, followed by more permanent repairs to the pipeline. Even if the emergency repairs occur over a shorter construction period compared to the construction of the proposed project, construction activities, which could extend up to 24 hours per day, could result in a greater amount of emissions per day. Additionally, there would be greater emissions under the No Project Alternative due to the increased truck haul trips associated with debris removal; total emissions could be greater than emissions under the proposed project. Therefore, the No Project Alternative would likely result in greater regional criteria pollutant emissions and localized toxic air contaminant emissions compared to the proposed project. Emissions associated with construction activities for pipeline repairs in the event of pipeline rupture would may violate air quality standards, contribute significantly to an existing air quality violation, or could expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors (**Impacts AQ-1, AQ-2, and AQ-3: greater**). However, similar to the proposed project, the temporary air quality impacts associated with emergency repairs would not hinder the achievement of long-term air quality goals due to the short-term nature of the emissions (**Impact AQ-4: similar**).

Overall, the No Project Alternative would have **greater impacts** on air quality compared to the proposed project. Implementation of basic construction measures to reduce fugitive dust and emissions, such as limiting vehicle speeds, covering spoils, watering exposed surfaces, reducing idling times, and maintaining equipment per manufacturer's specifications, would likely reduce impacts to less than significant with mitigation, although the emergency nature of repairs may limit the feasibility of implementing some measures, or delay their implementation.

### *Greenhouse Gas Emissions*

In the absence of a pipeline failure, the No Project Alternative would result in minimal greenhouse gas (GHG) emissions associated with tree removal during continued operations and maintenance activities. However, in the event of a pipeline failure, emergency repairs to portions of the pipeline would be necessary. Although emergency repairs could be conducted over a shorter time period than the proposed project, the daily amount of emissions may be increased above those anticipated under the proposed project as a result of extended construction hours.

Overall, the No Project Alternative would have **similar impacts** on climate change compared to the proposed project resulting from construction activities in the event of pipeline failure (**Impacts GG-1: similar**). Impacts would be less than significant, similar to the proposed project.

### *Wind and Shadow*

Similar to the proposed project, the No Project Alternative would have no impacts related to wind and shadow. The proposed PPSU project would result in upgrades to existing pipelines, which are located below ground in the vicinity of the sites and thus would not alter wind patterns. Additionally, the No Project Alternative would not propose any features that would substantially affect shadow patterns. Therefore, wind and shadow impacts would be no impact, **similar** to the proposed project.

### *Recreation*

Under the No Project Alternative, impacts on recreation resources could be greater than under the proposed project. In the absence of pipeline failure, ongoing operations and maintenance activities would result in fewer impacts on recreation facilities, because there would be no construction activities that would directly affect recreation facilities, and no construction-related noise or traffic impacts that could affect recreational users. However, temporary noise and traffic impacts on recreation facilities could occur with removal of trees in the SFPUC ROW, in accordance with the SFPUC ROW Integrated Vegetation Management Policy (SFPUC, 2007), similar to those described for the proposed project. In the event of a pipeline failure, emergency repairs to portions of the pipelines would be necessary. Localized flooding of recreational facilities and loss of water service to facilities could occur, and emergency repairs would be required; this could temporarily degrade existing recreation uses, resulting in significant and unavoidable impacts if mitigation is not feasible or available due to the uncontrolled nature of pipeline failure (**Impact RE-1: greater**).

Overall, the No Project Alternative could have **greater** impacts on recreation resources compared to the proposed project, given the potential impacts of pipeline failure and the emergency nature of repairs. Impacts would be significant and unavoidable, because feasible mitigation is not available.

### *Utilities and Service Systems*

The No Project Alternative would have greater impacts to public services in comparison to the proposed project, because a pipeline rupture could cause severe damage to public utilities and result in substantial interruption of services, including water supply, before emergency repairs are constructed. Therefore, impacts related to utilities and service systems could be more severe than impacts under the proposed project (**Impact UT-1 and UT-2: greater**). Pipeline rupture would result in a substantial adverse effect to water supply availability because it could prevent the delivery of water to cities on the Peninsula, resulting in greater impacts than the proposed project (**Impact UT-3: greater**). With the loss of water supply, fire-fighting capabilities would be severely hampered, adding to these already significant impacts.

Depending on the nature of emergency repairs in the event of pipeline rupture, the No Project Alternative could result in a larger amount of construction-related waste than the proposed project. Although the No Project Alternative would not be anticipated to result in significant impacts on landfill capacity because of the limited amount of waste that would be generated during repair of the pipeline, similar to the proposed project (**Impact UT-4: similar**), it is unknown if this alternative could achieve compliance with federal, State, and local statutes and

regulations pertaining to solid waste. Fewer materials may be recycled due to contamination or because the rapid speed of repairs may prevent separation of materials for recycling. Due to the emergency nature of repairs, mitigation to help achieve compliance with waste statutes may not be feasible, which could result in greater impacts than proposed project (**Impact UT-5: greater**).

Overall, the No Project Alternative could have **greater** impacts to utilities and service systems than the proposed project, because it could result in disruption of services, including loss of water supply, and uncertain compliance with goals for diversion of waste from landfills. Impacts could be significant and unavoidable because mitigation may not be available to implement due to the emergency/uncontrolled nature of the impacts.

### ***Public Services***

The No Project Alternative would have impacts on public services, unlike the proposed project. Pipeline failure could require a temporary acute emergency response by fire protection and emergency services. Although this demand would likely not require the provision of new or physically altered government facilities, impacts would be substantially greater than the proposed project. Although the No Project Alternative could have **greater** impacts on public services than the proposed project, such impacts would likely be less than significant because of the temporary nature of the increased demand placed on the services.

### ***Biological Resources***

Under the No Project Alternative, impacts on biological resources could be greater than the proposed project in the event of pipeline failure. However, in the absence of pipeline rupture, continued operation and maintenance of the pipelines and SFPUC ROW could entail tree removal, resulting in impacts to special-status wildlife species—particularly at the South San Francisco and Millbrae sites, where groves of trees are established in the ROW. Impacts would be similar to the proposed project.

A pipeline failure, which could occur during a seismic event as described above, could result in a larger area of disturbance than the proposed project, which could affect more special status species or their habitat. In this event, emergency repairs to portions of the pipeline would be necessary. Repairs could entail tree removal, excavation and shoring, and pipeline replacement, which could have substantial impacts on special-status wildlife species. Because of the emergency nature of repairs, mitigation measures that could reduce potential impacts to special-status wildlife may not be feasible, resulting in greater impacts than the proposed project (**Impacts BI-1 and BI-4: greater**). Additionally, pipeline rupture could discharge chloraminated water to riparian habitat at the South San Francisco site, as well as to waters of the State or of the United States (Colma, South San Francisco, San Bruno South, and Millbrae), and result in impacts on riparian habitat, aquatic resources, and jurisdictional waters, beyond impacts identified for the proposed project (**Impacts BI-2 and BI-3: greater**).

Overall, the No Project Alternative could have **greater** impacts on biological resources compared to the proposed project, due to potential emergency/uncontrolled discharges of chloraminated water to riparian habitats and storm drains that eventually flow to San Francisco Bay; and because implementation of mitigation to reduce impacts to special-status wildlife species and

comply with local tree protection ordinances may not be feasible, given the emergency nature of repairs. Impacts could be significant and unavoidable.

### *Geology and Soils*

Under the No Project Alternative, impacts on geology and soils could be greater than the proposed project. The No Project Alternative would not result in the construction of pipeline upgrades; in the case of a seismic event, the pipelines could fail due to surface fault rupture or soil liquefaction, exposing people and structures to substantial adverse effects (**Impact GE-2 and GE-3: greater**). Water loss from ruptured pipelines could result in scouring of topsoil and soil erosion (**Impact GE-1: greater**). These impacts could be significant and unavoidable, and unlike the proposed project, mitigation may not be feasible or available to reduce impacts because of the emergency nature of impacts. Similar to the proposed project, the No Project Alternative would not be located in areas with slopes that are likely to become unstable, nor is the project located in areas with expansive soils (**Impact GE-4 and GE-5: similar**).

Overall, impacts related to geology and soils could be **greater** than impacts from the proposed project, and impacts would be significant and unavoidable because mitigation may not be available to implement due to the emergency/uncontrolled nature of pipeline rupture.

### *Hydrology and Water Quality*

Under the No Project Alternative, impacts on hydrology and water quality could be greater than under the proposed project. In the absence of pipeline failure, ongoing operations and maintenance would not affect hydrology and water quality. However, a large-magnitude earthquake resulting in the rupture of the pipelines could release up to 6.7 million gallons of chloraminated water during 30 to 60 minutes, until SFPUC operators are able to close the shutoff valves to stop the flow, assuming the earthquake causes the rupture of all pipelines at the San Bruno South and Millbrae sites (SAPL2, SAPL3, and SSBPL). This volume of water would cause localized flooding and erosion. Additionally, due to the emergency natures of these discharges, water would likely not be dechlorinated, unlike under the proposed project (which would discharge 5.4 million gallons). Therefore, this alternative could substantially violate water quality standards and degrade water quality as a result of erosion (**Impact HY-1: greater**), resulting in significant and unavoidable impacts.

In addition, the repaired pipeline(s) would require disinfection (prior to being brought back online), and the associated discharge of this treated water. Similar to the proposed project, dewatering of excavated areas during project construction would not substantially deplete groundwater supplies (**Impact HY-2: similar**) nor would it degrade water quality (**Impact HY-3: similar**). Discharges of dewatering effluent from excavated areas and of treated water from repaired pipelines would not substantially degrade water quality, because it would comply with the same regulations as the proposed project (**Impact HY-4: similar**).

Overall, the No Project Alternative could have **greater** impacts on water resources compared to the proposed project, because it could result in emergency discharges of chloraminated water, which, along with associated erosion, could result in degradation of water quality. Impacts would be significant and unavoidable, because feasible mitigation is not available.

### *Hazards and Hazardous Materials*

In the absence of a seismic event and pipeline rupture, the No Project Alternative would have fewer impacts related to hazards and hazardous materials than the proposed project, because ongoing operations and maintenance activities—including tree removal, if required—would use minimal amounts of hazardous substances, which would be primarily associated with vehicles and equipment.

However, if a pipeline rupture were to occur during a seismic event, construction activities to repair the pipeline could create a significant hazard through the routine transport, use, and disposal of hazardous materials, or through the reasonably foreseeable upset of hazardous materials. Because these activities would be similar to construction activities for the proposed project, impacts would be similar (**Impacts HZ-1 and HZ-2: similar**). Mitigation measures similar to those identified for the proposed project would reduce these impacts to less than significant with mitigation. Because the use of hazardous materials during construction would be in compliance with applicable regulations, and because hazardous materials are likely not to be present in the soils or groundwater in the project area, construction activities would not result in the release of hazardous materials within 0.25 mile of a school (**Impact HZ-3: similar**). This alternative would also be located in the vicinity of the San Francisco International Airport and, similar to the proposed project, construction activities would not interfere with airport operations (**Impact HZ-4: similar**).

As described above, this alternative would likely impair implementation of emergency response or evacuation plans (**Impact HZ-5: greater**) due to the upset conditions such as roadway damage, response to first aid and emergency needs, or fires during a seismic event. Emergency access could be further hampered by construction activities for the pipeline repair, resulting in a potentially significant impact. Overall, hazards and hazardous materials impacts under the No Project Alternative would have a **greater** impact compared to the proposed project, because of the possibility for emergency response and subsequent emergency repairs to impair implementation of or physically interfere with an emergency response plan or emergency evacuation plan. Impacts would be significant and unavoidable because implementation of mitigation during emergency response may not be feasible.

### *Mineral and Energy Resources*

Similar to the proposed project, the No Project Alternative would not result in impacts related to mineral or energy resources. The project area is not located on lands with known mineral resources, or in an area with a locally important mineral resource recovery site. The use of energy associated with operations and maintenance activities and pipeline replacement in the event of a pipeline failure would not be in excess of standard construction and operation practices or encourage activities that use large amounts of fuel, water, or energy, or resources in a wasteful manner. Therefore, impacts to mineral and energy resources would be no impact, **similar** to the proposed project.

### *Agriculture and Forest Resources*

Similar to the proposed project, the No Project Alternative would have no impacts to agriculture and forest resources. The project area is not designated as farmland by the Farmland Mapping



and Monitoring Program, nor is the area zoned for agricultural uses or subject to a Williamson Act contract. The area is not zoned as forest land or timberland, nor are there forestry uses in the vicinity. Therefore, impacts to agriculture and forest resources would be no impact, **similar** to the proposed project.

### **7.2.3.3 Conclusions for Alternative 1**

In the absence of a major earthquake along the San Andreas Fault, the No Project Alternative would result in fewer and less severe impacts compared to the proposed project. Potential impacts would be associated with operations and maintenance activities along the pipeline. Significant impacts to biological resources would remain under normal circumstances due to the tree removal at the South San Francisco and Millbrae sites. However, many of the potentially significant and unavoidable and significant but mitigable impacts that would occur with the proposed project would be avoided, including impacts related to: land use and land use planning; cultural resources; transportation and circulation; noise; recreation; utilities and service systems; geology and soils; hydrology and water quality; and hazards and hazardous materials.

However, in the probable event of rupture of SAPL2, SAPL3, and/or SSBPL during a seismic event, the No Project Alternative would likely result in greater impacts than the proposed project. Flooding could result in greater impacts related to land use disruption, closure or disruption of recreational facilities, soil erosion, damage to previously unidentified archaeological and paleontological resources, impacts to biological and hydrological resources from discharge of chloraminated water, and damage to utilities (including service disruption). In addition, emergency pipeline repair activities could result in greater impacts than the proposed project because some mitigation that could reduce construction-related impacts may not be feasible under this alternative due to the emergency nature of repairs. Although the construction period could be shorter under the No Project Alternative, repairs would likely require additional 24-hour and weekend construction, resulting in greater noise-related impacts on nearby residences than under the proposed project and impacts from nighttime lighting for emergency construction. Removal of debris associated with pipeline failure and flooding would result in greater truck trips. Loss of water supply would adversely affect the provision of services on a normal service basis and for fire-fighting as a result of a seismic event. Acute demand for emergency response services would be required due to pipeline failure and flooding after a seismic event.

The No Project Alternative would not meet any of the project objectives. Overall, the No Project Alternative would likely result in greater environmental impacts than would the proposed project, due to the high probability of pipeline failure caused by an earthquake on the San Andreas Fault.

## **7.2.4 Alternative 2 – Sliplining Alternative**

### **7.2.4.1 Description of Alternative 2**

The Sliplining Alternative is a design alternative that entails installation of new smaller-diameter pipe within the existing pipe to improve the seismic reliability of the pipeline, as described in the following text. The Sliplining Alternative would be implemented at selected locations where the

pipe is susceptible to failure from seismic events at project sites where the proximity of the proposed project construction to nearby sensitive receptors would result in significant construction-related impacts. As shown in Figures 7-1 through 7-3, these locations are: South San Francisco (SAPL2), San Bruno South (SAPL2 and SAPL3), and Millbrae (SSBPL). Under this alternative, the PPSU project as proposed would be implemented at the Colma and San Bruno North sites.

Sliplining was not considered for the Colma site because potential PPSU project impacts would be less than significant or less than significant with mitigation, and sliplining would not reduce any impacts associated with the PPSU project. It was not considered for the San Bruno North site because sliplining would not provide an adequate engineering solution to stabilize the pipeline as it extends through the tunnel at that location. Furthermore, unlike other project sites where open-trench construction would be used, and where a sliplining alternative would reduce the area of excavation and thus limit the exposure of sensitive receptors to noise, the project design at the San Bruno North site already entails limited construction areas because of the use of access portals, which have smaller dimensions than sliplining pits. Sliplining would actually require additional construction work compared to the proposed project to connect the new pipeline segment to the existing pipe. Therefore, sliplining would not be expected to reduce construction-related impacts at the San Bruno North site.<sup>2</sup>

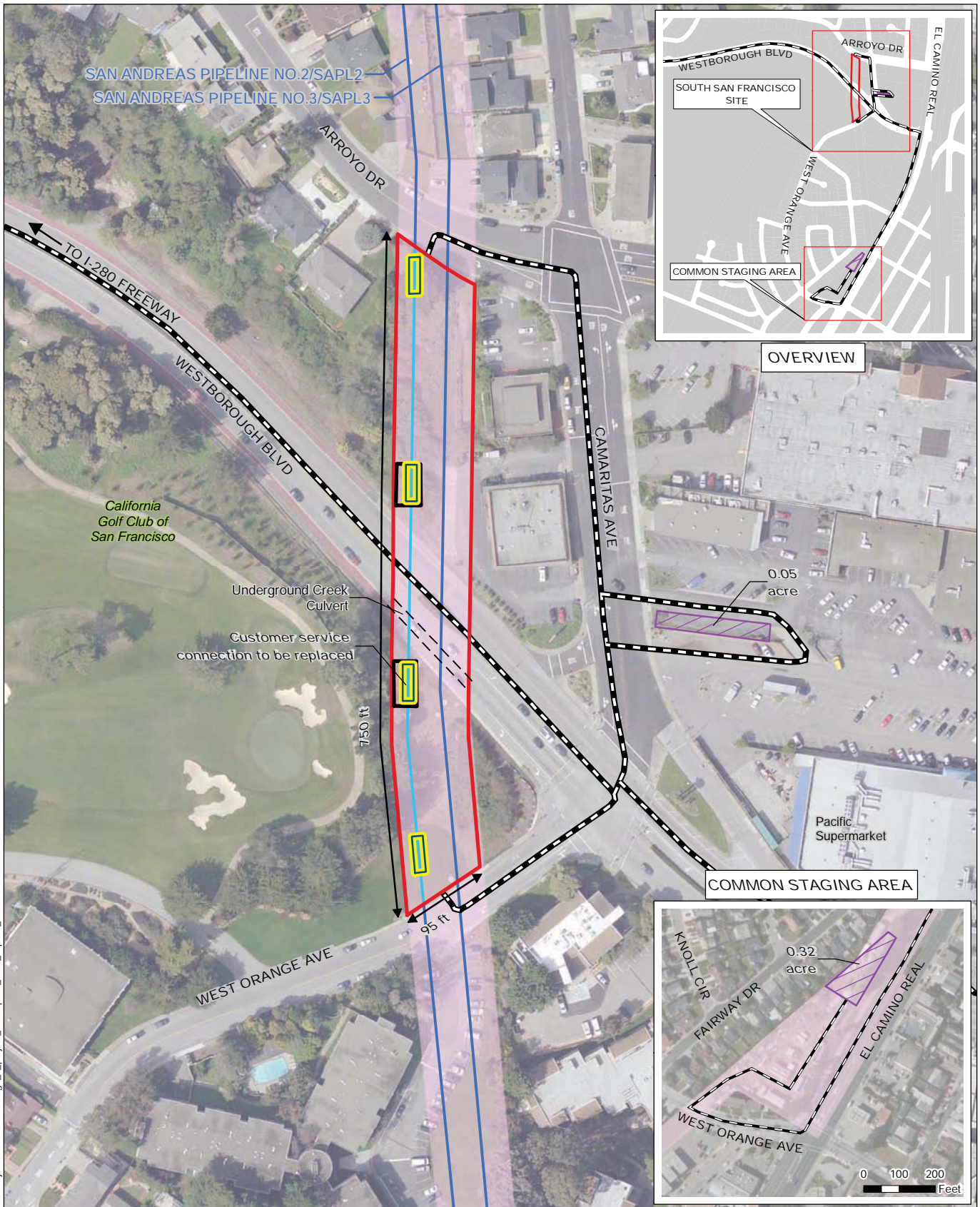
Sliplining would meet some of the project objectives, but would provide a lower seismic reliability than the proposed PPSU project because the welds for the liner pipe are considered to have a lower strength compared to new construction, where both sides of the pipe are accessible for welding (G&E/GTC Joint Venture, 2011). If sliplining were used, the existing pipe joints — riveted joints along SAPL2 and pre-stressed concrete cylinder pipe joints along SAPL3 — would concentrate strain due to seismic offset at points of connection to existing pipe.

Under this method, a smaller-diameter new pipe is pushed or pulled through the existing pipe. Compared to the proposed project, which would entail excavation of the existing pipeline along the entire section to be replaced at these sites, sliplining would require less ground disturbance since pits would be excavated where the pipeline alignment changes. These pits are typically located at the high and/or low points (vertical alignment change) and at horizontal deflection points (horizontal alignment change) of the pipeline alignment. To push the new pipeline through the old pipeline, hydraulic jacking equipment would be placed in the pit and braced against the wall opposite where the pipe would be pushed. To pull pipe, a winch would be set up in one pit and the new pipe would be placed at the opposite end of the pipe to be sliplined. A cable would be threaded through the existing pipe and attached to the new pipe. The new pipe would then be pulled through the existing pipeline. Once the new pipe is installed, the space between the new and old pipes would be filled with cement slurry.

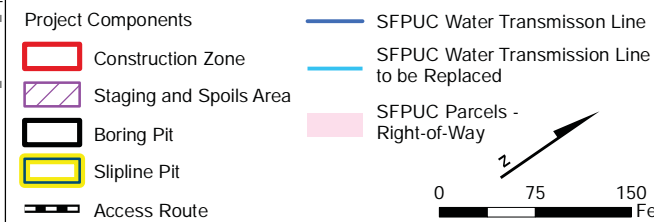
Under the Sliplining Alternative, a 48-inch-diameter pipeline would be sliplined inside the existing segments of SAPL2, SAPL3 and SSBPL at the South San Francisco, San Bruno South, and

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<sup>2</sup> The only other alternative to the proposed project at the San Bruno North site would involve pumping concrete into the tunnel to completely encase the existing pipe. However, this does not allow for future maintenance activities that may be required, and therefore was not considered further in this analysis.



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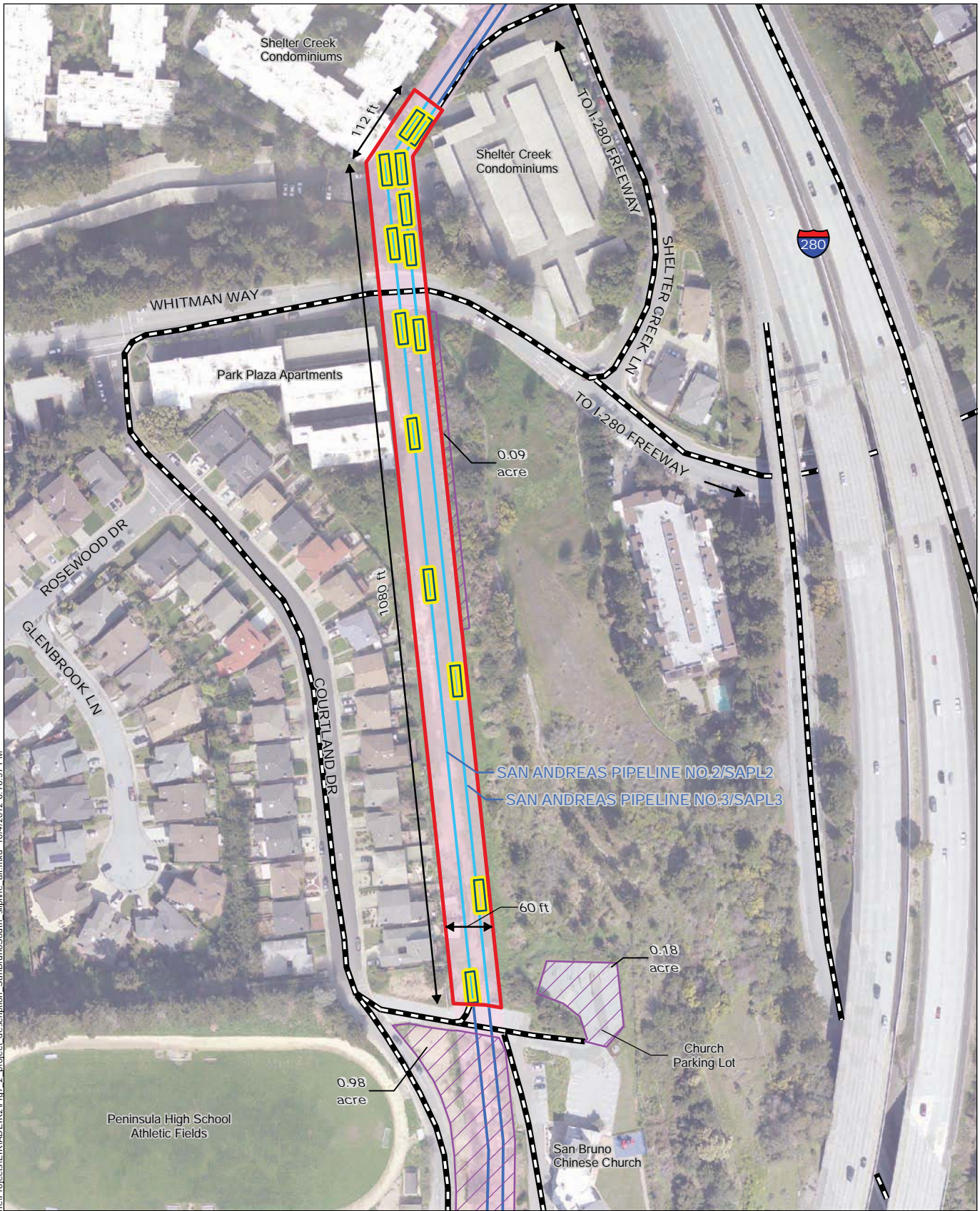
**SLIPLINING ALTERNATIVE  
SOUTH SAN FRANCISCO SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 7-1**

Source: SFPUC 2011

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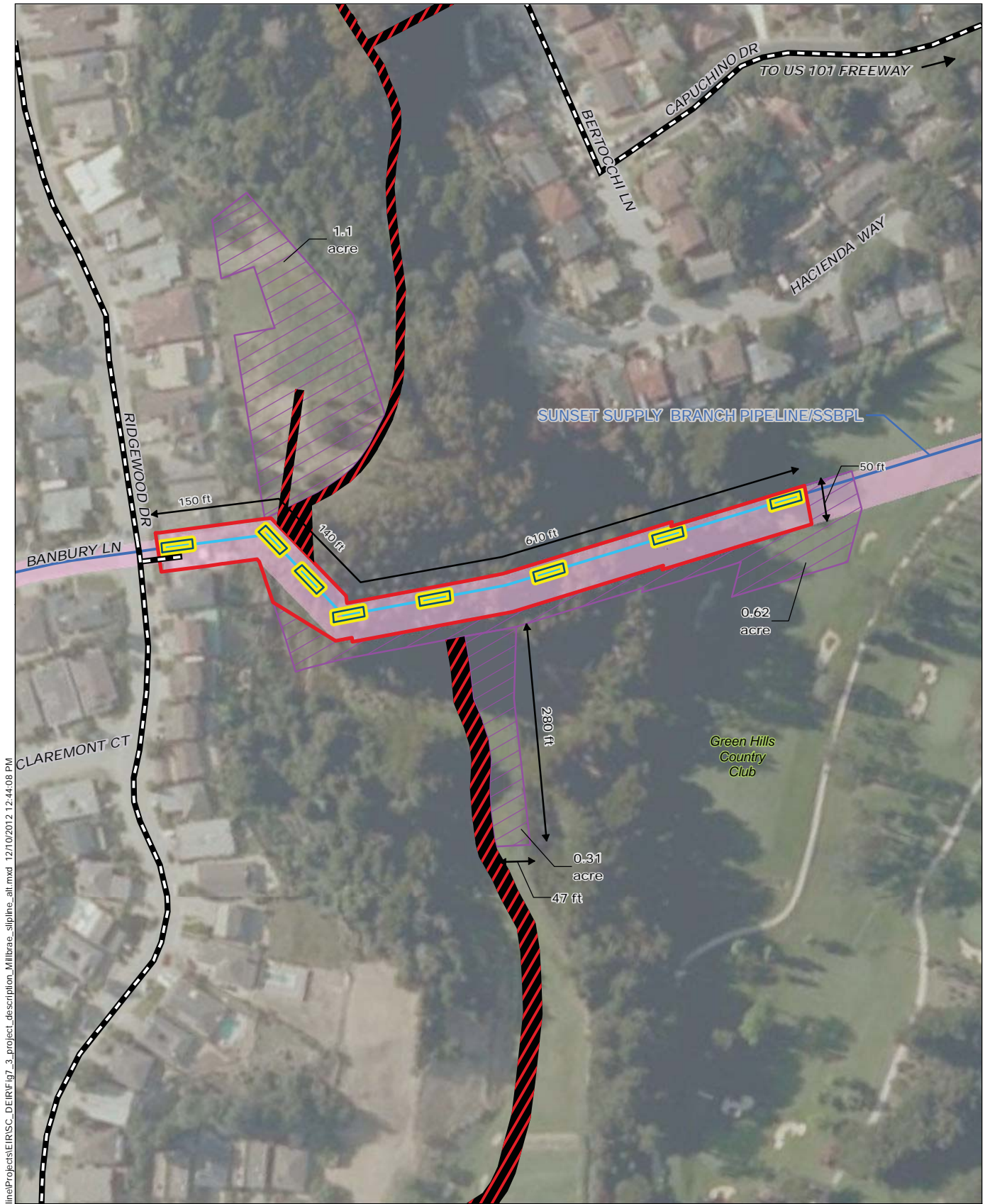
- |  |   |
|--|---|
| <span style="border: 2px solid red; display: inline-block; width: 20px; height: 10px;"></span> Construction Zone                                     | <span style="border-bottom: 2px solid blue; width: 20px; display: inline-block;"></span> SFPUC Water Transmission Line                |
| <span style="border: 2px solid yellow; display: inline-block; width: 20px; height: 10px;"></span> Slipline Pit                                       | <span style="border-bottom: 2px solid blue; width: 20px; display: inline-block;"></span> SFPUC Water Transmission Line to be Replaced |
| <span style="border: 1px solid purple; background-color: #e0e0ff; display: inline-block; width: 20px; height: 10px;"></span> Staging and Spoils Area | <span style="background-color: #ffe0e0; display: inline-block; width: 20px; height: 10px;"></span> SFPUC Parcels - Right-of-Way       |
| <span style="border-bottom: 2px dashed black; width: 20px; display: inline-block;"></span> Access Route  |   |

**SLIPLINING ALTERNATIVE  
SAN BRUNO SOUTH SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

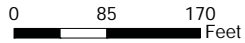
**FIGURE 7-2**

Source: SFPUC 2011



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- Project Components**
- Construction Zone
  - SFPUC Water Transmission Line to be Replaced
  - Staging and Spoils Area
  - Slipline Pit
  - Access Route Requiring Upgrade
  - Access Route
  - SFPUC Parcels - Right-of-Way



**SLIPLINING ALTERNATIVE  
MILLBRAE SITE**

Peninsula Pipelines Seismic Upgrade  
San Francisco Public Utilities Commission  
San Mateo County, California

**FIGURE 7-3**

Source: NAIP Imagery Summer 2010; SFPUC 2011

Millbrae sites. The excavation pit dimensions would be approximately 40 feet long by 12 feet wide. As shown on Figures 7-1 through 7-3, there would be approximately four pits along SAPL2 at South San Francisco, seven pits each along SAPL2 and SAPL3 at San Bruno South, and eight pits along SSBPL at Millbrae. The maximum depth of the pits would be 30 feet for SAPL2 at South San Francisco, 30 feet for SAPL2 at San Bruno South, 14 feet for SAPL3 at San Bruno South, and 18 feet for SSBPL at Millbrae. The amount of soils that would be excavated at these sites would be approximately 15 percent of the amount of soils that would be excavated under the proposed project at the South San Francisco and San Bruno South sites, and 45 percent of the estimated soils that would be excavated under the proposed project at the Millbrae site (55 to 85 percent less). In addition to construction equipment that would be used for the PPSU project, this alternative would require a hydraulic jacking machine.

The Sliplining Alternative would occur during planned operational shutdowns, similar to the proposed project. Depending on the sliplining material and orientation of the pipeline, sliplining would occur at a rate of approximately 50 feet per day. The construction duration at the project sites would be the same or slightly less than the proposed PPSU project construction duration, as follows: At South San Francisco and San Bruno South, construction would be 0.5 month less than the proposed project (2.5 months and 8.5 months, respectively) and construction would be the same duration at Millbrae as the proposed project (4.5 months) (Manders, 2012a).

The duration of work at each pit would include about 1 week for excavation and shoring of the pit, and would vary based on the distance to be sliplined. Durations for sliplining would range from 5 to 10 days at South San Francisco, 3 to 11 days at San Bruno South, and 4 to 7 days at Millbrae. In summary, total work durations at the pits would range from 1.5 to 3.5 weeks.

Because the Sliplining Alternative would require substantially less off-haul of soils and construction debris due to the smaller amount of excavation required and because the existing pipelines would not be removed, truck trips would range from approximately 10 percent of the proposed project's estimated truck trips at the South San Francisco and San Bruno South sites to 30 percent of estimated truck trips at the Millbrae site.

Other features of this alternative would be similar to the proposed project, including water discharges and blow-off locations, access routes, and staging areas. Additionally, future operations and maintenance activities would be similar to those for the proposed project.

#### **7.2.4.2 Impact Analysis for Alternative 2**

The Sliplining Alternative would occur at the South San Francisco, San Bruno South, and Millbrae sites. Under this alternative, the PPSU project as proposed would be implemented at the Colma and San Bruno North sites, and impacts would remain as described for the proposed project at those sites.

#### ***Land Use and Land Use Planning***

Under the Sliplining Alternative, land use impacts would be less than under the proposed project. The project "footprint," including construction zones, tree removal areas, and staging areas, would be similar to the proposed project, but the amount of excavation at the South San Francisco, San Bruno South, and Millbrae sites would be substantially less than required for the proposed project.

Because of the slightly reduced construction schedule at South San Francisco and San Bruno South sites and the substantial reduction in truck trips associated with construction activities, disruptions to existing land uses would be reduced (**Impact LU-1: reduced**). However, even with these reductions, potential construction impacts on nearby sensitive land uses would be significant. Mitigation measures identified for the proposed project for similar impacts would also apply to this alternative and would reduce impacts to less than significant with mitigation. Operations and maintenance activities would not result in significant permanent impacts to land uses, similar to the proposed project (**Impact LU-2: similar**).

Overall, the Sliplining Alternative would have **reduced** land use impacts that, with mitigation, would be less than significant, **similar** to the proposed project..

### *Aesthetics*

Under the Sliplining Alternative, impacts on aesthetics would generally be similar to the proposed project. During construction, temporary impacts from construction staging and activities could occur, but would not result in substantial adverse effects on scenic vistas or degrade the visual character of the area, and potential impacts would be less than significant (**Impact AE-1: similar**). Tree removal along the pipeline alignment would result in minor changes in the visual character of the area, but due to the combination of the limited viewer exposure and/or reduced visual quality of the sites, as well as the surrounding vegetation that would remain at the sites, these changes would be less than significant (**Impact AE-3: similar**). Similar to the proposed project, the Sliplining Alternative would not generate light and glare impacts for sensitive receptors during construction or operation at the South San Francisco, San Bruno South, or Millbrae sites (**Impact AE-2: similar**).

Overall, the Sliplining Alternative, with mitigation, would have less-than-significant impacts on aesthetics resources, **similar** to the proposed project.

### *Population and Housing*

The Sliplining Alternative would not have impacts to population and housing, similar to the proposed project. This alternative would not remove or create housing units or directly remove existing constraints to growth in the study area. Labor requirements would be similar to those associated with the proposed project, and these requirements could be readily filled by the existing resident labor force in the study region. Therefore, the Sliplining Alternative would have **similar** impacts on population or housing resources to the proposed project.

### *Cultural Resources*

The Sliplining Alternative would result in fewer impacts to cultural resources compared to the proposed project. Because less ground disturbance would be required for this alternative, there would be a reduced potential to cause an adverse change in the significance of historical or unique archaeological resources at the South San Francisco and San Bruno South sites (**Impact CP-2: reduced**). Similarly, it would have a reduced likelihood to disturb paleontological resources or human remains (**Impacts CP-3 and CP-4: reduced**). Mitigation measures identified for the proposed project would still be required for the Sliplining Alternative, and with implementation of these measures, potential impacts to cultural resources would be reduced to less-than-significant levels.

Under the Sliplining Alternative, there would be a less-than-significant impact to historical resources from construction activities on the Green Hills Country Club at the Millbrae site, similar to the proposed project (**Impact CP-1: similar**).

Overall, the Sliplining Alternative would have **reduced** cultural resource impacts because of the reduced amount of excavation that would occur under this alternative.

### ***Transportation and Circulation***

The Sliplining Alternative would result in fewer impacts on transportation and circulation than the proposed project. Because the Sliplining Alternative would require substantially less excavation of soils and less off-haul of spoils and construction debris, the number of truck trips would range from approximately 10 percent of the proposed project's estimated truck trips at the South San Francisco and San Bruno South sites, to 30 percent of estimated truck trips at the Millbrae site. Additionally, under the Sliplining Alternative, the duration of construction activity at the South San Francisco and San Bruno South sites would be slightly less than for the proposed project, resulting in a slightly shorter period of construction impacts associated with access and haul routes.

Similar to the proposed project, conflicts with applicable plans, ordinances, and policies, and impacts to emergency access for the Sliplining Alternative, would be less than significant because construction activities and the short-term increases in vehicle trips would not substantially conflict with applicable plans, or result in inadequate emergency access (**Impacts TR-1 and TR-2: similar**). Potential impacts to safety of public roadways for vehicles, bicyclists, and pedestrians would be reduced because of the reduction in the number of truck trips and slightly shorter duration of construction activities, as described above (**Impact TR-3: reduced**). With implementation of mitigation similar to that identified for the proposed project, impacts would remain less than significant with mitigation. Operation and maintenance of the pipelines and SFPUC ROW under this alternative would be similar to the proposed project, and impacts would be less than significant (**Impact TR-4: similar**).

Overall, the Sliplining Alternative would have **reduced** impacts on transportation and circulation compared to the proposed project, because it would result in fewer construction vehicles at the South San Francisco, San Bruno South, and Millbrae sites and shorter construction durations at the South San Francisco and San Bruno South sites.

### ***Noise***

Under the Sliplining Alternative, construction noise and vibration impacts would be reduced compared to the proposed project.

#### **South San Francisco Site**

Compared with the proposed project, the Sliplining Alternative would have similar construction activities in terms of noise and vibration, but access route truck trips would be reduced by approximately 90 percent at the South San Francisco site. The construction period would be slightly shorter, but the noise and vibration levels at sensitive receptors due to construction activities would generally remain the same as under the proposed project. Due to the location of the northernmost sliplining pit and the truck access routes, the Sliplining Alternative would affect approximately the same number of sensitive receptors. Noise levels from haul traffic would



be reduced compared to the proposed project, because of the reduced number of truck trips required for this alternative. Overall, impacts from construction noise would be somewhat reduced compared to the proposed project (**Impact NO-1: reduced**), but would likely remain significant and unavoidable with mitigation at the residential receptors on Arroyo Drive, and less than significant with mitigation at the other receptors.

Impacts due to excess groundborne vibration would be less than significant with mitigation, similar to the proposed project (**Impact NO-4: similar**). There would be no nighttime construction, and no conflicts with local ordinances, similar to the proposed project (**Impacts NO-2 and NO-3: similar**).

### San Bruno South Site

Compared with the proposed project, the Sliplining Alternative would have similar construction noise and vibration levels, but access route traffic would be reduced by approximately 90 percent at the San Bruno South site. The duration of construction impacts at each individual sensitive receptor would be slightly reduced due to the slightly shorter construction schedule, but the noise and vibration levels from construction activities would be similar to those of the proposed project. Due to the anticipated location of the sliplining pits, this alternative would affect approximately the same number of sensitive receptors in the Shelter Creek Condominiums and Park Plaza Apartments. However, a small number of single-family sensitive receptors along Courtland Drive (approximately five residences) would experience a great enough reduction in construction noise levels that impacts would be reduced from significant and unavoidable with mitigation to less than significant with mitigation at the five residences. Noise levels from haul traffic would be reduced compared to the proposed project. Overall, impacts from daytime construction noise would be somewhat reduced compared to the proposed project (**Impact NO-1: reduced**), but would likely remain significant and unavoidable with mitigation at the multi-family residential receptors (Shelter Creek Condominiums and Park Plaza Apartments), as well as at some single-family residential receptors (along Courtland Drive). Construction noise impacts would remain less than significant with mitigation at the other sensitive receptors.

Impacts due to nighttime construction (pipeline dewatering) and exposure of persons or structures to excess groundborne vibration would be less than significant with mitigation, similar to the proposed project (**Impacts NO-2 and NO-4: similar**). There would be no impacts due to conflicts with local ordinance time limits (**Impact NO-3: similar**).

### Millbrae Site

Compared with the proposed project, the Sliplining Alternative would have similar noise and vibration levels from construction activities, but access route traffic would be reduced by approximately 70 percent at the Millbrae site. The construction schedule would be similar to the proposed project, but the duration of noise impacts at each individual sensitive receptor may be slightly reduced by the use of pit excavation instead of open-trench construction techniques. Due to the anticipated location of the pits, the Sliplining Alternative would affect approximately the same number of sensitive receptors as the proposed project. However, noise levels from haul traffic would be reduced compared to the proposed project. Overall, impacts from construction noise would be somewhat reduced compared to the proposed project (**Impact NO-1: reduced**), but would likely remain significant and unavoidable with mitigation at the single-family

residential receptors along Ridgewood Drive and Hacienda Way, and less than significant or less than significant with mitigation at the other receptors.

Impacts due to nighttime construction (pipeline dewatering) and exposure of persons or structures to excess groundborne vibration would be less than significant with mitigation, similar to the proposed project (**Impacts NO-2 and NO-4: similar**). Impacts due to conflicts with local ordinance time limits would remain significant and unavoidable due to nighttime dewatering activities (**Impact NO-3: similar**).

Overall, the Sliplining Alternative would have **reduced** noise impacts on sensitive receptors, although many of the significant impacts that could occur under the proposed project would likely also occur under this alternative.

### *Air Quality*

Under the Sliplining Alternative, impacts on air quality would be somewhat less than the proposed project. This alternative would be constructed over a slightly shorter period than the proposed project at the South San Francisco and the San Bruno South sites (0.5 month less than the proposed project), although the construction period at the Millbrae site would be the same as the proposed project. Additionally, the Sliplining Alternative would result in substantially less excavation of soils, and would require approximately 70 to 90 percent fewer truck trips compared to the proposed project. As a result, the Sliplining Alternative would have less regional criteria pollutant emissions and localized toxic air contaminant emissions than the proposed project (**Impacts AQ-1, AQ-2, and Impact AQ-3: reduced**). However, to reduce impacts from fugitive dust, mitigation measures would be required to be implemented, similar to the proposed project. The temporary air quality impacts associated with construction of this alternative would not hinder the achievement of long-term air quality goals due to the short-term nature of the emissions, similar to the proposed project (**Impact AQ-4: similar**).

The Sliplining Alternative would have **reduced** impacts on air quality compared to the proposed project, because of the reduced number of truck trips associated with construction at all three project sites, the shorter construction period at two of the three sites, and the reduced amount of excavation of soils required for this alternative. Overall, air quality impacts would remain less than significant with mitigation, similar to the proposed project.

### *Greenhouse Gas Emissions*

Under the Sliplining Alternative, impacts on climate change would be somewhat less than the proposed project. The Sliplining Alternative would be conducted over a slightly shorter time period at two of the three project sites compared to the proposed project. Additionally, the Sliplining Alternative would require substantially fewer truck trips compared to the proposed project. As a result, the Sliplining Alternative would emit fewer GHG emissions. GHG emissions from the Sliplining Alternative would not have a significant impact on the environment, nor would they conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions (**Impacts GG-1: reduced**).

Overall, the Sliplining Alternative would have **reduced** impacts on climate change compared to the proposed project, because of the shorter construction timeframe and the substantially fewer truck trips. Impacts would remain less than significant, similar to the proposed project.

### *Wind and Shadow*

The Sliplining Alternative would have no impacts related to wind and shadow, similar to the proposed project. The proposed PPSU project would result in upgrades to existing pipelines, which are located below ground in the vicinity of the sites and thus would not alter wind patterns. Additionally, the Sliplining Alternative would not propose any features that would substantially affect shadow patterns. Therefore, impacts to wind and shadow would be **similar** to the proposed project.

### *Recreation*

Under the Sliplining Alternative, recreation impacts would be reduced compared to those associated with the proposed project. Similar construction and staging areas would be used compared to the proposed project, which would result in similar impacts to recreation facilities, including two golf courses and the athletic fields adjacent to the Peninsula High School; but the construction duration would be slightly shorter at the South San Francisco and San Bruno South sites (**Impact RE-1: reduced**).

Therefore, overall impacts to recreation facilities would be **reduced** compared to the proposed project. Potential impacts would remain less than significant with mitigation, similar to the proposed project.

### *Utilities and Service Systems*

Under the Sliplining Alternative, impacts on utilities and service systems would be less than the proposed project. Because this alternative would result in substantially less excavation, the potential to disrupt nearby utilities through accidental damage would be reduced (**Impacts UT-1 and UT-2: reduced**). With implementation of mitigation similar to that identified for the proposed project, impacts would remain less than significant with mitigation.

Dewatering activities and pipeline testing for the proposed project would require approximately 20 million gallons of water. It is estimated that the Sliplining Alternative would have similar requirements for dewatering. Therefore, impacts from the Sliplining Alternative are anticipated to be similar to the proposed project regarding water supply, and would be less than significant (**Impact UT-3: similar**).

The Sliplining Alternative would require less off-haul of soils and construction debris due to the substantially smaller amount of excavation required, and because the existing pipelines would not be removed. Therefore, potential impacts related to compliance with waste statutes and landfill capacity would be reduced compared to the proposed project (**Impacts UT-4 and UT-5: reduced**). This alternative would still be required to implement some of the mitigation measures that require compliance with waste statutes and landfills; therefore, it is anticipated that impacts would be reduced to less than significant with mitigation, similar to the proposed project.

Overall, the Sliplining Alternative would have **reduced** impacts on utilities and service systems.

### *Public Services*

Similar to the proposed project, the Sliplining Alternative would have no impacts to public services. Potential incidents requiring law enforcement, fire protection, or emergency services could occur during construction of this alternative; however, any temporary increase in incidents would not exceed the capacity of local law enforcement, fire protection, and emergency facilities to such a degree that new or expanded facilities would be required. Therefore, impacts to public services would be **similar** to the proposed project.

### *Biological Resources*

Under the Sliplining Alternative, impacts on biological resources would be similar to the proposed project. Tree removal could result in impacts to special-status wildlife, riparian habitat, and conflicts with tree protection ordinances, similar to the proposed project (**Impacts BI-1, BI-2, and BI-4: similar**). Impacts to jurisdictional waters would also be similar to the proposed project, because the Sliplining Alternative could affect the same waters of the United States and waters of the State as the proposed project (**Impact BI-3: similar**).

Overall, the Sliplining Alternative would have **similar** impacts on biological resources compared to the proposed project. With implementation of mitigation similar to that identified for the proposed project, impacts would remain less than significant with mitigation.

### *Geology and Soils*

Under the Sliplining Alternative, impacts on geology and soils would be less than the proposed project. Impacts from loss of topsoil and erosion would be decreased under the Sliplining Alternative, because there would be substantially less excavation than under the proposed project at the South San Francisco, San Bruno South, and Millbrae sites (approximately 55 percent to 85 percent less excavation) (**Impact GE-1: reduced**). However, impacts from erosion and loss of topsoil would remain less than significant with mitigation, similar to the proposed project. Because this alternative entails seismic upgrades to the pipelines, similar to the proposed project, potential operations impacts from surface fault rupture, ground shaking, ground failure, and landslides would be addressed by the design of this alternative. However, because this alternative would provide a lower seismic reliability than the proposed PPSU project, it could result in greater impacts related to surface fault rupture, ground shaking, ground failure, and landslides (**Impact GE-2 and GE-3: greater**). The pipelines are not located on slopes that are subject to failure, or on expansive soils, and are not likely to become unstable (**Impacts GE-4 and GE-5: similar**). These impacts would be less than significant, similar to the proposed project.

Overall, on the whole, impacts related to geology and soils would be **similar** to impacts under the proposed project.

### *Hydrology and Water Quality*

Under the Sliplining Alternative, impacts on hydrology and water quality would be less than the proposed project. Similar to the proposed project, no significant changes to existing drainage patterns would result from construction of this alternative. The replaced pipeline sections would be designed to withstand fault movement, so that there would be no uncontrolled discharge of

untreated chloraminated water from pipeline failure. Construction of the Sliplining Alternative would result in substantially less excavation than the proposed project. Due to the reduced area of disturbance associated with the sliplining procedure compared to the proposed project's open-trench method, there would be less excavated spoils and construction debris (asphalt) and less potential for erosion and sedimentation (**Impact HY-1: reduced**). Water quality impacts related to construction activities would remain less than significant with implementation of mitigation requiring implementation of a stormwater pollution prevention plan, and implementation of related stormwater best management practices. Compared to the proposed project, this alternative would require less groundwater dewatering of the trenches, and would have a lower risk to water quality because of the reduction in excavated areas (**Impacts HY-2 and HY-3: reduced**). Impacts would remain less than significant.

Similar to the proposed project, discharges would be necessary when the pipelines are drained during shutdown and startup activities, which include hydrostatic testing and disinfection. The volume of these discharges would be about the same as for the proposed project. Similar to the proposed project, treated water from the pipelines would be discharged in compliance with the Waste Discharge Requirements for the SFPUC Drinking Water Transmission System (San Francisco Bay Regional Water Quality Control Board Order No. R2-2008-0102), thereby avoiding adverse effects on water quality. Water quality impacts related to these discharges would be similar to those of the proposed project, and would remain less than significant (**Impact HY-4: similar**).

Overall, the Sliplining Alternative would have **reduced** impacts on hydrology and water quality compared to the proposed project.

### *Hazards and Hazardous Materials*

Under the Sliplining Alternative, impacts on hazards and hazardous materials would be less than the proposed project. There is a low potential to encounter hazardous materials in the soil and groundwater during construction at the project sites. However, it cannot be determined with certainty that excavated materials would not contain potentially hazardous soil and/or groundwater wastes. Therefore, because the amount of excavated materials would be substantially less for the South San Francisco, San Bruno South, and Millbrae sites under this alternative, the potential likelihood to release such hazardous materials through excavation would be decreased (**Impact HZ-1: reduced**), although this impact would remain less than significant with implementation of mitigation similar to that identified for the proposed project. Construction of the Sliplining Alternative would require use of hazardous materials, such as petroleum fuels, lubricants, and gases. The accidental release of these materials could result in impacts to the environment, similar to the proposed project (**Impact HZ-2: similar**). Implementation of mitigation measures identified for the proposed project would also reduce these impacts to less than significant with mitigation. Because the use of hazardous materials during construction would be in compliance with applicable regulations, and because hazardous materials are likely not to be present in the soils or groundwater in the project area, construction activities would not result in the release of hazardous materials within 0.25 mile of a school (**Impact HZ-3: similar**). Similar to the proposed project, the alternative is located in the vicinity of the San Francisco International Airport, but construction activities would not interfere with airport operations (**Impact HZ-4: similar**). Additionally, the alternative would not impair implementation of emergency response or evacuation plans (**Impact HZ-5: similar**).

Overall, the Sliplining Alternative would have **reduced** hazards and hazardous materials impacts compared to the proposed project, because of the reduced amount of excavation required and the corresponding decreased potential to encounter unknown hazards in the soils and/or groundwater.

### *Mineral and Energy Resources*

The Sliplining Alternative would not result in impacts related to mineral or energy resources, similar to the proposed project. The project area is not located on lands with known mineral resources or in an area with a locally important mineral resource recovery site. Construction of the alternative and operations activities would not result in the use of energy resources in excess of standard construction and operation practices. Therefore, impacts to mineral and energy resources would be **similar** to the proposed project.

### *Agriculture and Forest Resources*

Similar to the proposed project, the Sliplining Alternative would have no impacts to agriculture and forest resources. The project sites are not designated as farmland by the Farmland Mapping and Monitoring Program; zoned for agricultural uses or subject to a Williamson Act contract; located on lands zoned as forest land or timberland; or in the vicinity of forestry uses. The proposed project would also not directly or indirectly cause the conversion of farmland to nonagricultural use or forest land to nonforest use. Therefore, impacts to agriculture and forest resources would be **similar** to the proposed project.

#### **7.2.4.3 Conclusions for Alternative 2**

Under the Sliplining Alternative, impacts at the Colma and San Bruno North sites would be similar to the proposed project. Many of the potential impacts under the proposed project would be reduced at the South San Francisco, San Bruno South, and Millbrae sites. Although the severity or intensity of impacts would be reduced, mitigation measures similar to those identified for the proposed project would be required for each impact area, and the level of impacts would not be diminished such that potentially significant and unavoidable impacts would become less than significant with mitigation or that significant but mitigable impacts would become less than significant (without mitigation), except for approximately five residences on Courtland Drive at the San Bruno South site, where noise impacts would be reduced from significant and unavoidable with mitigation under the proposed project to less than significant with mitigation under Alternative 2. Overall, the Sliplining Alternative would have reduced impacts as summarized in Table 7-2 on the following page.

Impacts related to biological resources, including impacts from tree removal required at the South San Francisco and Millbrae sites, would be similar to those identified under the proposed project because the project area, including the construction zone and staging areas would be the same as the proposed project. Additionally, impacts related to geology and soils would on the whole be similar to the proposed project; impacts related to soil erosion would be reduced but impacts related to surface fault rupture, ground shaking, ground failure, and landslides would increase under this alternative. However, many other construction-related impacts would be reduced because of differences in the sliplining construction method (compared to the open trench method that would be used for the proposed project). Because substantially less soils would be excavated and subsequently less off-haul of both spoils and construction debris, such as pipe materials, would

**Table 7-2  
Reduction in Impacts – Sliplining Alternative**

Environmental Resource	Reduced Impacts Related To		
	Decreased Amount of Excavation and/or Fewer Truck Trips	Shorter Construction Durations	Location of Sliplining Pits
Land Use and Land Use Planning	X	X	X
Cultural and Paleontological Resources	X		
Transportation and Circulation	X	X	
Noise	X	X	X
Air Quality	X	X	
Greenhouse Gas Emissions	X	X	
Recreation	X	X	
Utilities and Service Systems	X		
Hydrology and Water Quality	X		
Hazards and Hazardous Materials	X		
Sources: Manders, 2012a; PPSU project analysis, URS.			

be required for this alternative, impacts associated with excavation and truck trips would be reduced. Additionally, the slightly shorter construction duration at the South San Francisco and San Bruno South sites would result in reduced duration of impacts at these sites.

The Sliplining Alternative would meet some of the project objectives, but would have a lower seismic reliability than the proposed PPSU project. Generally, impact levels would be the same or less than the proposed project, and in many cases, the intensity or severity of the impact would be reduced compared to the proposed project. However, because the reductions would be limited, no change would result to the overall significance determination for any impact (i.e. to reduce a significant and unavoidable impact to less than significant with mitigation, or to reduce a less than significant with mitigation impact to less than significant without mitigation).

## 7.3 Comparison of Alternatives

### 7.3.1 Comparison of Environmental Impacts

To determine the environmentally superior alternative, both alternatives were evaluated with respect to their ability to avoid or substantially lessen significant environmental effects of the proposed project. Both significant environmental effects that would be caused by each alternative and significant environmental effects that would be caused by the proposed project were considered. Table 7-3 on the following pages outlines the overall impacts of the proposed project

**Table 7-3  
Comparison of the Environmental Impacts of the CEQA Alternatives<sup>1</sup>**

	<b>Proposed Project</b>	<b>Alternative 1 No Project Alternative</b>	<b>Alternative 2 Sliplining Alternative</b>
<b>Description</b>	Seismic upgrades to three SFPUC water transmission pipelines—SAPL2, SAPL3, and SSBPL—at five locations on the San Francisco Peninsula. Construction techniques would be primarily open trench.	No pipeline repair/replacement unless pipeline failure (assumed).	Sliplining of pipeline segments at selected project sites to reduce environmental impacts. Relies on pushing smaller new pipe inside existing pipe; would reduce construction noise, volume of excavation, and truck trips.
<b>Ability to Meet SFPUC's Objectives</b>	Would meet all project objectives.	Would not meet any of the project objectives.	Would meet some of the project objectives, but would have a lower seismic reliability than the proposed PPSU project.
<b>IMPACTS:</b>			
<b>Land Use and Land Use Planning</b>			
Impact LU-1 Temporary impacts on existing character and land use disruptions	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-LU Contribution to cumulative impacts on existing land uses	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Aesthetics</b>			
Impact AE-2 New source of substantial light or glare	LSM	Greater (LSM) <sup>3</sup>	Similar (LSM)
Impact C-AE Contribution to cumulative impacts on scenic vistas, scenic resources, visual character, or light and glare	LS	Greater (SUM)	Similar (LS)
<b>Cultural and Paleontological Resources</b>			
Impact CP-2 Archaeological resources	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact CP-3 Paleontological resources	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact CP-4 Human remains	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-CP Contribution to cumulative impacts on cultural resources	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Transportation and Circulation</b>			
Impact TR-1 Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system	LSM	Greater (SU)	Similar (LSM)



**Table 7-3**  
**Comparison of the Environmental Impacts of the CEQA Alternatives<sup>1</sup>**  
**(Continued)**

	<b>Proposed Project</b>	<b>Alternative 1 No Project Alternative</b>	<b>Alternative 2 Sliplining Alternative</b>
Impact TR-2 Inadequate emergency access	LS	Greater (SU)	Similar (LS)
Impact TR-3 Safety of public roadways for vehicles, bicyclists, and pedestrians	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-TR Contribution to cumulative traffic increases and safety hazards on local and regional roads	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Noise</b>			
Impact NO-1 Temporary increases in daytime noise levels	SUM	Greater (SU)	Reduced (SUM) <sup>2</sup>
Impact NO-2 Nighttime noise levels	SUM	Greater (SU)	Similar (SUM)
Impact NO-3 Local general plan or noise ordinance standards	SUM	Greater (SU)	Similar (SUM)
Impact NO-4 Excessive groundborne vibration	SUM	Greater (SU)	Similar (SUM)
Impact C-NO Contribution to cumulative noise and vibration impacts	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Air Quality</b>			
Impact AQ-1 Violate air quality standards	LSM	Greater (LSM) <sup>3</sup>	Reduced (LSM) <sup>2</sup>
Impact AQ-2 Expose sensitive receptors to substantial pollutant concentrations	LS	Greater (LSM)	Reduced (LS) <sup>2</sup>
Impact AQ-3 Create objectionable odors	LS	Greater (LSM)	Reduced (LS) <sup>2</sup>
Impact C-AQ Contribution to cumulative air quality impacts	LSM	Greater (LSM) <sup>3</sup>	Reduced (LSM) <sup>2</sup>
<b>Recreation</b>			
Impact RE-1 Temporarily degrade existing recreational uses	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-RE Contribution to cumulative recreational impacts	LS	Greater (SU)	Reduced (LS) <sup>2</sup>
<b>Utilities and Service Systems</b>			
Impact UT-1 Disruption of utility operations or accidental damage	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact UT-2 Relocation of regional or local utilities	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact UT-3 Water supply availability	LS	Greater (SU)	Similar (LS)
Impact UT-5: Solid waste	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-UT Contribution to cumulative impacts related to disruption or relocation of utilities	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Biological Resources</b>			
Impact BI-1 Special-status wildlife species	LSM	Greater (SU)	Similar (LSM)
Impact BI-2 Coast live oak woodland, central coast riparian scrub habitat, or other sensitive natural community	LSM	Greater (SU)	Similar (LSM)
Impact BI-3 Jurisdictional waters	LSM	Greater (SU)	Similar (LSM)

**Table 7-3**  
**Comparison of the Environmental Impacts of the CEQA Alternatives<sup>1</sup>**  
**(Continued)**

	<b>Proposed Project</b>	<b>Alternative 1 No Project Alternative</b>	<b>Alternative 2 Sliplining Alternative</b>
Impact BI-4 Local policies or ordinances protecting biological resources, including trees	LSM	Greater (SU)	Similar (LSM)
Impact C-BI Contribution to cumulative impacts on biological resources	LSM	Greater (SU)	Similar (LSM)
<b>Geology and Soils</b>			
Impact GE-1 Soil erosion or the loss of topsoil	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact GE-2 Geologic unit that is unstable or that would become unstable as a result of the project	LS	Greater (SU)	Greater (LS) <sup>3</sup>
Impact GE-3 Expose people or structures to adverse effects involving surface fault rupture, groundshaking, ground failure, or landslides	LS	Greater (SU)	Greater (LS) <sup>3</sup>
Impact C-GE Contribution to cumulative impacts related to geology and soils	LSM	Greater (SU)	Similar (LSM)
<b>Hydrology and Water Quality</b>			
Impact HY-1 Violate water quality standards or waste discharge requirements or degrade water quality	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Impact C-HY Contribution to cumulative impacts on hydrology and water quality	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
<b>Hazards and Hazardous Materials</b>			
Impact HZ-2 Reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	LSM	Similar (LSM)	Similar (LSM)
Impact HZ-5 Interfere with emergency response plan or emergency evacuation plan	LS	Greater (SU)	Similar (LS)
Impact C-HZ Contribution to cumulative impacts related to hazards and hazardous materials	LSM	Greater (SU)	Reduced (LSM) <sup>2</sup>
Source: G&E/GTC Joint Venture, 2011; PPSU project analysis, URS.			
Notes:			
<sup>1</sup> Includes significant impacts of alternatives.			
<sup>2</sup> Although the impact conclusion does not change, the level or intensity of the impact would be reduced under this alternative.			
<sup>3</sup> Although the impact conclusion does not change, the level or intensity of the impact would be greater under this alternative.			
LS = Less-than-Significant impact, no mitigation required			
LSM = Less-than-Significant Impact with Mitigation			
SU = Significant and Unavoidable impact for which feasible mitigation is not available			
SUM = Significant and Unavoidable impact, with implementation of feasible Mitigation			

and the alternatives *after mitigation*, based on implementation of mitigation measures identified to reduce the PPSU project impacts. The table also identifies whether an alternative would have reduced impacts compared to the proposed project with respect to a specific resource (alternative is preferred); whether it would have greater impacts (project is preferred); or whether impacts would be similar (no clear environmental preference is apparent). The proposed project would result in *significant unavoidable impacts* from noise and vibration. The No Project Alternative would have *significant unavoidable impacts* to land use; cultural and paleontological resources; noise and vibration; transportation and circulation; recreation; utilities and service systems; biological resources; geology and soils; and hydrology and water quality. The Sliplining Alternative would have *significant unavoidable impacts* to noise and vibration, similar to the proposed project.

### 7.3.1.1 Alternative 1: No Project Alternative

In the absence of a major earthquake along the San Andreas Fault, the No Project Alternative would avoid the significant unavoidable impacts resulting from construction of the proposed project. However, during a probable seismic event and subsequent pipeline rupture, the No Project Alternative could result in more severe impacts related to disruption of land uses, light and glare, irretrievable loss of cultural resources, construction-related noise (including 24-hour construction), disruption of utilities and services, discharge of chloraminated water due to pipeline rupture, erosion, degradation of water quality and biological riparian habitats, and interference with implementation of emergency response or evacuation plans. Also, emergency repairs would have additional adverse impacts related to the likely infeasibility of implementation of some mitigation that would protect resources due to the emergency nature of repairs. Potential impacts could include reduced waste diversion, resulting in greater amounts of construction-related wastes being disposed of at permitted waste disposal facilities. Depending on the severity of damage from pipeline rupture, the No Project Alternative would likely result in similar impacts to the proposed project related to tree removal, air pollutant emissions, construction truck trips, greenhouse gas emissions, and hazardous materials. Overall, the No Project Alternative would likely result in greater or more severe environmental impacts than the proposed project.

### 7.3.1.2 Alternative 2: Sliplining Alternative

The Sliplining Alternative, which would occur only at the South San Francisco, San Bruno South, and Millbrae sites, would have reduced severity and intensity of impacts, compared to the proposed project and impacts at the Colma and San Bruno North sites would remain similar to the proposed project. Impacts would be reduced due to the decreased amount of soils to be excavated under this alternative construction method and due to the slightly reduced construction duration at the South San Francisco and San Bruno South sites. Because the sliplining method would leave the existing pipes in the ground, construction debris (old pipes) would be reduced as well. Therefore, truck trips would be reduced under this alternative.

Resource areas with reduced impacts due to decreased excavation would include: cultural resources, transportation and circulation, utilities and service systems, geology and soils, hydrology and water quality, and hazards and hazardous materials. Additionally, resources with reduced impacts due to the shorter construction period at the South San Francisco and San Bruno

South sites, fewer truck trips (due to reduced excavation), and location of sliplining excavation pits would include: land use and land use planning, noise, air quality, greenhouse gas emissions, and recreation.

Impacts related to biological resources, including impacts from tree removal, would be similar to those identified under the proposed project because the project area, including the construction zone and staging areas, would be similar to the proposed project. Impacts related to geology and soils would be reduced due to the reduction in excavation but impacts related to surface fault rupture, ground shaking, ground failure, and landslides would increase under this alternative because it would have a lower seismic reliability than the proposed PPSU project.

The Sliplining Alternative would meet some of the project objectives, but would provide a lower seismic reliability than the proposed PPSU project because the welds for the liner pipe are considered to have a lower strength compared to new construction, where both sides of the pipe are accessible for welding (G&E/GTC Joint Venture, 2011). Generally, impacts would be the same as or less than the proposed project, and in many cases, the intensity or severity of the impact would be reduced compared to the proposed project. However, because the reductions would be limited, no change would result to the overall significance determination for any impact (i.e. to reduce a significant and unavoidable impact to less than significant with mitigation, or to reduce a less than significant with mitigation impact to less than significant without mitigation).

### **7.3.2 Environmentally Superior Alternative**

The Sliplining Alternative is the environmentally superior alternative, based on the alternatives analysis above. This alternative would reduce impacts at the South San Francisco, San Bruno South, and Millbrae sites, where significant and unavoidable impacts would occur under the proposed project. This alternative would reduce the duration of impacts at the South San Francisco and San Bruno South sites by approximately 0.5 month. Additionally, it would reduce the intensity and severity of impacts at some sensitive land uses due to the more limited extent of excavation and would reduce impacts related to truck trips due to the reduced amount of off-haul of spoils and construction debris required for the alternative. Under this alternative, the PPSU project as proposed would be implemented at the Colma site and San Bruno North site; therefore, impacts at these two sites would remain as described for the proposed project.

Although this alternative would have significant and unavoidable impacts related to construction noise and vibration levels, these impacts would be less severe than the proposed project. Similar to the proposed project, the Sliplining Alternative would increase ambient noise levels and vibration during construction such that nearby sensitive land uses could be adversely affected and could result in exposure of these sensitive land uses to noise levels in excess of standards established in the local general plan or noise ordinance at the South San Francisco and Millbrae sites. Land uses would be temporarily disrupted due to the location of the staging area at the San Bruno South site, which would restrict access to community recreation facilities, and due to the noise and vibration impacts near sensitive land uses.

Although the Sliplining Alternative would have many less-than-significant impacts with mitigation, similar to the proposed project, some of these impacts would be reduced either due to the reduced amount of excavation required for this alternative or due to the reduced number of

truck trips or shorter construction duration. Resource areas that would have reduced impacts are: land use; cultural and paleontological resources; transportation and circulation; recreation; utilities and service systems; hydrology and water quality; and hazards and hazardous materials. The only significant impacts that would not be reduced under this alternative are impacts to biological resources and geology and soils, which would be similar to the proposed project.

Additionally, impacts to air quality and greenhouse gas emissions, although less than significant, would be reduced under this alternative. Aesthetics, also less than significant, would be similar to the proposed project.

Therefore, for the reasons described above, the Sliplining Alternative would have less overall environmental effects when taken as a whole and would be considered the environmentally superior alternative.

## **7.4 Alternatives Identification and Screening**

Prior to the development of the PPSU project, the SFPUC conducted several background studies that identified the seismic hazards affecting SAPL2, SAPL3, and SSBPL in the Serra Fault crossing zones in San Bruno and Millbrae and the liquefaction zones in the Colma Valley (Colma and South San Francisco areas). An Alternatives Analysis Report (AAR) (G&E/GTC, 2011) summarized the conditions assessment performed for the pipelines and identified vulnerable pipeline sections and viable alternatives for analysis. Seismic hazards used to assess the vulnerability of pipeline sections included fault crossings, landslides, ground shaking and liquefaction. The report developed engineering options to upgrade and/or replace the most vulnerable sections of the pipeline. Several design alternatives to the proposed project were considered in the AAR. A summary of these methods is described below and shown in Table 7-4 on the following page.

As summarized in Section 7.5, Alternatives Considered but Rejected from Further Analysis, most of the design options developed by the SFPUC would not meet the seismic reliability goals of the proposed project or would result in constructability issues and greater environmental impacts than the proposed project, and therefore were not evaluated in detail in Section 7.2 as CEQA alternatives to the proposed project. Thus, these alternatives were rejected from further consideration. The design alternative selected for further analysis represents the alternative that would meet the project objectives and would have the fewest environmental impacts. During the scoping period for this EIR, the San Francisco Planning Department did not receive any comments or suggestions regarding alternatives to the project.

## **7.5 Alternatives Considered but Rejected from Further Consideration**

Six alternatives were considered but were rejected from further consideration either because they would not meet the project goals or would not reduce environmental impacts compared to the

**Table 7-4  
Alternatives Considered But Rejected from Further Consideration**

Potential Alternative Identified	Ability to Achieve Project Goals	Reason(s) for Rejection
Steel Pipe Inside a Corrugated Metal Pipe (San Bruno South and Millbrae sites)	Yes	<ul style="list-style-type: none"> <li>• Similar or greater environmental impacts to the proposed project</li> <li>• Increased cost compared to the proposed project</li> </ul>
Pipe with Pre-formed Bulge Zone Inside a Corrugated Metal Pipe (San Bruno South and Millbrae sites)	Yes	<ul style="list-style-type: none"> <li>• Similar or greater environmental impacts to the proposed project</li> <li>• Increased cost compared to the proposed project</li> </ul>
Fiber-wrap Pipe Joints and Encase Pipe Bends (Millbrae site)	No	<ul style="list-style-type: none"> <li>• Would not meet project goals</li> </ul>
Isolation Valves (Millbrae site)	No	<ul style="list-style-type: none"> <li>• Would not meet project goals</li> </ul>
Welded Steel Pipe (San Bruno North and San Bruno South sites)	Yes	<ul style="list-style-type: none"> <li>• Similar or greater environmental impacts to the proposed project</li> <li>• Substantially increased cost compared to the proposed project</li> </ul>
Relocation (all project sites)	Yes	<ul style="list-style-type: none"> <li>• Substantially greater environmental impacts than the proposed project</li> <li>• Significant constraints: land availability; new rights-of-way; would require approximately 23 new wholesale customer connections</li> <li>• Substantially increased cost compared to the proposed project</li> </ul>
Sources: G&E/GTC Joint Venture, 2011; Roche, 2011; PPSU project analysis, URS.		

proposed project, as described below and shown in Table 7-4. Five of these alternatives are design options that were considered in the AAR and one alternative is a location variation option. The ability of each alternative to achieve the project goals is summarized below.

### **7.5.1 Steel Pipe Inside a Corrugated Metal Pipe Alternative (San Bruno South and Millbrae Sites)**

The installation of a thick-walled steel pipe inside a corrugated metal pipe was identified in the AAR as a potential construction method to address earthquake-related fault offsets and landslides where the pipeline crosses the Serra Fault. This alternative was focused on the San Bruno South site (SAPL2 and SAPL3) and the Millbrae site (SSBPL). This alternative would involve placing the existing pipe inside a larger diameter corrugated metal pipe. Under this

scenario SAPL2, SAPL3, and SSBPL would remain with their current dimensions (54 inches, 66 inches and 60 inches in diameter, respectively) and they would be placed in a 72- to 84-inch-diameter corrugated metal pipe. The benefit of this approach is that it allows the corrugated metal pipe to act as a sleeve, which allows the pipe to move — in a perpendicular direction to the pipe in the space created by the two different pipe diameters — when subject to fault offset. The AAR determined that this alternative would provide an equivalent seismic reliability to the proposed project.

This alternative would cost between 25 and 30 percent more compared to the proposed project (Parsons, 2011; Roche, 2012). The construction cost would be higher because it would involve the purchase of more materials (i.e., corrugated metal pipe in addition to steel pipe would need to be purchased). Additionally, more labor would be involved in slipping the steel pipe into the corrugated metal pipe sleeve compared to normal excavation and backfill for a steel pipe.

This alternative would have greater environmental impacts than the proposed project as it would require transport of more materials (more truck trips). Additionally, it would result in similar noise impacts compared to the proposed project because it would require a similar amount of excavation of soils (along the entire length of the pipeline to be replaced). Because the steel pipe inside a corrugated metal pipe alternative would not reduce significant impacts and would have increased costs, this alternative was rejected from further analysis.

## **7.5.2 Pipe with Pre-Formed Bulge Zone inside a Corrugated Metal Pipe Alternative (San Bruno South and Millbrae Sites)**

The installation of a pre-formed bulge zone inside a corrugated metal pipe was identified by the AAR as a potential construction method to address earthquake-related fault offsets and landslides where the pipeline crosses the Serra Fault, at the San Bruno South site (SAPL2 and SAPL3) and the Millbrae site (SSBPL). This alternative would involve using a welded steel pipe that has pre-formed bulge zones or bellows where the pipe transitions from its typical diameter to a larger diameter zone, which acts as an expansion/movement sleeve allowing the pipe to compress into the bellow. This assembly would then be put into a corrugated metal pipe that would allow movement of the entire pipeline. The AAR determined that this alternative would provide approximately equivalent seismic reliability compared to the proposed project.

The estimated costs for this alternative would be between 33 and 35 percent more compared to the proposed project (Parsons, 2011; Roche, 2012). The construction cost would be higher because it would involve purchasing a custom steel pipe which has pre-formed bulge zones built in at the pipe manufacturer. Additionally, more materials (i.e., corrugated metal pipe in addition to custom steel pipe) would need to be purchased. Also, more labor would be involved in slipping the steel pipe into the corrugated metal pipe sleeve, in comparison to normal excavation and backfill for a steel pipe.

The pre-formed bulge zone inside a corrugated metal pipe alternative would have greater environmental impacts than the proposed project as it would require transport of more materials (more truck trips), thereby resulting in greater traffic and air quality impacts. Additionally, it would result in similar noise impacts compared to the proposed project because it would require a similar amount of excavation of soils (along the entire length of the pipeline to be replaced), and

would impact the same sensitive receptors as the proposed project. It would therefore result in a similar disruption of land uses from construction noise. Because this alternative would not reduce significant impacts and would have increased costs, this alternative was rejected from further analysis.

### **7.5.3 Fiber-Wrap Pipe Joints and Encase Pipe Bends Alternative (Millbrae Site)**

Fiber-wrapping the pipe joints and encasement of pipe bends in reinforced concrete was identified by the AAR as a potential alternative at the Millbrae site (SSBPL). This alternative would be anticipated to accommodate an offset of up to 10 inches of fault displacement. This alternative would involve wrapping the existing joints of the pipe in Fiber Reinforced Polymer wrap using a coating system applied in layers. The Fiber Reinforced Polymer wrap would increase the hoop strength capacity of the pipe, giving it more strength in compression when subjected to fault offset. Additionally, the pipe bends would be encased in concrete. The benefit of this alternative is that it would require only the joints and bends of the pipeline to be excavated rather than the entire pipeline. However, because the AAR found it probable that the alternative would not allow the pipe to withstand the maximum fault offset of 24 inches anticipated at this site, this alternative would not meet the project's basic objectives; therefore, this alternative was eliminated from further consideration.

### **7.5.4 Isolation Valves Alternative (Millbrae Site)**

The AAR identified the installation of an isolation valve to protect the customer turnout and provide water in the event of pipeline failure at the fault crossing at the Millbrae site (SSBPL). This alternative would involve installing a 60-inch-diameter isolation valve upstream of the fault zone. The valve would be below grade, located in a concrete valve vault below the intersection of Banbury Lane and Helen Drive in Millbrae. The valve would be closed in the event of a leak at the fault and would protect the supply to those customers upstream of Banbury Lane (high zone of Millbrae), whose water is supplied primarily by the SSBPL line. This alternative would allow for continued delivery of water to the City of Millbrae from the Helen Drive turnout, while allowing the shutdown of the SSBPL pipeline in the event of a pipeline failure at the Serra Fault crossing. However, because this alternative would not allow for the flow of water to the Capuchino Value Lot after an earthquake event, it would not achieve the project's reliability goals (see Section 7.2.1 above). Therefore, this alternative was eliminated from further consideration.

### **7.5.5 Welded Steel Pipe Alternative (San Bruno North and San Bruno South Sites)**

The installation of welded steel pipe was identified in the AAR as an alternative to the proposed project. At the San Bruno South site (SAPL2), the AAR determined that installation of an approximately 2,000-foot-long welded steel pipe segment would provide high reliability after an earthquake event. However, the AAR also determined that installation of a shorter length of pipe



(i.e., the proposed project, which proposed to replace approximately 1,108 feet of existing pipe at this site) would achieve the same reliability rating.

At the San Bruno North site, the AAR examined an alternative to replace the segment of SAPL2 with 140 feet of welded steel pipe where it extends through the tunnel. However, the AAR determined that this alternative would cost 185 percent more than the proposed project (Parsons, 2011; Roche, 2012) and was not required to meet the reliability goals due to ground shaking at the site.

Because the welded steel pipe alternative would require the replacement of a longer length of pipeline, it would have greater environmental impacts than the proposed project. It would require transport of more materials (more truck trips) and a greater amount of excavation of soils. Because this alternative would have increased environmental impacts and would have increased costs, this alternative was rejected from further analysis.

### **7.5.6 Relocation Alternative (All Project Sites)**

The relocation of the existing pipelines to avoid crossing faults on the Peninsula was also considered as an alternative to address the hazards of earthquake fault offset (Roche, 2011). Two faults are known to extend along the Peninsula in the project vicinity, the San Andreas Fault and the Serra Fault. The San Andreas Fault extends north-westerly along Highway 35 to Mussel Rock Park on the Pacific coast between Pacifica and San Francisco. The Serra Fault, although generally parallel to Interstate 280, is not adjacent to the highway along the entire fault and is located east of the highway in several locations. The relocated SAPL2, SAPL3, and SSBPL would be constructed generally parallel to these faults and would extend between the two faults in order to avoid crossing the faults. The relocated SAPL2 and SAPL3 would extend approximately 10 miles and the relocated SSBPL would extend approximately 7.8 miles from the Harry Tracy Water Treatment Plant to the Sunset Reservoir.

Because this alternative would be located outside of the existing SFPUC right-of-way, it would require the acquisition of new land and negotiation of new rights-of-way and would result in numerous environmental impacts associated with constructing new pipelines for approximately 17.8 miles. The design of the alignments under this alternative would be challenging due to the presence of existing development along this alignment and the need to cross major roadways. In addition, new wholesale customer connections would need to be installed along the new alignments: SAPL2 and SAPL3 would require approximately 16 connections and SSBPL would require approximately 7 connections. Construction of these connections would entail similar challenges to those described for the relocation of the pipelines. Therefore, because the relocation alternative would have substantially increased environmental impacts, substantially increased costs, and real estate and other logistical constraints, this alternative was rejected from further analysis.

## 7.6 References

G&E/GTC Joint Venture, 2011. CUW 36702 Peninsula Pipeline Seismic Upgrade Project, Final Alternatives Analysis Report. September.

GTC (Geotechnical Consultants, Inc.), 2010. Draft Geotechnical Interpretive Report, Peninsula Pipelines Seismic Upgrade, CS 101, SF10016B, December.

GTC (Geotechnical Consultants, Inc.), 2011. Final Geotechnical Data Report, Peninsula Pipelines Seismic Upgrade, CS 101, SF10016B, March.

Manders, Heather, 2012a. Personal e-mail communication between Heather Manders, PPSU Project Engineer, SFPUC, and Hannah Young, URS. June 28.

Manders, Heather, 2012b. Personal e-mail communication between Heather Manders, PPSU Project Engineer, SFPUC and Hannah Young, URS. July 18.

Parsons, 2011. CUW36702 Peninsula Pipeline Seismic Upgrade Project, Conceptual Engineering Report, Estimate Validation, prepared for SFPUC. December 5.

Roche, Anna, 2011. Personal e-mail communication between Anna Roche, PPSU Environmental Project Manager, SFPUC, and Hannah Young, URS. November 8.

Roche, Anna, 2012. Personal e-mail communication between Anna Roche, PPSU Environmental Project Manager, SFPUC, and Hannah Young, URS. June 19.

SFPUC (San Francisco Public Utilities Commission), 2007. Right-of-Way Integrated Vegetation Management Policy. February.

# CHAPTER 8

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