San Mateo State Route 1 Safety Barrier Project

San Mateo County, California
District 04 SM-1 (36.49/38.31)
EA: 04 0Q610/ Project ID 0418000123

Initial Study with Proposed Mitigated Negative Declaration

Prepared by the
California Department of Transportation

December 2021

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General Information about this Document

What's in this document:

The California Department of Transportation (Caltrans) has prepared this Initial Study (IS) with Proposed Mitigated Negative Declaration (MND) which examines the potential environmental impacts of replacing existing safety barriers and installing new safety barriers along a segment of State Route (SR) 1 in San Mateo County, California (project). Caltrans is the lead agency under the California Environmental Quality Act (CEQA). The document tells you why the proposed project is being proposed, how the existing environment could be affected by the project, the potential impacts of each proposed activity, and the proposed avoidance and minimization measures.

What you should do:

- Please read this document.
- The document is available to download at the Caltrans environmental document website (https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs).
- We would like to hear what you think. Caltrans will be holding an online public meeting on Thursday, January 27, 2022, from 5:30 to 7:00 p.m. to discuss the project and answer questions. Information about the public meeting, including how to log on to the meeting and a project specific website link will be provided at https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs. If you have any comments about the proposed project, please attend the online public meeting. Send comments by mail or email to:
    - Caltrans District 4
      Office of Environmental Analysis
      ATTN: Nina Hofmarcher
      P.O. Box 23660, **MS: 8B**
      Oakland, CA 94623-0660
    - Nina.Hofmarcher@dot.ca.gov (Preferred method of contact during COVID-19)
- Be sure to send comments by the deadline: February 11 2022.

What happens next:

Per CEQA Section 15073, Caltrans will circulate the IS/MND for review for at least 30 days. During the 30-day public review period, the general public and responsible and trustee agencies can submit comments on this document to Caltrans. Caltrans will consider the comments and will respond to the comments after the 35-day public review period. After comments are received from the public and reviewing agencies, Caltrans may (1) grant environmental approval to the project, (2) conduct additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, Caltrans could design and construct all or part of the project.

Alternative Formats:

For individuals with sensory disabilities, please call or write to the California Department of Transportation, District 4, Attn: Nina Hofmarcher, Associate Environmental Planner, P.O. Box 23660 MS 8B, Oakland, CA 94623-0660; (510) 926-0702 (Voice), or use the **California Relay Service 1 (800) 735 2929 (TTY), 1 (800) 735 2929 (Voice) or 711**.

An Americans with Disabilities Act (ADA)-compliant electronic copy of this document is available to download at the Caltrans environmental document website (https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs).

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04-SM-1-PM 36.49/38.31
EA No 04-0Q610
Project No. EFIS 0418000123

San Mateo State Route 1 Safety Barrier Project
(Post Miles 04 SM-1-36.49 /38.31)

INITIAL STUDY WITH PROPOSED MITIGATED NEGATIVE DECLARATION

Submitted Pursuant to: Division 13, California Public Resources Code

THE STATE OF CALIFORNIA
Department of Transportation

Responsible Agencies:
California Transportation Commission
San Mateo County Local Coastal Program
California Coastal Commission
United States Fish and Wildlife Service
California Department of Fish and Wildlife

Lindsay Vivian
Office Chief, Environmental Analysis
California Department of Transportation
CEQA Lead Agency

12/23/2021
Date of Approval

The following individual may be contacted for more information about this document:

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Proposed Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes a safety barrier project (project) along State Route (SR) 1, from Post Mile (PM) 36.49 to PM 38.31 north of the community of Montara in San Mateo County, California.

Determination

This proposed Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that it is Caltrans' intent to adopt an MND for this project. This does not mean that Caltrans' decision regarding the project is final. This MND is subject to change based on comments received by interested agencies and the public.

Caltrans has prepared an Initial Study for this project, and pending public review, has determined from this study that the project would not have a significant effect on the environment for the following reasons:

The project would have no effect on agriculture and forestry, air quality, cultural resources, mineral resources, noise, population and housing, public services, recreation, tribal cultural resources, and utilities and service systems.

With standard Caltrans conservation measures and project-specific avoidance and minimization measures and mitigation measures, the project would have less-than-significant effects to aesthetics and biological resources, including the California red-legged frog, San Francisco garter snake, and the American badger. The project would have a less than significant impact on aesthetics, biological resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, transportation, and wildfire.

Melanie Brent Deputy District Director Environmental Planning and Engineering California Department of Transportation	Date

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Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) is the California Environmental Quality Act (CEQA) lead agency and sponsor for the proposed San Mateo (SM) 1 Safety Barrier Project (project) and has prepared this Initial Study with Proposed Mitigated Negative Declaration (IS/MND).

1.1.1 CEQA Lead Agency Status

The project is subject to state environmental review requirements. Project documentation has been prepared in compliance with the CEQA. Caltrans is the lead agency under CEQA and sponsor for the project and has prepared this IS/MND for the project.

1.1.2 Project Location

The project is along State Route (SR) 1 in San Mateo County, from Post Mile (PM) 36.49 to PM 38.31 (from 0.09 mile south of 2nd Street in the community of Montara to 0.38 mile north of the Gray Whale Cove State Beach parking lot) (Figure 1-1).[1]

Along the San Mateo County coastline from Pacifica to Santa Cruz, SR 1 is known as the “Cabrillo Highway” and operates as a conventional highway. The route provides primary access to several communities as well as access to beaches, parks, and other attractions along the coast, making it a popular route for tourists. Within the project limits, SR 1 is an undivided two-lane conventional highway that runs north-south with 11- to 12-foot lanes and 1- to 4-foot typical outside shoulders. New barriers would be installed at 11 locations along SR 1 within the project limits.

[1] To identify specific work locations, Caltrans uses its postmile system. A postmile is the way that a specific location on a state or federal route is specified within the linear reference system. The postmile value measures the distance, in miles, from the start of the route, or from the point at which the route enters the county. Thus, post mile values reset to zero each time the route crosses a county border. Sometimes, postmiles include a prefix or suffix code, or qualifiers, to distinguish two postmile specifications, representing two distinct geographic locations that differ in their postmile listing only in whether a single qualifier is present. Information about Caltrans postmiles and a mapping tool can be viewed at https://postmile.dot.ca.gov/PMQT/PostmileQueryTool.html.

Figure 1-1 Project Location

1.1.3 Local Planning

The project is within the permitting jurisdiction of both San Mateo County Local Coastal Program and the California Coastal Commission (CCC). Development in the Coastal Zone requires either a Coastal Development Permit (CDP) or an exemption from CDP requirements. For a permit to be issued, the development must comply with the policies of the LCP and CCC.

1.2 Purpose and Need

The purpose of the project is to enhance traffic safety by reducing run-off-the-road accidents from errant vehicles within the project limits.

The project is needed because the Caltrans Office of Traffic Safety reported that from October 10, 2017, through September 30, 2020 (the most recent 3-year data reporting period), 33 run-off-the-road accidents (including 24 injuries and one fatality) occurred on this segment of SR 1. The accident rates within the project limits were more than 1.5 times greater than the statewide average accident rates for similar facilities. Run-off-the-road accidents are more common within the project limits for three reasons: edge of pavement condition, steep drop offs, and lack of permanent barriers. Some portions of the roadway have little to no shoulder backing (a slight slope) along the edge of the pavement (Caltrans 2006). These sections of roadway instead have a non-tapered edge, which can be more difficult to recover from if vehicle tires come into contact with the edge of the pavement. In addition, many places along the southbound side of SM 1 within the project limits have a steep drop off to the ocean below the roadway. Lastly, some sections of the roadway adjacent to the steep drop offs are missing permanent barriers. If these issues are not addressed, there is a risk that vehicles may continue to drive off the highway, causing severe injury or death to motorists and passengers as well as Caltrans maintenance workers.

1.3 Project Description

The project would be constructed along SR 1 in San Mateo County, from PM 36.49 to PM 38.31 (from 0.09 mile south of 2nd Street in the community of Montara to 0.38 mile north of the Gray Whale Cove State Beach parking lot). The proposed scope of work includes replacing all existing nonstandard existing metal-beam guardrail (MBGR) with standard Midwest Guardrail System (MGS); replacing temporary K-rail with safety barriers; installing retaining walls and safety barriers at multiple locations; and

upgrading existing regulatory (white color) and warning (yellow color) signs to current standards.

Three different barrier types are under consideration for the build alternatives: MGS, Concrete Barrier (CB) Type 85, and Type ST-75. All proposed safety barriers would be "see-through" barriers. Examples of these three barrier types are shown in Figure 1-2. New safety barrier approach and departure ends would require new end treatments unless they are buried into existing embankments.

Table 1-1 describes the locations where existing barriers would be removed and where new barriers would be constructed as part of this Build Alternative. Figure 1-3 shows the locations of each barrier and Figure 1-4 shows the types of barriers proposed at each location.

Table 1-1 Proposed New Safety Barrier Locations for Build Alternative 1

Location Number	Direction: Northbound/ Southbound (NB/SB)	Remove Existing MBGR; Parapet Wall; or K-Rail (Linear Feet)	Proposed Barrier Type and Length (Feet)
1	SB	MBGR (139)	MGS (140)
2	NB	MBGR (135)	MGS (220)
3	SB	Parapet Wall (93)	CB Type 85 or ST-75 (110)
4	SB	K-Rail (59)	MGS (60)
5	SB	MBGR (147)	MGS (280)
6	SB	106 MBGR (158) Parapet Wall (88) K-Rail (113)	MGS or (130) CB Type 85 or ST-75 (87)
7	SB	125 MBGR (123) K-Rail (146)	MGS (279)
8	SB	MBGR (80)	MGS (730)
9	SB	MBGR (409)	MGS (409)
10	SB	N/A	MGS (520)
11	NB	N/A	MGS (590)

CB = concrete barrier
K-rail = temporary safety barrier
MBGR = metal beam guardrail
MGS = Midwest guardrail system
N/A = not applicable
NB = northbound
SB = southbound
ST = define

Simulation of MGS at Locations 10 and 11

Simulation of CB Type 85 at Location 3

Figure 1-2 Barrier Types Under Consideration (Page 1 of 2)

Simulation of Type ST-75 at Location 6

Figure 1-2 Barrier Types Under Consideration (Page 2 of 2)

Figure 1-3 Barrier Locations (Page 1 of 4)

Figure 1-3 Barrier Locations (Page 2 of 4)

Figure 1-3 Barrier Locations (Page 3 of 4)

Figure 1-3 Barrier Locations (Page 4 of 4)

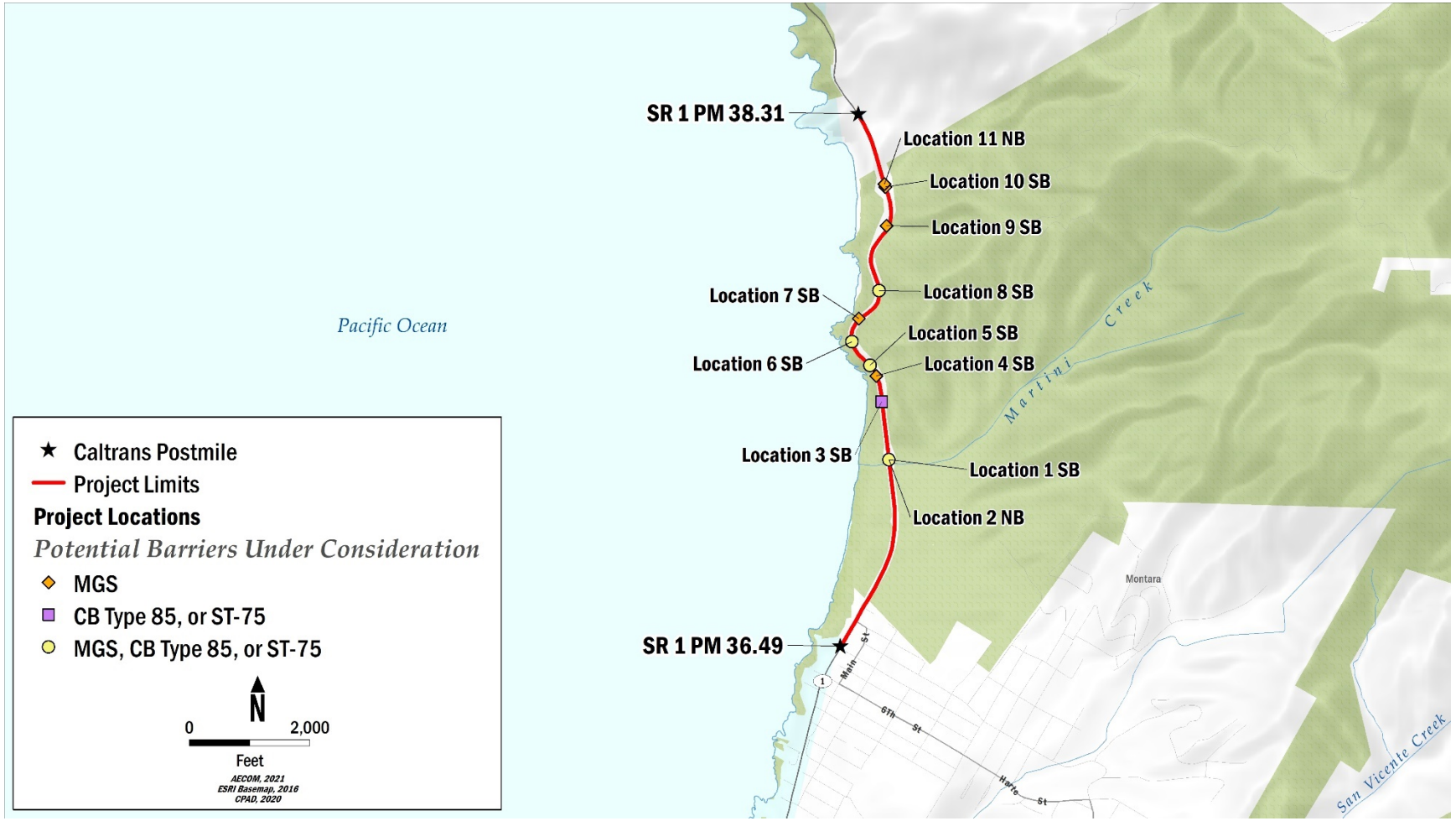

Figure 1-4 Barrier Types Under Consideration by Location

1.4 Build Alternatives – Proposed Project

This section describes project features common to both build alternatives as well as the unique features of Build Alternative 1 and Build Alternative 2.

1.4.1 Common Design Features of the Build Alternatives

The following features would be included in the project with the selection of either Build Alternative:

- All existing nonstandard MBGR would be replaced with standard MGS or safety barrier.
- Existing temporary safety barrier (K-rail) would be replaced with safety barriers at three locations.
- Retaining walls and safety barriers would be installed at multiple locations.
- Existing regulatory (white color) and warning (yellow color) signs would be upgraded to current standards.

1.4.2 Build Alternative 1

Under Build Alternative 1, all existing nonstandard MBGR would be replaced with new MGS and new safety barriers (either CB Type 85 [see-through] or California ST-75 [see-through]) would be installed with no shoulder widening.

- Existing MBGR and K-rail would be replaced with MGS.
- New safety barriers would be installed at locations that currently do not have safety barriers.
- The maximum foundation dimensions for the new safety barriers would be 3 feet deep by 3 feet, 2 inches wide.
- A minimum 3-foot horizontal clearance from the outside face of the safety barrier to the shoulder backing hinge point would be provided.
- Existing parapet walls would be removed to a depth of 1 foot, 8 inches below the existing edge of shoulder elevation. The top of the existing wall would be replaced with the proposed safety barrier.
- The existing substandard shoulder width would stay approximately the same.

1.4.3 Build Alternative 2

Under Build Alternative 2, all existing nonstandard MBGR would be replaced with new MGS, and new safety barriers (either CB Type 85 [see-through] or California ST-75 [see-through]) would be installed. In addition, the existing shoulder would be widened to a minimum of 5 feet in some locations to meet the standard horizontal clearances from the inside face of the new safety barrier to the existing edge of the traveled way (i.e. pavement).

Where necessary, existing parapet walls would be removed to a depth of 1 foot 8 inches below the existing edge of shoulder elevation.

To accommodate shoulder widening, soldier pile retaining walls would be constructed at some locations. They would range from 5 to 20 feet high. The solider pile walls would require cast-in-drilled-hole (CIDH) piles, which would be drilled to a depth of 15 to 40 feet with timber lagging connecting the piles. On top of the soldier pile walls, a 1-foot-8- inch-deep by a maximum 10-foot-wide concrete slab would be constructed. An example of a soldier pile retaining wall from another Caltrans project is shown in Figure 1-5.

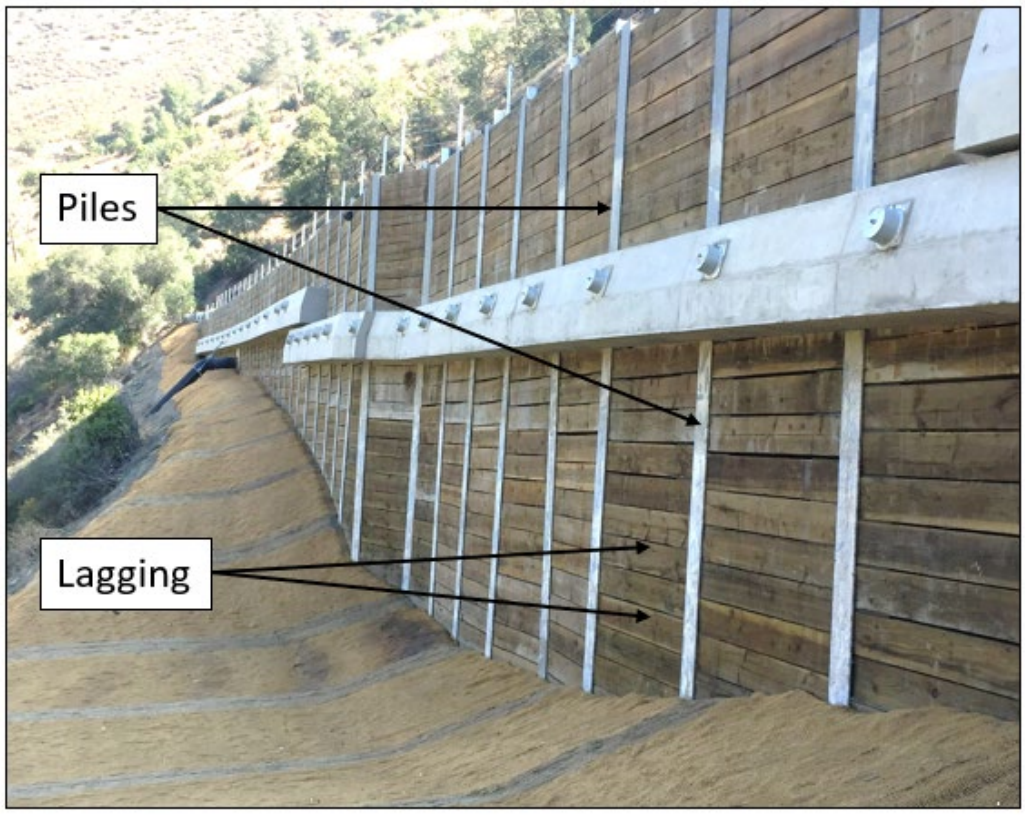

Figure 1-5 Example Soldier Pile Retaining Wall

Table 1-2 describes the locations where existing barriers would be removed and where new barriers would be constructed as part of this Build Alternative.

Table 1-2 Proposed New Safety Barrier Locations Alternative 2

Location Number	Direction: Northbound/ Southbound (NB/SB)	Remove Existing MBGR; Parapet Wall; or K-Rail (Linear Feet)	Proposed Barrier Type and Length (Feet)	Proposed Shoulder Widening (Feet) CB Type 85 or ST-75 Only	Proposed Length of New Retaining Wall (Feet)* CB Type 85 or ST-75 Only
1	SB	MBGR (139)	MGS (150)	N/A	N/A
2	NB	MBGR (135)	CB Type 85 or ST-75 or (170) MGS (50)	1 to 2	170
3	SB	Parapet Wall (93)	CB Type 85 or ST-75 (100) MGS (50)	2 to 3	100
4	SB	K-rail (59)	MGS (109)	N/A	N/A
5	SB	MBGR (147)	MGS (100) or CB Type 85 or ST-75 (100)	2 to 3	100
6	SB	106 MBGR (158) Parapet Wall (88) K-rail (113)	MGS or (50) or CB Type 85 or ST-75 (293)	0 to 3	293
7	SB	125 MBGR (123) K-rail (146)	MGS (269)	2 to 3	N/A
8	SB	MBGR (80)	MGS (630) or CB Type 85 or ST-75 (100)	2 to 3	100
9	SB	MBGR (409)	MGS (409)	N/A	N/A
10	SB	N/A	MGS (520)	3 to 5	N/A
11	NB	N/A	MGS (590)	3 to 4	N/A

* The actual length and the type of proposed retaining walls would be determined during detailed design, following project approval.

CB = concrete barrier
K-rail = temporary safety barrier
MBGR = metal beam guardrail
MGS = Midwest guardrail system
N/A = not applicable
NB = northbound
SB = southbound
ST = define

1.4.4 No Build Alternative

Under the No Build Alternative, the existing barriers would remain unchanged. The No Build Alternative would not address the purpose and need of the project. If no action is taken, there would be continued risk that vehicles may drive off the highway, causing severe injury or death to the motorists/passengers or maintenance workers.

1.5 Right-of-Way Requirements

The project would occur completely within existing Caltrans right-of-way. No temporary easements or permanent acquisitions would be needed to construct the project.

1.6 Construction Methodology, Schedule, and Equipment

The details described in this section represent the most likely procedure for the construction of the project. Construction procedures would continue to be refined during detailed design in coordination with regulatory agencies, if required. Although some details of project construction would be left to the discretion of the contractor who is awarded the project, every effort has been made to articulate project details with the potential to affect the environment.

Due to existing limited roadway and shoulder widths, the existing use of temporary K-rail, and the presence of overhead utility lines, there may be limitations on the types of equipment and vehicles that can be used during construction. Although staging areas are anticipated, construction work would also be along the outside shoulders. Construction crews would access the construction sites from the existing roadway. During construction of the project, the lane adjacent to the work area would need to be closed; this would require one-way reverse traffic control during working hours, with temporary K-rail to protect the work area. Existing pullouts would most likely be needed to stockpile construction material and for use as construction staging area. These plans will be finalized during the detailed design phase.

1.6.1 Staged Construction and Traffic Management

Access to construction locations would be from shoulders and in the travel lanes using one-way reverse traffic control. At the beginning of each stage, traffic on the highway would be shifted either west or east away from the work area. Then K-rail would be installed or repositioned to provide protection for construction workers from active traffic. In areas with steep slopes, a temporary containment platform may be required as fall-protection for workers as well as containment for debris. The containment platform would prevent construction debris from falling outside the construction area. Existing

MBGR would be removed with hand tools. The pressure-treated post would be pulled out using a 10-ton truck with mounted auger. The contractor would then drill and install the MGS posts using a 10-ton truck with mounted auger. Examples of barrier installations from other projects are depicted in Figure 1-6.

Figure 1-6 Examples of Barrier Installations (Page 1 of 2)

Figure 1-6 Examples of Barrier Installations (Page 2 of 2)

1.6.2 Schedule

Depending on the alternative selected, the construction schedule is anticipated to take 200 working days (14 months), from July 2024 through August 2025. Work will be conducted between June 1 and October 15 to avoid the times when California red-legged frog (*Rana draytonii*) and San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) are most active. Work may be conducted as early as April 15 but will be determined in consultation with U.S. Fish and Wildlife Service (USFWS). The construction schedule may be shifted to stay within the work window restrictions. It is anticipated that the implementation of Alternative 1 would require one construction season and the implementation of Alternative 2 would require two construction seasons.

1.6.3 Bicycle and Pedestrian Access Options

Currently, pedestrian access is limited within the project limits. During construction, access to the roadway for cyclists would be maintained. Appropriate signage would be placed at the ends of the project limits to share the road. Cyclists would be able to share the road with normal traffic. Because the shoulders would not be available to the cyclists, proper temporary signs would be installed.

After construction, bicycle access would be returned to its existing condition.

1.6.4 Equipment

Due to existing limited roadway and shoulder widths and the use of K-rail, as well as overhead utility lines, there may be limitations on types of equipment and vehicles that can be used. Typical construction equipment potentially used during construction of the project is listed below:

- Rock drill
- Paver
- Scraper
- Jackhammer
- Concrete mixer truck
- Pneumatic tools
- Chain saw
- Roller
- Tractor
- Concrete pump truck
- Generator
- Compactor (ground)
- Compressor (air)
- Backhoe
- Vibratory concrete mixer
- Pumps
- Truck-mounted drill/drill rig truck
- Front-end loader
- Excavator
- Mini-excavator
- Mini-loader
- Dump truck
- Water truck

Construction equipment and materials would be stored in opened areas within the project limits that would be identified by Caltrans maintenance and right-of-way staff during the detailed design phase.

1.7 Project Funding

This project is funded by the State Highway Operation and Protection Program (SHOPP) under 201.010 “safety improvements” for the 2023/2024 fiscal year.

1.8 Project Features

The project contains several standardized project components that are employed on most, if not all, of Caltrans projects and were not developed in response to any specific potential environmental impact resulting from the project. These components are referenced as project features in this chapter as they pertain to different environmental resources. Project features are separated out from avoidance and minimization measures (AMMs), which directly relate to the impacts resulting from the proposed project. AMMs and other measures are discussed separately within each environmental section.

Table 1-3 lists the features of the project that would be implemented by Caltrans to reduce or avoid potential impacts to the human and natural environment.

Table 1-3 Project Feature Summary

Resource Area	Project Feature Reference	Project Feature
Aesthetics/ Visual	Feature AES-1	**Construction Work Areas.** During construction operations, unsightly material and equipment in staging areas shall be placed where they are less visible and/or covered where possible. Construction activities shall limit all construction lighting to within the area of work and avoid light trespass in residential areas through directional lighting, shielding, and other measures as needed.
Air Quality	Feature AQ-1	**Control Measures for Construction Emissions of Fugitive Dust.** Dust control measures would be implemented to minimize airborne dust and soil particles generated from graded areas. For disturbed soil areas, the use of an organic tackifier to control dust emissions would be included in the construction contract. Watering guidelines would be established by the contractor and approved by the Caltrans resident engineer. Any material stockpiles would be watered, sprayed with tackifier, or covered to minimize dust production and wind erosion.
Air Quality	Feature AQ-2	**Air Pollution Control.** Caltrans Standard Specifications Section 14-9.02, Air Pollution Control, requires contractors to follow all air pollution control rules, regulations, ordinances, and statutes.
Biological Resources	Feature BIO-1	**Worker Environmental Training:** Construction personnel will attend a mandatory environmental education program delivered by a qualified Caltrans biologist prior to taking part in site construction. The program will focus on the conservation measures that are relevant to an employee's personal responsibilities and will include an explanation as how to best avoid take of California red-legged frog. and San Francisco garter snake. At a minimum, the training will include a description of species; how they might be encountered within the project area; their status and protection. A fact sheet conveying this information will be prepared and distributed to all construction and project personnel. Distributed materials will include cards with distinctive photographs of the California red-legged frog and San Francisco garter snake, compliance reminders, and relevant contact information. Documentation of the training, including sign-in sheets, will be kept on file and made available to regulatory agencies upon request.
Biological Resources	Feature BIO-2	**Proper Use of Erosion Control Devices.** To avoid entanglement or injury of susceptible, protected biological resources, erosion control materials that use plastic or synthetic monofilament netting will not be used during the project's construction.

Resource Area	Project Feature Reference	Project Feature
Biological Resources	Feature BIO-3	**Bird Protection Measures.** To avoid take of migratory birds during the bird nesting season (February 1 to September 30): a qualified biologist(s) would conduct preconstruction nesting bird surveys no more than three days prior to construction. If an active nest is discovered, the biologists would establish an appropriate exclusion buffer around the nest. The area within the buffer would be avoided until the young are no longer dependent on the adults or the nest is no longer active. If a nesting special-status bird species is discovered, an agency approved biologist would notify the USFWS and/or California Department of Fish and Wildlife (CDFW) for further guidance. Partially constructed and inactive nests would be removed to prevent occupation.
Biological Resources	Feature BIO-4	**Night Lighting.** Artificial lighting during nighttime hours will be minimized to the maximum extent practicable. Lighting must be directed to illuminate the immediate work area only, while minimizing spillage into adjacent areas.
Biological Resources	Feature BIO-5	**Trash Control.** Food and food related trash items would be secured in sealed trash containers and removed from the site at the end of each day.
Biological Resources	Feature BIO-6	**Pets.** Pets would be prohibited from entering the project limits.
Biological Resources	Feature BIO-7	**Firearms.** Firearms would be prohibited within the project limits except for those carried by authorized security personnel or local, state, or federal law enforcement.
Cultural Resources	Feature CULT-1	**Stop Work Upon Discovery of Cultural Materials.** If cultural materials are discovered during construction, all earth-moving activities within a sixty-foot radius would be halted until a Caltrans Professionally Qualified Staff (PQS) can assess the nature and significance of the find.
Cultural Resources	Feature CULT-2	**Additional Actions if Cultural Materials Contain Human Remains.** If Caltrans PQS determines that cultural materials contain human remains, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains. Caltrans' Office of Cultural Resource Studies (OCRS) would contact the San Mateo County Coroner. Pursuant to Public Resource Code (PRC) Section 5097.98, if the remains are thought by the coroner to be Native American, the coroner would notify the Native American Heritage Commission, which would then notify the Most Likely Descendent. OCRS would work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.
Greenhouse Gas Emissions	Feature GHG-1	**Emissions Reduction.** Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, require contractors to comply with all laws applicable to the project and to certify they are aware of and would comply with all California Air Resources Board (ARB) emission reduction regulations.
Hazardous Materials	Feature HAZ-1	**Unanticipated Hazardous Waste.** Caltrans standards will be followed for the proper handling and disposal of any unanticipated hazardous waste discovered during construction.

Resource Area	Project Feature Reference	Project Feature
Hazardous Materials	Feature HAZ-2	**Aerial Deposited Lead (ADL).** The project will implement Best Management Practices (BMPs) according to Caltrans specifications special provision 12-11.09 “Minimal Disturbance of Regulated Material Containing ADL.”
Hydrology and Water Quality	Feature WQ-1	**Water Quality Best Management Practices (BMPs).** The potential for adverse effects to water quality will be avoided by implementing temporary and permanent BMPs outlined in Section 7-1.01 G of the Caltrans Standard Specifications. Caltrans erosion control BMPs will be used to minimize any wind or water related erosion. The State Water Resources Control Board has issued a National Pollutant Discharge Elimination System Statewide Storm Water Permit to Caltrans to regulate storm water and non-stormwater discharges from Caltrans facilities. A Water Pollution Control Plan would be developed for the project, as one is required for all projects that have less than one acre of soil disturbance. Protective measures will be included in the contract, including, at a minimum: • No discharge of pollutants from vehicle and equipment cleaning are allowed into the storm drain or water courses. • Vehicle and equipment fueling and maintenance operations must be 50 feet away from water courses. • Concrete wastes are collected in washouts and water from curing operations is collected and disposed of and not allowed into water courses. • Dust control will be implemented, including use of water trucks and tackifiers to control dust in excavation and fill areas, rocking temporary access roads entrances and exits, and covering temporary stockpiles when weather conditions require.
Tribal Cultural Resources	Feature TRIBE-1	**Protect Discovered Tribal Cultural Resources with Temporary Fencing:** If any tribal cultural resources are found during construction, a Caltrans PQS archaeologist shall determine whether the resources can be avoided by the project. If the resources can be avoided, the resources would be delineated on the ground with temporary fencing and avoided by construction. No construction-related activities or staging are permitted within these areas.

1.8.1 Permits and Approvals Needed

Table 1-4 describes the permits and approvals needed for the project.

Table 1-4 Permits and Approvals

Agency	Permit, Authorization, or Agreement	Permit Status
California Coastal Commission	Coastal Development Permit	Application submittal anticipated during the design phase
San Mateo County	Coastal Development Permit	Application submittal anticipated during the design phase
U.S. Fish and Wildlife Service	Biological Opinion for California red-legged frog and San Francisco garter snake	Consultation ongoing
California Department of Fish and Wildlife	Coordination on impacts to California Endangered Species Act (CESA) species	Coordination ongoing

Chapter 2 California Environmental Quality Act Evaluation

The proposed project by Caltrans is subject to CEQA and project documentation has been prepared in compliance with CEQA. Caltrans is the lead agency under CEQA. This chapter evaluates potential environmental impacts of the proposed project, as described in Chapter 1 as they relate to the CEQA checklist to comply with State CEQA Guidelines (Title 14 California Code of Regulations, Division 6, Chapter 3, Section 15091). Unless otherwise noted, the analysis and conclusions in this chapter apply to both alternatives under consideration.

2.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the project. Please see the full CEQA Environmental Checklist for additional information.

Table 2-1 Environmental Factors Potentially Affected

Potentially Affected	Environmental Factor
Yes	Aesthetics
No	Agriculture and Forestry
No	Air Quality
Yes	Biological Resources
No	Cultural Resources
Yes	Energy
Yes	Geology/Soils
Yes	Greenhouse Gas Emissions
Yes	Hazards and Hazardous Materials
Yes	Hydrology/Water Quality
Yes	Land Use/Planning
No	Mineral Resources
No	Noise
No	Population/Housing
No	Public Services
No	Recreation
Yes	Transportation/Traffic
No	Tribal Cultural Resources
No	Utilities/Service Systems
No	Wildfire
No	Mandatory Findings of Significance

2.2 CEQA Environmental Checklist

This checklist (presented at the beginning of each resource section below in the form of a table listing the pertinent questions applicable to the resource and four columns where the degree of impact is indicated) identifies physical, biological, social, and economic factors that might be affected by the project. In many cases, technical studies performed in connection with the project indicate that there are no impacts to a particular resource. A “no impact” answer in the last column reflects this determination. The words “significant” and “significance” used throughout the checklist are related to CEQA impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Both project features and AMMs will be part of this project. Project features, which can include both design elements of the project, and standardized measures that are applied to all or most Caltrans projects such as best management practices (BMPs) and measures included in Caltrans’ Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below; see Section 1.9 for a detailed discussion of these features. All proposed measures are provided in Appendix B.

Potentially affected environmental factors are indicated in Table 2-1. All environmental factors that could be potentially affected are marked with a yes. All of the environmental factors that would not be affected by the project are marked with a no.

2.3 Aesthetics

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	No	No	Yes	No
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No	No	No	Yes
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	No	No	No	Yes
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No	No	No	Yes

The Caltrans Office of Landscape Architecture prepared the “Visual Impact Assessment: Bridge Rail Replacement” (VIA; Caltrans 2021a) for the project. The findings of the VIA are analyzed as they apply to CEQA in this section.

The project corridor is defined as the land that is visible from, adjacent to, and outside the highway right-of-way. Within the project limits, SR 1 is an undivided two-lane conventional highway. It is eligible for state scenic highway designation and is recognized as a county scenic corridor. The highway winds around sandstone cliffs directly above the Pacific Ocean, which allows travelers expansive views to the water and horizon, sometimes narrowed by steep hills abutting the highway. Natural features dominate the visual landscape of the predominantly undeveloped project corridor. The narrow shoulders and the scale of the steep slopes against the highway accentuate the natural features and dramatic views to the ocean. The continuity of the coastline contrasts with the changing form of the inland topography, which varies from gentle,

rolling hills set back behind coastal plains at the southern end to dramatic steep hillside cut slopes abutting the highway, creating a diversity of visual experiences.

The project corridor maintains moderate to high vividness as the highway travels between sandstone coastal bluffs along the shore and the rolling hills and high peaks in the coast hills on the inland side. This area exhibits a moderate to high degree of intactness, with invasive vegetation prevalent, but sparse built features that are mostly limited to overhead utility lines; parking areas for recreational access; and traffic safety features, including safety barriers and traffic signs. Two existing downslope retaining walls are visible from nearby beaches and can be glimpsed from the highway. Unity is moderate to high as the highway winds through the terrain, and signs and other built elements are of a character and scale suitable to the landscape. Some segments of K-rail occur along the segment, partially obstructing views to the ocean and reducing intactness and unity.

The VIA included visual simulations depicting changes with the proposed project at areas that would most clearly demonstrate the potential change in the visual resources within the project limits. These areas include locations 1 and 2, 3, 5, 6, 8, and 10 and 11. Simulations for these locations are shown in Figure 2-1 through Figure 2-6 for select build alternatives/options and are typical of the changes that are anticipated as a result of this project. Potential changes in the visual resources at locations 4, 7, and 9 would be similar to that depicted in the figures.

a) Less than Significant Impact

The permanent changes most likely to be noticed by the traveling public would include the new railing and safety barrier types within the project limits. In addition to the permanent changes, the traveling public would be exposed to temporary visual impacts due to construction activities, containment platforms, equipment storage, and one-way traffic control.

Temporary impacts during construction could have a negative impact to the public views from the project site and its surroundings, but these impacts would be less than significant due to their limited duration and the implementation of Project Features and AMMs listed in Appendix B.

Existing Conditions

Build Alternative 2 with Shoulder Widening and CB Type 85

Figure 2-1 Looking North towards Martini Creek near Locations 1 and 2 (Page 1 of 2)

Build Alternative 2 with Shoulder Widening and ST-75

Figure 2-1 Looking North towards Martini Creek near Locations 1 and 2 (Page 2 of 2)

Existing Conditions – Alternative 1 with CB Type 85

Figure 2-2 Looking South toward Montara Beach near Location 3 (Page 1 of 3)

Build Alternative 1 with CB Type 85

Build Alternative 1 with Steel Barrier ST-75

Figure 2-2 Looking South toward Montara Beach near Location 3 (Page 2 of 3)

Build Alternative 2 with Shoulder Widening and CB Type 85

Build Alternative 2 with Shoulder Widening and ST-75

Figure 2-2 Looking South toward Montara Beach near Location 3 (Page 3 of 3)

Existing Conditions

Build Alternative 2 with Shoulder Widening and CB Type 85

Figure 2-3 Looking South toward Montara Beach near Location 5 (Page 1 of 2)

Build Alternative 2 with Shoulder Widening and ST-75

Figure 2-3 Looking South toward Montara Beach near Location 5 (Page 2 of 2)

Existing Conditions

Figure 2-4 Looking South toward Montara Beach near Location 6 (Page 1 of 3)

Build Alternative 1 with CB Type 85

Build Alternative 1 with ST-75

Figure 2-4 Looking South toward Montara Beach near Location 6 (Page 2 of 3)

Build Alternative 2 with Shoulder Widening and CB Type 85

Build Alternative 2 with ST-75

Figure 2-4 Looking South toward Montara Beach near Location 6 (Page 3 of 3)

Existing Conditions

Build Alternative 2 with Shoulder Widening and CB Type 85

Figure 2-5 Looking South near Location 8 (Page 1 of 2)

Build Alternative 2 with Shoulder Widening and ST-75

Figure 2-5 Looking South near Location 8 (Page 2 of 2)

Existing Conditions

Figure 2-6 Looking North near Locations 10 and 11 (Page 1 of 2)

Build Alternative 1 with MGS

Build Alternative 2 with 5-foot shoulders and MGS

Figure 2-6 Looking North near Locations 10 and 11 (Page 2 of 2)

The project would replace existing MBGR with MGS and install new MGS at multiple locations. However, MGS would not block existing views. In addition, new safety barriers would be constructed at the outside shoulder edge along the southbound lane at four locations within the project limits. These new segments of safety barrier would be taller and visually bulkier than the existing MBGR. However, open, see-through type barriers would be constructed to maintain scenic views to the ocean beyond. Due to their limited quantity and scale, along with their “see-through” design that maintains views of the ocean and the surrounding landscape, they would not fundamentally alter the scenic character or quality. Impacts would be less than significant.

b) No Impact

The project corridor is not within a designated state scenic highway. The project corridor is eligible for scenic designation, but neither of the build alternatives would substantially damage visual resources within the project limits. No impact would occur.

c) No Impact

The project would be constructed along nonurbanized segments of SR 1 in San Mateo County. Visual change resulting from construction of new MGS and safety barriers, construction of replacement retaining walls, and upgrading of existing traffic signs would not substantially degrade the existing character and quality of the roadway. Project features will be in character with existing built features within the project limits and would not degrade existing visual character.

d) No Impact

The project does not include new lighting. Exposed metal in new MGS and safety barriers installed as part of the project will be treated with a matte finish to avoid creating a new source of substantial glare. No impact would occur.

2.4 Agriculture and Forest Resources

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	No	No	No	Yes
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No	No	No	Yes
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	No	No	No	Yes
d) Result in the loss of forest land or conversion of forest land to non-forest use?	No	No	No	Yes
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	No	No	No	Yes

a), b), c), and d) No Impact

The project would be constructed entirely within Caltrans' right-of-way. The project includes the replacement of existing guardrails and safety barriers, as well as the construction of new retaining walls and additional safety barriers at eleven locations along SR 1 between PM 36.49 to 38.31. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the project footprint. The project footprint does not contain land zoned for agricultural uses, land under the Williamson Act, or land zoned as forest land, timber land, or timberland production. There would be no loss or conversion of forest land to non-forest land, or any other changes to the existing environment that would convert farmland to nonagricultural use or forest land to non-forest use. Therefore, there would be no impact to agriculture and forest resources as a result of the project.

2.5 Air Quality

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	No	No	No	Yes
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	No	No	No	Yes
c) Expose sensitive receptors to substantial pollutant concentrations?	No	No	No	Yes
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	No	No	No	Yes

a) No Impact

The project is in the San Francisco Bay Area Air Basin and is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), the ARB, the San Mateo County General Plan (San Mateo County 1986), and the San Mateo County Local Coastal Program (San Mateo County 2013a). The project would not conflict with or obstruct the implementation of the pertinent air quality policies and goals of these agencies. The project would not add capacity and would therefore not result in operational degradation of air quality. Although construction is anticipated to result in short-term emissions, construction air pollutants are expected to be minimal to negligible, and construction practices would conform to the performance standards outlined in the applicable plans. Additionally, the project is federally exempt from the requirement to determine air quality conformity, in accordance with 40 Code of Federal Regulations (CFR) 93.126 – Exempt Projects: guardrails, median barriers, crash cushions.

b) No Impact

The project is not capacity-increasing, because it does not add a lane to the roadway and would therefore not result in long-term degradation of air quality, due to additional

traffic, that could be cumulatively considerable. During project construction, there would be short-term emissions from the use of diesel- and gasoline-powered construction equipment and vehicles. San Mateo County is in nonattainment zone for 8-Hour ozone (2015) and particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$) (2006), according to federal 2021 standards (EPA 2021). However, project construction would only result in short-term emissions, which would not result in a cumulatively considerable net increase of criteria pollutants. In addition, Project Features AQ-1 and AQ-2 would help ensure that there are no impacts from fugitive dust.

c) No Impact

Sensitive receptors include children, elderly, people with asthma, and other members of the population who are at a heightened risk of negative health outcomes due to exposure to air pollution. Schools, childcare facilities, hospitals, nursing homes, and residential communities are where sensitive receptors typically occur. However, such locations are not present in or near the project area, and the project would not increase emissions of criteria pollutants or mobile source air toxics (MSATs) over existing conditions or exceed BAAQMD's recommended thresholds for construction emissions. Therefore, the project is not anticipated to expose sensitive receptors to substantial pollutant concentrations.

d) No Impact

Typical odors associated with construction equipment may be present temporarily. However, the project would not lead to other emissions, such as odors, that would adversely affect a substantial number of people.

2.6 Biological Resources

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

The Office of Biological Sciences and Permits prepared a Natural Environmental Study (NES) (Caltrans 2021b) for the project. The following text summarizes the information included in the NES.

Literature searches for biological resources were conducted in five U.S. Geological Survey (USGS) 7.5-minute quadrangles of the project footprint; however, for the

purposes of this project, the biological study area (BSA) was narrowed down to the extent of the project's starting and ending post miles, plus a rough 400-foot buffer. This buffer was used to account for potential impacts to wildlife that could be caused by earthwork, noise, visual disturbance, and vibration. Potential impacts (or effects) could include direct effects, indirect effects, and interrelated and interdependent activities.

The BSA extends about 400 feet from the center of the project impact area and includes portions of McNee Ranch State Park on the east, Montara State Park on the west, residential and private property south of location 1, and Caltrans property north of location 11. The natural environment in the BSA was evaluated through a combination of field surveys, database searches, and literature reviews.

a) Less than Significant Impact with Mitigation

Special-Status Plant Species

Plants considered to be of special concern are based on (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the presence of habitat required by the special-status plants occurring on site. Ten plants of special concern were previously documented in the BSA and have potential to be affected by the project. Two additional plants (yellow pansy [*Viola pedunculata*] and pacific stone crop [*Sedum spathulifolium*]) that are host plants for special-status butterflies are also likely to occur in the BSA. Yellow pansy is a host to callippe silverspot butterfly (*Speyeria callippe callippe*). Pacific stone crop is the host plant for the San Bruno elfin butterfly (*Callophrys mossii bayensis*). However, none of these twelve plants were observed during the initial site visit on March 2, 2021, nor were they observed during the early- and mid-season rare plant surveys that were conducted on March 26 and April 30, 2021.

Impacts are not expected for any special-status plant species because they were not observed during the early- and mid-season 2021 rare plant survey, and historic occurrence records are vague and/or outside the project footprint. However, protected plants could still appear on site in their preferred habitat. Project Features and AMMs listed in Appendix B will be in place during construction. Compliance with these measures will ensure that effects to sensitive plants will be avoided or minimized, and the impact would be less than significant.

Habitats and Natural Communities of Special Concern

Seaside Daisy Alliance (*Eriophyllum staechadifolium – Erigeron glaucus – Eriogonum latifoli* Alliance) was found in multiple locations throughout the project limits. Implementation of Alternative 1 would result in 0.03 acre of temporary impacts and 0.03 acre of permanent impacts to this sensitive natural community. Implementation of Alternative 2 would result in 0.02 acre of temporary impacts and 0.05 acre of permanent impacts. Project Features and AMMs listed in Appendix B will be in place during construction. Compliance with these measures will ensure that effects to Seaside Daisy Alliance are minimized though the loss of habitat cannot be completely avoided. The impact would be less than significant.

Special-Status Wildlife Species

Animals are of special concern based on (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status animals occurring on site. The following species were previously documented in the BSA and have a moderate to high likelihood to occur within the project footprint: California red-legged frog and its critical habitat, San Francisco garter snake, and American badger (*Taxidea taxus*). Potential effects to these two species are further described below.

San Francisco garter snake: The San Francisco garter snake is federally listed as an endangered and is a state endangered species. The garter snake is considered a Fully Protected Species under California Fish and Game Code (CFGC) Section 5050. Fully Protected Species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research or if they are a covered species whose conservation and management is provided for in a Natural Community Conservation Plan (NCCP).

The San Francisco garter snake was not observed onsite during reconnaissance site visits. Protocol-level San Francisco garter snake surveys were not conducted as part of the background information collected for the project. A review of the California Natural Diversity Database (CNDDB) revealed 9 occurrences of San Francisco garter snake within 5 miles of the project footprint. The online application iNaturalist was also used to find approximate locations of San Francisco garter snake. There are 4 iNaturalist occurrences within 5 miles of the project footprint.

According to a review of USFWS dispersal data, the San Francisco garter snake has been known to move on average between 328 feet and 656 feet from pond foraging habitat to upland wintering sites, and some individuals have been observed to move over 2,200 feet. Typically, San Francisco garter snakes do not appear to move distances of more than 0.60 mile; although longer San Francisco garter snake movements may occur in pursuit of prey. San Francisco garter snakes are not known to exhibit the wide-ranging movements associated with California red-legged frog.

The San Francisco garter snake has a moderate likelihood to occur in the BSA. Wetlands and adjacent uplands (both of which are present in BSA) are known to be used by both California red-legged frogs and San Francisco garter snakes for dispersal or migration. This specific habitat is of moderate quality with more preferable grassland dominated areas less than 0.5 mile from SR 1. It is interspersed with shrub-dominated habitat as well as some agricultural lands; this may contribute to smaller home ranges and lower abundances of the garter snake.

A small restoration pond a few hundred feet from SR 1 which California red-legged frog are known to inhabit could increase the likelihood of San Francisco garter snake also occurring in the vicinity. The nearest documented occurrences of the San Francisco garter snake is over 2 miles away from the BSA, and recent studies provide evidence of a growing population that would inevitably lead to formations of metapopulations and increased migratory distances by sexually mature individuals. Further, there are no impassable barriers from the undeveloped foothills east of this pond (where occurrences of San Francisco garter snake are documented) that would invariably negate San Francisco garter snake from accessing this potential foraging habitat. Both San Francisco garter snake and California red-legged frog are known to occur along the San Mateo Coast and federally designated habitat for the California red-legged occurs throughout the BSA.

Despite no recent occurrences within the taxon’s known average dispersal distance, this species could still occur in the project footprint and be affected by project activities. However, due to its more limited distribution than the red-legged frog, Caltrans anticipates a low likelihood of encountering the snake within the project footprint. Additionally, avoidance and minimization measures will be in place to avoid direct impacts consistent with “take” of the species as prohibited by its fully protected status under CFGC.

Table 2-2 and Table 2-3 provide an estimate of impacts to different types of San Francisco garter snake habitat within the project area. Temporary impacts are those that result in habitat disturbances or loss for less than one year. Permanent habitat impacts are any habitat disturbances or loss that exceed one year.

Table 2-2 Impacts to San Francisco Garter Snake Habitat Alternative 1

Habitat Type	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Aquatic	0	0
Upland/Dispersal	0.28	0.30

Table 2-3 Impacts to San Francisco Garter Snake Habitat Alternative 2

Habitat Type	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Aquatic	0	0
Upland/Dispersal	0.26	0.57

California red-legged frog: The California red-legged frog is federally listed as threatened and is a State Species of Special Concern (SSC). Protocol-level surveys for California red-legged frog were not performed. Rather, its presence was inferred based on a literature review, recorded observations, and habitat evaluations during site visits on March 3, March 26, and April 30, 2021. There are no ponds or saturated areas within the project limits and no California red-legged frogs were observed or heard. However, the vegetated parts of the project footprint may provide suitable upland habitat (shelter and dispersal) for the California red-legged frog. Proximity to current recorded California red-legged frog observations and known breeding habitat areas suggest that California red-legged frog is likely to be present and active within the project limits. The breeding pond closest to the project limits is in the Green Valley area east of SR 1 near location 11. However, no project work would occur within the breeding pond. Aquatic non-breeding habitat is present near location 2. Upland habitat is found throughout the BSA on both sides of SR 1.

The project has the potential to adversely affect individual California red-legged frogs that occur at the project site during construction, which may result in injury, mortality, or harassment. Indirect effects to California red-legged frog could come from ground disturbance during vegetation removal, equipment and vehicle staging, trampling of vegetation, construction-related dust, increases in noise and light, and impacts to water

quality during construction. Direct effects to California red-legged frog could come from trampling of individual California red-legged frog.

Table 2-4 and Table 2-5 provide an estimate of impacts to different types of California red-legged frog habitat within the project area. Temporary impacts are those that result in habitat disturbances or loss for less than one year. Permanent habitat impacts are any habitat disturbances or loss that exceed one year.

Table 2-4 Impacts to California Red-legged Frog Habitat Alternative 1

Habitat Type	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Aquatic Breeding	0	0
Aquatic Non-Breeding	0	0
Upland/Dispersal	0.28	0.30
Designated Critical Habitat	0.23	0.25

Table 2-5 Impacts to California Red-legged Frog Habitat Alternative 2

Habitat Type	Temporary Impacts (Acres)	Permanent Impacts (Acres)
Aquatic Breeding	0	0
Aquatic Non-Breeding	0	0
Upland/Dispersal	0.26	0.57
Designated Critical Habitat	0.22	0.53

Technical assistance with the USFWS Coast-Bay division was requested on May 26, 2021. Designated critical habitat is present in the BSA for California red-legged frog, and the project may adversely affect the California red-legged frog. Caltrans has made the following determinations pursuant to section 7 of the federal Endangered Species Act:

- ***May affect, and is likely to adversely affect,*** the California red-legged frog
- ***Will not affect,*** federally designated critical habitat for the California red-legged frog
- ***May affect, and is likely to adversely affect,*** the San Francisco garter snake

A Biological Assessment is being prepared pursuant to FESA and will be used to initiate section 7 consultation with the USFWS. Project Features and AMMs listed in Appendix B will be in place during construction. In addition, compensatory mitigation may be necessary and will be detailed in the biological opinion from USFWS (see MM BIO-1 in Appendix B). Section 7 consultation will be completed during the design phase of this project. Compliance with these measures will ensure that effects to California red-legged frog and San Francisco garter snake will be mitigated, and the impact would be less than significant.

American Badger: The American badger (*Taxidea taxus*) is a SSC. The nearest California Natural Diversity Database (CNDDB)-occurrence of the American badger is 1.4 miles from the project area. It was recorded in May 1948 and detailed that one male was “collected” in September and one in October of 1933 as well as one individual in May of 1948 near Peak Mountain. The next nearest CNDDB-documented occurrence is more than 13 miles to the south. The nearest occurrence found on the online nature observation reporting application iNaturalist is within the project footprint. The observation is from June 5, 2020, and recorded as a deceased juvenile male that was hit by a car. Individuals and dens were not observed during any site visit.

Construction activity, including lighting, noise, vibration, human presence, and moving and stationary equipment could directly or indirectly impact the badger, if present. Because badgers are solitary and have a large territory, it is not likely that one will be encountered; however, Project Features and AMMs listed in Appendix B will be in place during construction. Compliance with these measures will ensure that effects to American badger will be avoided or minimized, and the impact would be less than significant.

b) and c) No Impact

The project would not impact riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by the CDFW or the USFWS. The project would not impact federally-protected wetlands.

d) No Impact

The coastal bluff west of SR 1 is a narrow strip of land (50 to 150 feet wide) that connects north to the entrance of San Francisco Bay, and south to Moss Beach and El Granada. It is bordered to the west by the Pacific Ocean, and to the east by SR 1. Montara State Beach and Gray Whale Cove State Beach are in the BSA but not part of

the project footprint—except at location 7, where a temporary construction easement would be required to install the safety barrier. Due to the steep, sandy, rocky, soils of the western bluff and its proneness to landslides, the ground cover consists of invasive succulents, annual forbs, and short shrubs.

SR 1 currently acts as a potential barrier for wildlife movement along the project corridor. The high daytime traffic volumes of the highway deter and prevent the crossing of wildlife throughout the project limits. Lower nighttime traffic volumes may not pose a total barrier to the movement of wildlife across SR 1.

There is an existing fish passage barrier to anadromous salmonids on Martini Creek at locations 1 and 2. The creek flows 10 to 20 feet below SR 1 through a large concrete box with metal culvert inside. The project would not affect fish passage because it does not propose any drainage work. Proposed retaining walls in this area would not affect fish passage because they would not be in the creek.

None of the proposed new barriers would affect wildlife crossings or exacerbate existing conditions. The addition of safety barriers and replacement of guardrails would represent some new infrastructure on the landscape. Wildlife species may have trouble negotiating new manmade obstacles. However, the SR 1 corridor would continue to support an abundance of protected lands and habitat on both sides of the highway. Additionally, areas impacted by temporary work will be regraded and reseeded with a local seed mix and will continue to provide habitat for native wildlife species post-project. The project is not anticipated to substantially worsen or degrade the ability of wildlife to move across the landscape. The project would have no impact on the movement of native resident or migratory fish.

e) No Impact

San Mateo County regulates the removal of significant trees and heritage trees. Chapter 2 Section 12,012, Part 3 of Division 8 of the San Mateo County Ordinance Code defines a significant tree as any live woody plant rising above the ground with a single stem or trunk of a circumference of 38 inches or more at 4.5 feet vertically above the ground or immediately below the lowest branch, whichever is lower, and having the inherent capacity of naturally producing one main axis continuing to grow more vigorously than the lateral axes. Chapter 2 Section 11,050 of the San Mateo County Ordinance Code defines a heritage tree as any tree or grove of trees so designated after Board inspection, advertised public hearing and resolution by the Board of

Supervisors, or one of 17 trees of varying sizes measured by diameter at breast height in inches.

Although tree removal is not anticipated, any tree removal would necessitate coordination between the County of San Mateo and Caltrans. Permits to remove trees may be subject to the County's Local Coastal Program (LCP) and/or local tree ordinance. Compliance with these permits would ensure that there would be no impact.

f) No Impact

There is no Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan in the project area. Therefore, there would be no impact.

2.7 Cultural Resources

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	No	No	No	Yes
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	No	No	No	Yes
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	No	No	No	Yes

a), b), and c) No Impact

Caltrans' Office of Cultural Resource Studies completed a Section 106 review of the project consistent with Caltrans' regulatory responsibilities under the January 2014 First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it pertains to the Administration of the Federal-Aid Highway Program in California (Programmatic Agreement).

The review consisted of a detailed search of records, maps, plans, and digital files found in Caltrans' Cultural Resources Database and a pedestrian survey of the project area. Additionally, Caltrans consulted with local Native American tribes and individuals about the project. Consultation under Section 106 and Assembly Bill (AB) 52 was initiated on May 11, 2020, with the following tribes and individuals: Ms. Irene Zwierlein of the Amah Mutsun Tribal Band of Mission San Juan Bautista, Mr. Tony Cerda of the Costanoan Rumsen Carmel Tribe, Ms. Ann-Marie Sayers of the Indian Canyon Mutsun Band of Costanoan, Ms. Monica Arellano of the Muwekma Ohlone Tribe of the SF Bay Area, Mr. Andrew Galvan of The Ohlone Indian Tribe, and Ms. Ann Marie Sayers of Indian Canyon Mutsun Band of Costanoan.

In accordance with stipulation VIII.A and Attachment 3 of the PA, under the delegated authority of Federal Highway Administration (FHWA), the Area of Potential Effects (APE) was developed in consultation with Caltrans PQS Kristina Montgomery (PQS Co-Principal Investigator, Historic Archaeology), Charles Palmer (PQS Principal

Architectural Historian), and Kerry Morgan, Caltrans Project Manager, and was signed on February 16, 2021. The APE is limited to the entirety of Caltrans' right-of-way within the project limits and a temporary construction easement at one location. The architectural and archaeological APE are the same.

Based on the results of the review, Caltrans has determined that there are no historic properties within the project APE and the project's finding is No Historic Properties Affected (Caltrans 2021c). The review also determined that there are no historical resources present for the purposes of CEQA. Project Features CULT-1 and CULT-2 would help ensure that there would be no impact to previously unknown cultural resources found during construction.

2.8 Energy

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	No	No	Yes	No
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No	No	No	Yes

a) Less than Significant Impact

The project would not result in significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy. Project construction would be a temporary, one-time commitment of energy, necessary for any infrastructure improvement project. Energy consumption during construction would be conserved and minimized to the extent feasible through the implementation of BMPs. Additionally, the project does not add roadway capacity and would therefore not increase energy usage during operation. Energy usage during operation is typically quantified using vehicle miles traveled (VMT), a measure of travel for all vehicles in the project area, by converting VMT to fuel consumption measured in British thermal units (BTU). Because the project would not influence traffic volumes or otherwise affect VMT, there would be no quantifiable increase in energy usage during operations other than routine maintenance. The impact would be less than significant.

b) No Impact

The project does not include changes in the current capacity or use of the roadway within the project limits. Therefore, the project would not result in long-term changes to energy consumption. Neither construction nor operation of the project would conflict with the implementation of local and state plans related to energy and energy efficiency.

2.9 Geology and Soils

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	No	No	No	Yes
ii) Strong seismic ground shaking?	No	No	No	Yes
iii) Seismic-related ground failure, including liquefaction?	No	No	No	Yes
iv) Landslides?	No	No	No	Yes
b) Result in substantial soil erosion or the loss of topsoil?	No	No	Yes	No
c) 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 on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	No	No	No	Yes
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	No	No	No	Yes
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	No	No	No	Yes
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	No	No	No	Yes

a(i) No Impact

The project is intended to enhance vehicle traffic safety by replacing and adding guardrails within the project limits. The project area is approximately 2 miles away from the San Gregorio Fault, and according to the California Department of Conservation the project area is not in an Earthquake Fault Zone. The project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death due to rupture of a known fault. There would be no impact.

a(ii) No Impact

Due to the historical seismic activity in the Bay Area and numerous major fault lines including the San Gregorio fault, which is closest to the project area, the project area has the potential to experience moderate to strong ground shaking during a seismic event. The project includes the replacement and installation of guardrails and safety barriers at 11 locations along SR 1 to improve vehicle safety within the project limits. The project would be designed to resist ground-shaking associated with the nearby fault in compliance with all applicable standards and regulations. The project would have no direct or indirect impact on the potential for ground shaking or on the public's risk for loss, injury, or death from seismic events. There would be no impact.

a(iii) No Impact

The project does not overlap with areas that are susceptible to liquefaction, according to California Department of Conservation's California Earthquake Hazards Zone Application (California Department of Conservation 2019). Although there are liquefaction zones relatively close to the project area, the project would not install, replace, or construct any element of the project in a liquefaction area (San Mateo County 2005). The project would not increase the risk of loss, injury, or death due to liquefaction; there would be no impact.

a(iv) No Impact

The project is in an area that is susceptible to landslides. According to the Department of Conservation, the project area is a landslide prone area. According to the County of San Mateo Hazards map, the project area is an area mapped as "few existing" landslides. Design and construction guidelines would incorporate engineering standards that address seismic risks, including ground failure related to liquefaction, landslides, and lateral spreading. Therefore, although the project would be in a landslide-prone

area, the project would not increase the risk of loss, injury, or death due to landslides; impacts would be less than significant.

b) Less than Significant Impact

Caltrans would design the project so that erosion or loss of topsoil would be minimized as much as possible. The construction of the project would occur within the Caltrans right-of-way on previously disturbed ground and would include excavation, vegetation clearing, and grubbing. These earth-disturbing activities could cause some minor erosion of the topsoil; however, implementation of standard Caltrans practices and BMPs for erosion control would be incorporated. Project Feature WQ-1 would be implemented to reduce any erosion or loss of topsoil that may occur. Native topsoil removed for the project would be stockpiled for reuse. Following construction and earth-disturbing activities, all areas of disturbed soil would be revegetated to stabilize the topsoil to prevent any erosion post construction. There would be a less than significant impact.

c) No Impact

Discussion of earthquake-induced landslides and other seismic-related ground failures is discussed previously under Impact (a). Caltrans will conduct geotechnical subsurface and design investigations required during the design phase to ensure that the project addresses geologic concerns. The project would not increase the risk of on- or offsite landslides, lateral spreading, subsidence, liquification, or collapse. There would be no impact.

d) No Impact

The project would be constructed within Caltrans' right-of-way on nonnative soils, which are not expansive. Expansive soils are soils that expand when wet and shrink when dry due to mineralogical composition. The project is not on expansive soil (as defined in Table 18-1-B of the Uniform Building Code [1994]) and would not include construction of habitable structures; therefore, it would not create substantial risk to life or property. Additionally, Caltrans design and construction guidelines incorporate engineering standards that address expansive soils. There would be no impact.

e) No Impact

The project includes the replacement and installation of safety barriers along SR 1 for increased vehicle safety and would not include the use of septic tanks or alternative wastewater disposal systems. There would be no impact.

f) No Impact

Although the project would include ground-disturbing activities, it is not expected to result in the disturbance or overlap with paleontological resources because it would not impact native soil or rock. Caltrans does not anticipate the discovery or destruction of any unique paleontological resources during construction. There would be no impact.

2.10 Greenhouse Gas Emissions

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	No	No	Yes	No
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	No	No	Yes	No

a) and b) Less than Significant Impact

The project would not increase the capacity of the existing roadway and would therefore not lead to an increase in operational greenhouse gas (GHG) emissions (i.e., increased emissions from vehicles in the project area). However, short-term GHG emissions resulting from construction activities are anticipated.

Construction-generated GHG stems from materials processing by onsite construction equipment, workers commuting to and from the project site, and potential traffic delays due to construction. These emissions would be produced at different rates throughout the construction phase, depending on the activities involved at various phases of project construction.

A construction-related GHG emission analysis was conducted for the project, focusing on vehicle-emitted GHG (Caltrans 2021d). Carbon dioxide (CO_2) is the single most important GHG pollutant due to its abundance when compared with other vehicle-emitted GHGs, including methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbon (HFCs), and black carbon (BC).

Construction-related GHG emissions were calculated using the Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model (RCEM), version 9.0.0. The analysis estimated that, for a construction period of 12 months, construction would produce a total of 395 tons of CO_2. Additionally, the analysis quantified total GHG emissions—including CO_2, CH_4, and N_2O—as carbon dioxide equivalent (CO_2e). CO_2e is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given time, relative to the emissions of 1 ton of CO_2.

This figure was obtained by multiplying each GHG by its global warming potential. The total GHG emissions for construction would be 362.73 metric tons of CO_2e.

Because construction activities are short-term, the GHG emissions resulting from construction activities would not result in long-term adverse effects. Implementation of Caltrans Standard Specifications—such as complying with air-pollution-control rules, regulations, ordinances, and statutes that apply to work performed under the contract and the use of construction best management practices—would result in reducing GHG emissions from construction activities.

Short-term GHG emissions during project construction are anticipated but would be minimized to the extent feasible, and would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. At the state level, the ARB implements measures to achieve emission reductions of GHG in response to AB 32 and Senate Bill (SB) 32. AB 32, the California Global Warming Solutions Act of 2006, initially set a goal of reducing GHG emissions to 1990 levels by 2020. This goal was extended by SB 32 in 2016, to reduce emissions by 40 percent below 1990 levels by 2030. At the local level, plans and programs include the San Mateo County General Plan Energy and Climate Change Element, Energy Efficiency Climate Action Plan, and Government Operations Climate Action Plan. Project construction would not conflict with any goals or policies at the state or local level, because Caltrans' Standard Specifications support the reduction of emissions to the maximum feasible extent.

All construction contracts include Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, which require contractors to comply with all laws applicable to the project and to certify that they are aware of and would comply with all ARB emission reduction regulations; and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions. Additionally, implementation of Project Features and TRANS-1: Develop and Implement a Traffic Management Plan (TMP) would reduce the potential for GHG emissions due to construction-induced traffic. Therefore, the impact would be less than significant.

2.11 Hazards and Hazardous Materials

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	No	No	No	Yes
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	No	No	No	Yes
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	No	No	No	Yes
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	No	No	Yes	No
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	No	No	No	Yes
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No	No	Yes	No
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No	No	Yes	No

a) and b) No Impact

During construction, the project would use vehicles and equipment that would be powered with fuels such as gasoline and diesel, which are hazardous. Caltrans Standard Specifications BMPs would be implemented to prevent spills or leaks from construction equipment and from storage of fuels, lubricants, and solvents. All aspects of the project associated with removal, storage, transportation, and disposal of hazardous material would be done in accordance with the appropriate California Health and Safety Code. If hazardous materials are found during construction, the appropriate measures would be taken, and the project would comply with Caltrans Standard Specification 14-11, Hazardous Waste and Contamination, which outlines handling, storing, and disposing of hazardous waste. Construction of the project is not expected to create a hazard to construction workers, the public, or the environment. Operation of the project would not involve the use of hazardous materials. The project would have no impact.

c) No Impact

There are no schools within 0.25 mile of the project area. The closest school, Farallone View Elementary, is approximately 0.85 mile from location 1. project construction would be limited to the 11 locations areas along SR 1 within the project limits, and a relatively small amount of emissions from vehicles and equipment would occur during project construction. Adherence to local, federal, and state regulations during project construction would reduce the risk of exposure to hazardous materials and accidental hazardous materials released, such as fuel. Therefore, the project would not result in the spread of hazardous materials or expose sensitive receptors, such as schools. There would be no impact.

d) Less than Significant Impact

Screening of environmental regulatory databases (the State Water Resources Control Board's Geotracker and the California Department of Toxic Substances Control's [DTSC's] EnviroStor) revealed no known hazardous waste sites within the project footprint; however, there are several sites within 0.25 mile of the project area (California Department of Toxic Substances Control 2021).

The EnviroStor database indicated two Military Evaluation cleanup sites within 0.25 mile of the Gray Whale Cove State Beach parking lot, which is near locations 9, 10, and 11 of the project. The Military Evaluation cleanup site approximately 2,000 feet north of the

Gray Whale Cove State Beach parking lot, Little Devil's Slide Military Reservation (J09CA0855), was used for harbor defense of San Francisco and was deactivated in 1958. A team of researchers with the Coast Defense Study Group visited the site in 2005 to assess the condition of existing facilities and found no evidence of the powerhouse, underground electrical wiring, or barbed wire fences. In 2018, an Earth Day Cleanup crew at the beaches around Gray Whale Cove found a rusted abandoned steel tank on the hillside above this beach, and the United States Army Corps of Engineers (USACE) was notified.

The other Military Evaluation cleanup site, Camp Montara, is approximately 2,000 feet east of the Gray Whale Cove State Beach parking lot. Currently, the State of California Department of Parks and Recreation operates and maintains the site as part of McNee Ranch State Park. No evidence of hazards was found during a site visit in 2007.

If site investigations conducted during the design phase of the project show evidence of hazardous materials, Caltrans would require the contractor to follow the appropriate standard specifications for any contaminants. There would be a less than significant impact.

e) No Impact

Project locations 1, 2, and 3 are within 2.5 miles of Half Moon Bay Airport. However, due to the relatively short duration of construction and adherence to federal and state regulations during construction, the project is not expected to result in a safety hazard for people residing or working in the project area. There would be no impact.

f) Less than Significant Impact

SR 1 is a major north-south highway for the communities near the project area, and it is assumed that SR 1 would be used as an evacuation route in the event of an emergency. The project would be subject to the San Mateo County's Emergency Operations Plan (EOP). The EOP provides guidelines for emergency response planning, preparation, training, and execution throughout the county. Project construction would result in minor increases in short-term construction-related traffic on SR 1; however, Caltrans would prepare a TMP to maintain the flow of traffic during construction and ensure accessibility through the locations along SR 1 for essential services and vehicles. In the event of such an emergency, Caltrans would coordinate with local officials to ensure that SR 1 remains open to emergency traffic. There would be less than a significant impact.

g) Less than Significant Impact

The project is within zones classified as Very High Fire Severity State Responsibility Areas (CAL FIRE 2007). Caltrans proposes to replace and construct new guardrails and safety barriers made of concrete and metal, which would therefore have a limited susceptibility to fires. The project includes the installation of soldier pile retaining walls on the downslope side of SR 1. This installation would not affect occupants nor would it require the installation of associated infrastructure that would exacerbate fire risk. The project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. The impact would be less than significant.

Please refer to the Wildfire section for more details and discussion regarding Wildfire hazards.

2.12 Hydrology and Water Quality

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	No	No	Yes	No
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	No	No	No	Yes
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site;	No	No	No	Yes
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	No	No	No	Yes
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	No	No	No	Yes
(iv) impede or redirect flood flows?	No	No	No	Yes
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No	No	No	Yes
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No	No	No	Yes

Caltrans investigated impacts to hydrology and water quality from the project and prepared a *Water Qualify Study* (Caltrans 2021e). This section summarizes the findings of that review.

The project is within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (Region 2), which is responsible for implementation and enforcement of state and federal laws and regulations concerning water quality.

This project is in the Hydrologic Sub-Area 204.20. There are no base flood plains present in the project area. The receiving waterbodies of the project would be the Ward Creek-Frontal San Francisco Bay Estuaries, Sausal Creek-Frontal San Francisco Bay Estuaries, and San Francisco Bay Estuaries.

a) Less than Significant Impact

Temporary impacts to water quality may result from soil disturbance during construction, including potential changes to localized pH and turbidity of receiving water bodies. The project would include vegetation clearing and grubbing, as well as some minor excavation and trenching. Although temporary impacts from soil disturbance have the potential to impact water quality, with implementation of Project Feature WQ-1, project activities would not substantially degrade surface or groundwater quality or result in violations of water quality standards or waste discharge requirements. Impacts would be less than significant.

b) No Impact

The project would not involve the use of groundwater or interference with groundwater supplies. The project includes the installation of new guardrails, safety barriers, and retaining walls for vehicle safety at 11 locations along SR 1 within the project limits. The amount of added impervious surface in the project area would be relatively negligible and would not impede the infiltration of groundwater. The project would not substantially decrease groundwater supplies or interfere with groundwater recharge so substantially that the project would impede sustainable groundwater management of the basin. There would be no impact.

c) (i), (ii), (iii), and (iv) No Impact

The construction and operation of the project would not alter the drainage pattern or interfere with the course of a stream or river in the project area. The project would replace existing and install new guardrails and safety barriers along SR 1 for increased vehicle protection. The impervious surface that would be added by the project is relatively small when compared to the amount of underdeveloped areas surrounding the project area and would not substantially increase runoff from the project area.

Construction actives are not expected to alter the drainage pattern of the project area. There would be no impact.

d) No Impact

The project is not in a flood hazard, seiche, or tsunami zone. There would be no impact.

e) No Impact

The project would not conflict with or obstruct the implementation of a water quality control plan or sustainable groundwater management plan. The project includes the installation of guardrails and safety barriers for vehicle safety at 11 locations along SR 1 within the project limits. There would be no impact.

2.13 Land Use and Planning

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Physically divide an established community?	No	No	No	Yes
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	No	No	Yes	No

a) No Impact

The project would be constructed within existing state right-of-way in a rural area of San Mateo County. The highway would remain open throughout construction, with either two-way traffic or one-way reversing traffic control during specific periods. The project does not include physical features that would change the configuration of the existing roadway in such a way that new barriers would be created, limiting access to adjacent areas. Therefore, the project would not physically divide an established community. There would be no impact.

b) Less than Significant Impact

SR 1 within the project limits is used as a primary access road to San Mateo County coastal areas, providing access to public parks, beaches, visitor-serving facilities, and coastal residential developments. Land uses along the 2-mile stretch of SR 1 within the project limits include single-family residential development, equestrian areas, and state beaches such as Montara State Beach and Gray Whale Cove State Beach. As discussed above, all project features would be constructed within the existing Caltrans right-of-way. Therefore, project features would not change existing land uses in the project area and would not conflict with existing or future land use designations.

This section of SR 1 is part of the Pacific Coast Bicycle Route, and sections of the California Coastal Trail (CCT) run adjacent to SR 1 within the project limits. Impacts to segments of the CCT are further discussed under the “Coastal Zone Management Act.”

During construction, the highway would remain open; however, one lane would need to be temporarily closed and one-way reversing traffic control would be required in select

areas. Existing pull-out areas may need to be used to stockpile material and for construction staging. However, there would be no effect on public access or tourism and visitor-serving facilities.

Consistency with State, Regional, and Local Plans and Programs

State Scenic Highway Program

SR 1 from the southern limits of the City of Half Moon Bay to Daly City is eligible for state scenic highway designation. This means that the California State Legislature marked the state route as eligible due to its outstanding scenic qualities, and local governments with land use authority have adopted a “scenic corridor protection program” that has been approved by Caltrans. The scenic corridor protection program limits adjacent development and other land uses.

Open, see-through type barriers would be constructed to maintain scenic views to the ocean beyond. Due to their limited quantity and scale, along with their “see-through” design that maintains views of the ocean and the surrounding landscape, the barriers would not fundamentally alter the scenic character or quality of the project area. In addition, the implementation of Project Features and AMMs listed in Appendix B would minimize temporary construction impacts. Therefore, it is not anticipated that the project’s temporary and permanent visual resource impacts would affect the eligibility of the highway for the State Scenic Highway Program, and the impact to this program would be less than significant.

Coastal Zone Management Act

The project is in the California Coastal Zone; resources in this zone are protected by the federal Coastal Zone Management Act of 1972 (16 United States Code [USC] 1451-1464, as amended). States with an approved coastal management plan are able to review federal permits and activities to determine whether they are consistent with the state’s management plan.

California has developed a coastal zone management plan and has enacted its own law, with the passing of the California Coastal Act of 1976 (CCA), to protect the coastal zone. The policies established by the CCA include the protection and expansion of public access and recreation; the protection of agricultural lands; the protection of scenic beauty; and the protection of property and life from coastal hazards. The CCC is responsible for implementation and oversight under the CCA.

The CCA delegates power to local governments to enact their LCPs; in this case, the SMLCP (San Mateo County 2013a). The state-certified LCP includes all LCP policies, with amendments approved through August 8, 2012. The SMLCP requires that planning projects in the Coastal Zone be designed to comply with these requirements. The SMLCP covers the unincorporated areas of San Mateo County that fall within the coastal zone.

The project is within the permitting jurisdiction of both San Mateo County and the CCC and would require individual permits from San Mateo County and the CCC.

The policies of the CCA give the highest priority to the preservation and protection of prime agricultural land and timber lands. The next highest priorities are public recreation and visitor-serving facilities. The project would not conflict with agricultural land uses or timber land uses in the project area. The project feature locations do not overlap with land zoned for either use and there are no agricultural lands or timber lands in the project area. Additionally, the project features would not conflict and do not overlap with land designated as open space. This project would not adversely impact the CCT or its use in the long term. The project features would not conflict with the uses of the trail.

Key provisions of the CCA and San Mateo LCP are provided below, along with an evaluation of permitting activities of the project (see Table 2-6 and Table 2-7.)

San Mateo County General Plan 2013

The project would be consistent with the San Mateo County General Plan (San Mateo County 2013b). This project aligns with the following policies, goals, and objectives by providing a safe, reliable highway for motorized vehicles and multi-modal users, while maintaining or enhancing the visual quality of the highway:

- Goal and Objective (GO) 12.6: Plan for a transportation system that provides for the safe, efficient, and convenient movement of people and goods in and through San Mateo County.
- GO 12.11: Balance and attempt to minimize adverse environmental impacts resulting from transportation system improvements in the County.
- GO 4.1 Protection of Shorelines:
    - Protect and enhance the visual quality of and from shorelines of bodies of water, including lakes, reservoirs, streams, bays, ocean, and sloughs.

- Maximize the preservation of significant public ocean views.

There would be no impact from the project due to inconsistencies with the San Mateo County General Plan. The project would contribute to enhancing the safe movement of people throughout the project corridor.

Table 2-6 Key Provisions of the California Coastal Act

Policy Number	Subject of Policy	Coastal Zone Assessment
Section 30210	Maximum public access and recreational opportunities shall be provided.	This project would not affect access to or recreational opportunities involving the coast. The proposed safety features would not interfere with the public's access to the beach.
Section 30211	Development shall not interfere with public access to the sea.	The project would not interfere with the public's access to the coast.
Section 30212	New development Projects shall provide for public access to the shoreline and along the coast.	Access to the coast already exists near the project location, and this project would not affect this access.
Section 30252	Public Access	The public's access to coastal resources would be preserved as described above. Public access and use of the CCT and recreational areas would not be adversely affected by the project.
Section 30231	Biological activity; water quality	With the proposed Project Features and AMMS, this project would not have any impact on biological activity. The project would not affect water quality either directly or indirectly. Caltrans would implement Project Feature WQ-1 to reduce any potential impact to water quality from the project.
Section 30233	Diking, filing, and dredging of wetlands	Caltrans would conduct the project entirely from the highway shoulders and adjacent disturbed areas. Alternative 1 would potentially result in temporary impacts to 0.02 acre of coastal wetlands and Alternative 2 would potentially result in permanent impacts to 0.03 acre and temporary impacts to 0.03 acre of coastal wetlands.
Section 30235	Construction altering natural shoreline	There would be no alterations to the natural shoreline as part of this project; the work would be confined to the highway lanes and adjacent shoulder areas.
Section 30240	Environmentally Sensitive Habitat Areas	There would be no impact to environmentally sensitive habitat areas because the project would be confined to paved and highly compacted surfaces.
Section 30241-30242	Agricultural land	No Prime Farmland or lands under a Williamson Act contract are present within the project footprint.
Section 30244	Archaeological/Paleontological resources	There would be no impact to any archaeological or paleontological resources as part of the project.
Section 30251	Scenic and visual qualities	There would be no impact to scenic or visual resources as part of the project

Policy Number	Subject of Policy	Coastal Zone Assessment
Section 30254	Public works facilities	This project would not change the character of SR 1, which would remain a scenic two-lane highway.
Section 30604	Coastal Development permits shall include a finding that the development is in conformity with public access and public recreation policies; housing opportunities for low and moderate income persons	Caltrans would be in conformity with public access and public recreation policies. Creating housing opportunities for low and moderate income persons is outside of the scope of this project.
Section 30609.5	State lands between the first public road and the sea; sale or transfer	No state lands would be sold to a private entity as part of the project.

Notes:

AMMS = Avoidance and Minimization Measure

Caltrans = California Department of Transportation

CCT = California Coastal Trail

SR = State Route

Table 2-7 Key Components of the San Mateo County Local Coastal Program

Component Subject	San Mateo County Local Coastal Program Assessment
Locating and Planning New Development	The project would be considered new development under the definition within the SMLCP. The project would not have any effect on growth, sensitive archaeological or paleontological resources, or require the development of public services and infrastructure as a result of the project. Caltrans would implement BMPs to minimize the project's effect on water quality in the project area.
Public Works	The project involves replacing and installing new safety improvements on SR 1, which is an existing public transportation facility. Highway capacity would not be increased as specified in Section 2.44b in the SMLCP. SR 1 would remain a scenic two-lane road after construction.
Housing	The project is in a rural area of the SR 1 corridor and would have no impacts to housing.
Energy	The project does not include the construction of any oil or gas wells, onshore oil facilities, pipelines or transmission lines, or alternative energy facilities.
Agriculture	The project would be constructed within the existing Caltrans right-of-way and would not impact agricultural land or land zoned for timber harvest. The project would not conflict with the Agriculture Component in the SMLCP.
Aquaculture	The project would not affect aquaculture facilities or construct any new aquaculture facilities.
Sensitive habitats	There are sensitive habitats in the BSA. However, project activities would be confined to paved or highly compacted surfaces and would not result in impacts to these habitats.
Visual Resources	The project would result in temporary impacts to visual resources during construction. The project is likely to enhance the view from the highway after the project is complete, because the new safety barrier will be an aesthetic improvement over the existing guardrail or K-rail as well as provide a more scenic roadway.
Hazards	The project is not in a high-risk fire area or in an area that is at risk for liquefaction and severe seismic impacts. The project is in an area that could experience tsunamis or flooding. This project would not create features that would worsen impacts on the surrounding areas from such hazards. This project would be consistent with this component of the San Mateo LCP.
Shoreline Access	The project would not construct improvements in or adjacent to existing trails or shoreline access areas. There, the project is not anticipated to impact shoreline access.
Recreation/Visitor Serving Facilities	The project would be constructed within the existing Caltrans right-of-way and would not impact adjacent recreation/visitor serving facilities.
Commercial Fishing/ Recreational Boating	The project would have no impact on commercial fishing or recreational boating.

BMP = Best Management Practice
BSA = Biological Study Area
Caltrans = California Department of Transportation
K Rails = temporary safety barrier
LCP = Local Coastal Program
SMLCP = San Mateo County Local Coastal Program
SR = State Route

The project would not cause a substantial adverse effect on coastal resources and is anticipated to have no significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted to avoid or mitigate an environmental effect. The impact would be less than significant.

2.14 Mineral Resources

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	No	No	No	Yes
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	No	No	No	Yes

a) and b) No Impact

The project would not be constructed in a known mineral resource zone. Construction of the project would take place in previously disturbed soil within existing the Caltrans right-of-way. According to the United States Geological Survey Mineral Resources On-line Spatial Data, the project is not close to or on a known mineral resource (USGS 2021). There would be no impact.

2.15 Noise

Would the Project Result In:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	No	No	No	Yes
b) Generation of excessive groundborne vibration or groundborne noise levels?	No	No	No	Yes
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	No	No	No	Yes

a), b), and c) No Impact

The project would be constructed within existing state right-of-way in a rural area of San Mateo County. The closest sensitive noise receptors are residences in Montara, 0.5 mile south of locations 1 and 2. The project is not a Type I project under 23 CFR 772 because it would not alter the location of a roadway, alter the horizonal or vertical alignment of the roadway, or increase the number of through-traffic lanes on the roadway. It is not a Type II project because it is not a project for noise abatement on an existing highway. Therefore, the project is a Type III project; no significant operational noise impacts are anticipated, and no Noise Study is required.

The project could result in increases in noise during construction. However, construction noise would be temporary and intermittent and would be within acceptable levels for construction activity. In addition, in accordance with 2018 Caltrans Standard Specifications Section 14-8.02, construction activities are not to exceed 86 A-weighted decibel (dBA) Maximum Noise Level (L_{max}) at a distance of 50 feet from 9 p.m. to 6 a.m.

Groundborne vibration and groundborne noise levels could slightly increase during construction of the project. Vibration would be intermittent, depending on what

construction activities are occurring. This vibration would be minimal, temporary, and short in duration. Therefore, there would be no impact related to vibration.

The nearest airport is Half Moon Bay Airport, which is 1.6 miles south of the project limits. The project is not in an identified noise level contour for the airport (City/County Association of Governments of San Mateo County [C/CAG] 2014). Therefore, the project would not expose construction workers to excessive noise from airports.

2.16 Population and Housing

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No	No	No	Yes
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No	No	No	Yes

a) No Impact

The project would not involve the construction of new residential buildings, businesses, or expand transportation services and facilities that could induce population growth. No impact would result from the project.

b) No Impact

The project would not remove or displace existing people or housing and would not necessitate construction of replacement housing elsewhere. No impact would result from the project.

2.17 Public Services

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: Fire protection?	No	No	No	Yes
Police protection?	No	No	No	Yes
Schools?	No	No	No	Yes
Parks?	No	No	No	Yes
Other public facilities?	No	No	No	Yes

a) No Impact

The project would have no effect on the provision or need for public services. Project construction has the potential to increase traffic delays on SR 1 that could affect response times of emergency response vehicles. However, Caltrans would prepare a TMP to ensure that traffic flows are maintained during construction and to ensure accessibility throughout the corridor for emergency service providers. The project does not include construction of new housing or other land uses that could directly or indirectly increase the local population and demand for governmental facilities and services, such as fire protection, police protection, schools, or parks. Because the project would not be growth-inducing, the project would have no effect on existing demands for fire protection, police protection, schools, parks, or other public facilities in the surrounding area. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or result in the need for new or physically altered governmental facilities.

2.18 Recreation

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	No	No	No	Yes
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	No	No	No	Yes

a) No Impact

Gray Whale Cove State Beach, Montara State Beach, and McNee Ranch State Park (part of Montara State Beach) are all adjacent to the project limits, with access provided by SR 1. All three parks are owned and managed by the California Department of Parks and Recreation. In general, the parks are open from 8:00 a.m. until sunset and allow hiking, biking, horseback riding, and walking dogs on leash.

The project would involve several safety improvements along SR 1. It does not include features that would directly or indirectly result in an increase in the use of nearby recreational facilities that would result in such an increase in use of these neighborhood and regional parks or other recreational facilities that deterioration would occur or be accelerated. There would be no impact.

b) No Impact

The project does not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. There would be no impact.

2.19 Transportation

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	No	No	Yes	No
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	No	No	Yes	No
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	No	No	No	Yes
d) Result in inadequate emergency access?	No	No	Yes	No

SR 1 within the project limits is an undivided two-lane conventional highway with two 12-foot lanes and 1- to 4-foot typical outside shoulders. It is the primary route connecting coastal communities and cities—including Half Moon Bay, Montara, and Pacifica—to one another.

One-way traffic control would be necessary during construction and could cause short-term localized traffic congestion and delays. One-way traffic control would consist of flaggers to regulate traffic. However, the project would not permanently alter the circulation system, nor would it have any effect on vehicle miles traveled (VMT). The project is not capacity-increasing and is therefore VMT-neutral.

a) Less than Significant Impact

The project would not conflict with policies, goals, or objectives regarding the circulation system, public transit, bicycle, or pedestrian facilities in the San Mateo County General Plan or General Plan Policies (San Mateo County 1986, General Plan) (San Mateo County 2013b), nor would it affect access to recreational trails in or near the project area, such as the California Coastal Trail.

SamTrans operates a bus service, Route 17, through the project limits along SR 1. In addition, the project corridor is part of the Pacific Coast Bicycle Route. A TMP would be developed with input from the local community during the design phase. The TMP

would detail how access would be maintained during construction. As part of the TMP, SamTrans would be notified prior to construction to minimize service disruption. Therefore, although delays are anticipated, impacts would be less than significant.

b) Less than Significant Impact

This project is consistent with CEQA Guidelines section 15064.3, subdivision (b), which relates to induced demand and vehicle miles traveled. The project would have no impact on VMT because it is not a capacity-increasing project. Under section 15064.3, subdivision (b), transportation projects that have no impact on VMT should be presumed to cause less than significant transportation impacts.

c) No Impact

This project would not increase hazards, because the existing geometric design of the roadway would not be altered. The project is intended to enhance traffic safety by reducing run-off-the-road accidents from errant vehicles within the project limits and would introduce new safety features to the shoulder without altering the existing design of the roadway.

d) Less than Significant Impact

Under the TMP (TRANS-1), medical and emergency vehicles would be able to continue to use routes in the local area to serve fire, medical, and law enforcement purposes. During one-way reversing traffic control, flaggers would give priority to emergency vehicles. The impact would be less than significant.

Avoidance and Minimization Measure

TRANS-1: Develop a Traffic Management Plan: To offset temporary disruption during construction, a TMP will be developed by Caltrans with input from the local community during the design phase. The TMP would include one-way traffic controls, flaggers, and construction phasing to reduce impacts to local residents and maintain access for emergency services. The TMP would also include coordination with San Mateo County, and public notification in the event of an emergency. The TMP would also ensure access to residential driveways that are near construction activities. The TMP would have the added benefit of reducing construction GHG emissions by limiting traffic delays.

2.20 Tribal Cultural Resources

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	No	No	No	Yes
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No	No	No	Yes

a) and b) No Impact

No tribal cultural resources were reported in record searches or in attempts to consult with Native groups and individuals. There would be no impact to tribal cultural resources.

2.21 Utilities and Service Systems

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	No	No	No	Yes
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	No	No	No	Yes
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	No	No	No	Yes
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	No	No	No	Yes
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No	No	No	Yes

a), b), c), d), and e) No Impact

The project would involve replacing and installing new safety guardrails along SR 1 within the Caltrans right-of-way for vehicle protection. The project would not require installation of new utilities. There are existing utilities within the project limits that could potentially require relocation. However, any interruption of service associated with these relocations would be temporary and short-term. If necessary, underground utility verification (known as potholing) would be completed during the design phase.

The project does not include new development or uses that would require water supplies. The project would generate a small amount of solid waste during construction.

However, Caltrans (and its contractor) would comply with all federal, state, and local management and reduction statutes and regulations related to solid waste disposal. No impact would result.

2.22 Wildfire

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	No	No	Yes	No
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	No	No	No	Yes
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	No	No	No	Yes
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	No	No	No	Yes

a) Less than Significant Impact

The project is entirely in State Responsibility Areas, classified as Moderate and Very High Fire Severity Zones (CAL FIRE 2007). The project would be subject to San Mateo County's Emergency Operations Plan (EOP). The EOP provides guidelines for emergency response planning, preparation, training, and execution throughout the county. The project would result in some short-term construction-related traffic on SR 1. Caltrans would prepare a TMP to maintain the flow of traffic during construction and ensure access priority for fire and police essential vehicles through the project area. Therefore, a substantial reduction in emergency response times is not expected; after construction, there would be no changes to the existing capacity of the roadway that would impact an emergency response plan or evacuation plan. The impact would be less than significant.

b) and c) No Impact

The project includes the installation of new guardrails and safety barriers for vehicle safety at 11 locations along SR 1 within the project limits. The project does not include effects to occupied structures, because none exist within the project limits. The project would not require installation of associated infrastructure that would exacerbate fire risk in the project area. During construction, measures for minimizing fire risks would be incorporated and would follow state and federal fire regulations. There would be no impact.

d) No Impact

Frequent landslides and erosion are known to occur along SR 1. The project would replace and install new guardrails and safety barriers at 11 locations along SR 1 within the project area, as well as several retaining walls (depending on the alternative selected). Implementation of erosion control measures, incorporated into the design of the project as part of Caltrans standards and specifications and in compliance with all applicable regulations, would avoid or minimize the project's potential to result in downslope or downstream flooding or landslides as a result of runoff, post-fire slope stability, or drainage changes. Additionally, construction and operation of the project would not alter the existing topography or create slopes that would increase susceptibility to wildfire hazards, including downslope or downstream flooding, or landslides. There would be no impact.

2.23 Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	No	No	No	Yes
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	No	No	No	Yes
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	No	No	No	Yes

a) No Impact

No impact to biological or cultural resources are anticipated as a result of the project with the implementation of Project Features and AMMs. The project does not have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal species; nor does it have the potential to affect important examples of California history or prehistory.

b) No Impact

The project would be constructed in the vicinity of other past and planned Caltrans projects, as documented in Table 2-8. There are no capacity increasing projects in the vicinity of the project. Additionally, the San Mateo County Transportation Authority (SMCTA) is evaluating the feasibility of projects and alternatives identified in the Highway 1 Safety and Mobility Improvement Study to relieve congestion; improve throughput; and enhance safety for motorists, bicyclists, and pedestrians along a 7-mile stretch of SR 1 in San Mateo County, which includes the project area (SMCTA 2015). The potential improvements of this endeavor include designated pedestrian crossings, left-turn lanes, acceleration lanes, and raised medians.

Table 2-8 Past and Planned Projects

Project Number and Title	Project Location	Project Type	Construction Year
EA 04-2K880 – State Route 1 Traffic Operational Systems Improvement Project	SR1 PMs 26.43-47.20	Provide emergency and incident-management related information to the traveling public and Caltrans.	2022
EA 04-0Q130	SR1 PMs 27.5-34.8	Rehabilitate roadway, upgrade guardrail and Transportation Management System (TMS) elements, rehabilitate drainage systems, upgrade facilities to Americans with Disabilities Act (ADA) standards, and make bicycle improvements.	N/A
EA 04-2J790 – State Route 1 and State Route 84 Structures and Scour Mitigation Project	SR1 PM 28.9	Retrofit scour critical bridges at the Pilarcitos Creek Bridge No. 35-0139L/R and on Route 84 at San Gregorio Creek Bridge No. 35-0166.	2022
EA 04-0Q670	SR1 PM 36.2	Repair damaged storm drain and restore eroded embankment near Montara, south of 9th Street.	N/A
EA 04-0Q440	SR1 PMs 44.0-48.0	Construct permanent Best Management Practices (BMPs) to achieve statewide National Pollutant Discharge Elimination system permit compliance units for trash capture and Total Maximum Daily Load.	N/A
EA 1Q130 - Gray Whale Cove Pedestrian Crossing	SR1 PM 37.8-38.0	Modifications to the Gray Whale Cove State Beach parking lot off of SR 1 and the pedestrian crossing from the parking lot across the roadway to the beach, in order to improve pedestrian safety for beach users.	N/A

ADA = Americans with Disabilities Act
BMPs = Best Management Practices
PM = post mile
SR = state route
TMS = Transportation Management System

The project is anticipated to have less than significant or no impacts in all resource areas identified in the checklist above. Construction-related impacts, such as traffic disruptions due to lane closures, would be temporary and minor in nature, and the long-term effects of the project on the environment are negligible. Therefore, the projects listed in Table 2-8, and the potential congestion and safety improvements proposed by SMCTA, do not have the potential to cumulatively contribute to effects on the environment when viewed in connection to this project.

c) Less than Significant Impact

As noted in the previous CEQA checklist items above, the project would have a less-than-significant impact or no impact on the environment, including on aesthetics, habitat and threatened and endangered species, and cultural resources. This project does not have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species or cause a drop in their population below self-sustaining levels.

Caltrans considered a future multi-asset project (EA 04-0Q130K), another Caltrans project, as part of its cumulative analysis. The purpose of the multi-asset project would be to restore the roadway to a condition that would require only minimal maintenance expenditures, and to upgrade existing traffic system infrastructure. The multi-asset project would take place along SR 1 south of the project limits between Wavecrest Road and 0.1 mile south of Marine Boulevard, in San Mateo County. Project elements would include upgraded guardrails, variable message signs at 5 locations, roadway rehabilitation, and improvements to transit, bicycle, and pedestrian facilities. Circulation of the draft CEQA document for the multi-asset project is anticipated in March 2022. Features to be included in the multi-asset project would be similar in scale and style with existing roadway elements in the corridor and no significant impacts are anticipated.

Based on the analysis provided in the CEQA checklist items above, the project would not have impacts that would be cumulatively considerable. The short-term and temporary nature of construction impacts and negligible long-term effects would result in less-than-significant or no impacts for all resource areas evaluated. Therefore, the project, in combination with known past, present, or future projects, would not contribute in a cumulative manner to effects on the environment. This project would not have any environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

2.24 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to GHG emissions, particularly those generated from the production and use of fossil fuels.

Although climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change by the United Nations and World Meteorological Organization in 1988 led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including CO_2, CH_4, N_2O, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, and various HFCs. CO_2 is the most abundant GHG; although it is a naturally occurring component of the Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2.

Two terms are typically used when discussing how to address the impacts of climate change: greenhouse gas mitigation and adaptation. GHG mitigation covers the activities and policies aimed at reducing GHG emissions to limit or "mitigate" the impacts of climate change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels). This analysis will include a discussion of both.

2.24.1 Regulatory Setting

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

2.24.1.1 FEDERAL

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

The National Environmental Policy Act (NEPA) (42 USC Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to

valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2019). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values—"the triple bottom line of sustainability" (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Economy Standards. This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy program based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Energy Policy Act of 2005, 109th Congress H.R.6 (2005–2006): This act sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) the establishment of the Office of Indian Energy Policy and Programs within the Department of Energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

The United States Environmental Protection Agency (U.S. EPA) in conjunction with the National Highway Traffic Safety Administration is responsible for setting GHG emission standards for new cars and light-duty vehicles to significantly increase the fuel economy of all new passenger cars and light trucks sold in the United States. Fuel efficiency standards directly influence GHG emissions.

2.24.1.2 STATE

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and executive orders (EOs) including, but not limited to the following:

EO S-3 05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of AB 32 in 2006 and SB 32 in 2016.

AB 32, Chapter 488, 2006, Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3 05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

EO S-01 07 (January 18, 2007): This order sets forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020. ARB re-adopted the low carbon fuel standard regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

SB 391, Chapter 585, 2009, California Transportation Plan: This bill requires the State's long-range transportation plan to identify strategies to address California's climate change goals under AB 32.

EO B-16 12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

EO B-30 15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of

reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$). Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, Safeguarding California, every 3 years, and to ensure that its provisions are fully implemented.

SB 32, Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30 15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

SB 1386, Chapter 545, 2016, declared "it to be the policy of the state that the protection and management of natural and working lands … is an important strategy in meeting the state's GHG reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands."

AB 134, Chapter 254, 2017, allocates GHG Reduction Funds and other sources to various clean vehicle programs, demonstration/pilot projects, clean vehicle rebates and projects, and other emissions-reduction programs statewide.

SB 743, Chapter 386 (September 2013): This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on VMT, to promote the state's goals of reducing GHG emissions and traffic-related air pollution and promoting multimodal transportation while balancing the needs of congestion management and safety.

SB 150, Chapter 150, 2017, Regional Transportation Plans: This bill requires ARB to prepare a report that assesses progress made by each MPO in meeting their established regional GHG emission reduction targets.

EO B-55 18 (September 2018) sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

EO N-19 19 (September 2019) advances California's climate goals in part by directing the California State Transportation Agency to leverage annual transportation spending

to reverse the trend of increased fuel consumption and reduce GHG emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This EO also directs ARB to encourage automakers to produce more clean vehicles, formulate ways to help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

2.24.1.3 ENVIRONMENTAL SETTING

The segment of SR 1 within the project limits is in unincorporated areas in San Mateo County. This segment of SR 1 is in a semi-rural environment, and adjacent to both undeveloped areas and developed areas. SR 1 provides access to beaches, state parks and national recreation areas. The majority of GHG gases emissions in the project limits are from vehicle use.

The BAAQMD's 2017 clean air plan addresses GHGs in the project region. The U.S. EPA is responsible for documenting GHG emissions nationwide, and the ARB does so for the state, as required by Health and Safety Code (H&SC) Section 39607.4.

2.24.1.4 NATIONAL GHG INVENTORY

The U.S. EPA has prepared the Inventory of the U.S. Greenhouse Gas Emissions and Sinks every year since the 1990s and submits it to the United Nations in accordance with the Framework Convention on Climate Change (see Figure 2-7). The inventory provides a comprehensive accounting of all human-produced sources of GHGs in the United States, reporting emissions of CO_2, CH_4, N_2O, HFCs, perfluorocarbons, sulfur hexafluoride (SF_6), and nitrogen trifluoride. It also accounts for emissions of CO_2 that are removed from the atmosphere by "sinks" such as forests, vegetation, and soils that uptake and store CO_2 (carbon sequestration). In 2018, GHG emissions from the transportation sector accounted for 28 percent of US GHG emissions (U.S. EPA 2020).

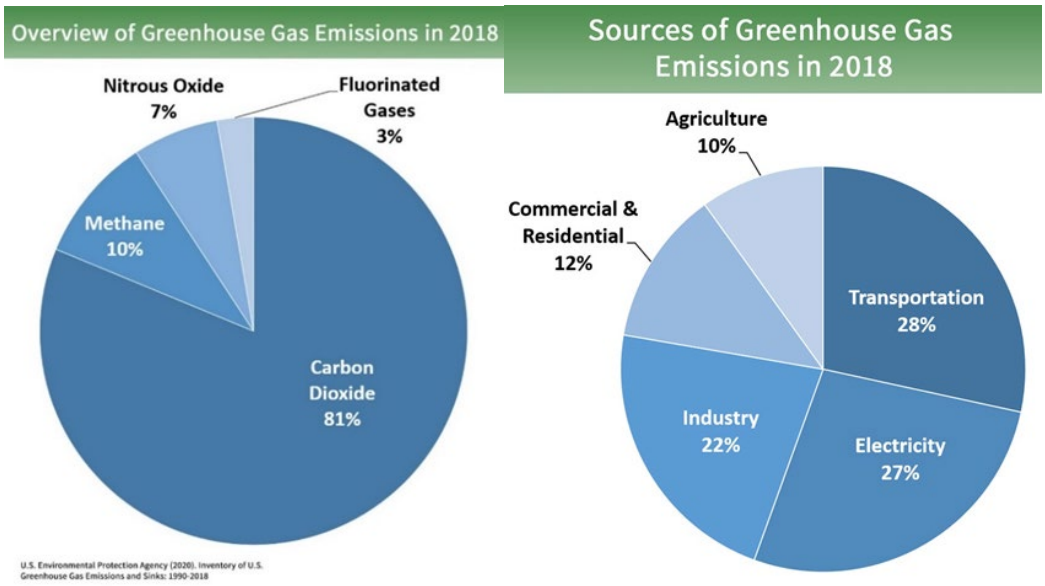

Figure 2-7 U.S. 2016 Greenhouse Gas Emissions

2.24.1.5 STATE GHG INVENTORY

ARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year (see Figure 2-8). It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2019 edition of the GHG emissions inventory found total California emissions of 424.1 $MMTCO_2e$ for 2017, with the transportation sector responsible for 41 percent of total GHGs. It also found that overall statewide GHG emissions declined from 2000 to 2017 despite growth in population and state economic output (ARB 2019a) (see Figure 2-9).

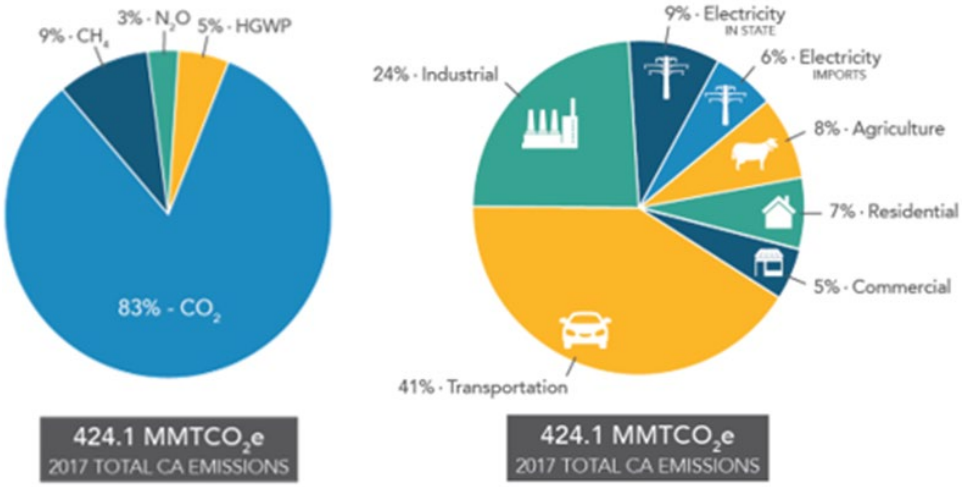

Figure 2-8 California 2017 Greenhouse Gas Emissions

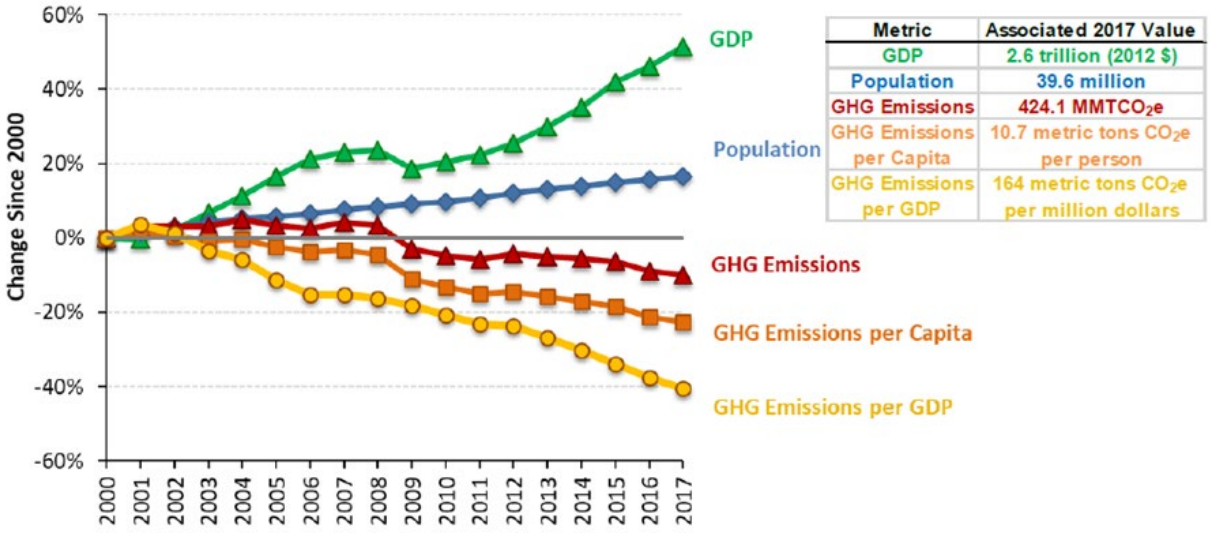

Figure 2-9 Change in California GDP, Population, and GHG Emissions since 2000 (Source: ARB 2019a)

AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every 5 years. ARB adopted the first scoping plan in 2008. The second updated plan, California's 2017 Climate Change Scoping Plan, adopted on December 14, 2017, reflects the 2030 target established in EO B 30 15 and SB 32. The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions.

2.24.2 Regional Plans

ARB sets regional targets for California's 18 MPOs to use in their Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) to plan future projects that will cumulatively achieve GHG reduction goals. Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The Metropolitan Transportation Commission is the MPO and regional transportation planning agency for the project region, for which ARB has established GHG reduction targets of 10 percent by 2020 and 19 percent by 2035. However, the project is not included in the RTP/SCS project list.

Plan Bay Area goals align with those of the California Transportation Plan 2040, which include CO_2 emissions reduction to tackle future climate change and fixing an aging transportation system (ABAG and MTC 2017).

The BAAQMD's 2017 clean air plan, Spare the Air, Cool the Climate, defines strategies for climate protection in the Bay Area that support goals laid out in Plan Bay Area. Goals include transforming the transportation sector to reduce motor vehicle travel, promote zero-emissions vehicles and renewable fuels, adopt fixed- and flexible-route transit services, and support infrastructure and planning that enable a large share of trips by bicycling, walking, and transit.

San Mateo County adopted an energy efficiency climate action plan in 2013 with a GHG reduction target of 17 percent below 2005 emissions levels by 2020. The climate action plan aligns with GHG-reduction goals and policies of the San Mateo County General Plan that focus on energy efficiency, waste reduction, and efficient land use in the unincorporated county (San Mateo County 2013b).

2.24.2.1 PROJECT ANALYSIS – CONSTRUCTION EMISSIONS

GHG gasses are responsible for causing climate change. As discussed in Section 2.10 Greenhouse Gas Emissions, GHG gasses would be generated during construction of the project. It was estimated that for a construction duration of 6 months, the total amount of CO_2 produced for the construction of the project would be 166.00 tons. Total CO_2e emissions (CO_2, CH_4, and N_2O) would be 151.51 metric tons. The CEQA Guidelines generally address GHG emissions as a cumulative impact due to the global nature of climate change (Pub. Resources Code, § 21083(b)(2)). As the California Supreme Court explained, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself." (Cleveland National Forest Foundation v. San Diego Assn. of Governments (2017) 3 Cal. 5th 497, 512.). In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment. Because GHG emissions associated with the construction of this project are not substantial, this project is not expected to contribute a significant cumulative impact. There may be some GHG emissions associated with ongoing maintenance operations from the use of vehicles and gas or diesel equipment. Nonetheless, maintenance operations would occur periodically and are not expected to contribute significantly to GHG emissions.

2.24.2.2 PROJECT ANALYSIS – OPERATIONAL EMISSIONS

The purpose of this project is to enhance traffic safety by reducing run-off-the-road accidents from errant vehicles within the project limits. The project is not a capacity increasing project. Because the project would not increase the number of travel lanes, no increase in VMT would occur as result of project implementation. Although some GHG emissions during the construction period would be unavoidable, no increase in operational GHG emissions is expected.

2.24.3 Greenhouse Gas Reduction Strategies

2.24.4 Statewide Efforts

Major sectors of the California economy, including transportation, will need to reduce emissions to meet the 2030 and 2050 GHG emissions targets. Former Governor Edmund G. Brown promoted GHG reduction goals that involved (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farms and rangelands, forests, and wetlands so they can store carbon; and (6) periodically updating the state's climate adaptation strategy, Safeguarding California (see Figure 2-10).

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of VMT. A key state goal for reducing GHG emissions is to reduce today's petroleum use in cars and trucks by up to 50 percent by 2030 (State of California 2019).

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove CO_2 from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

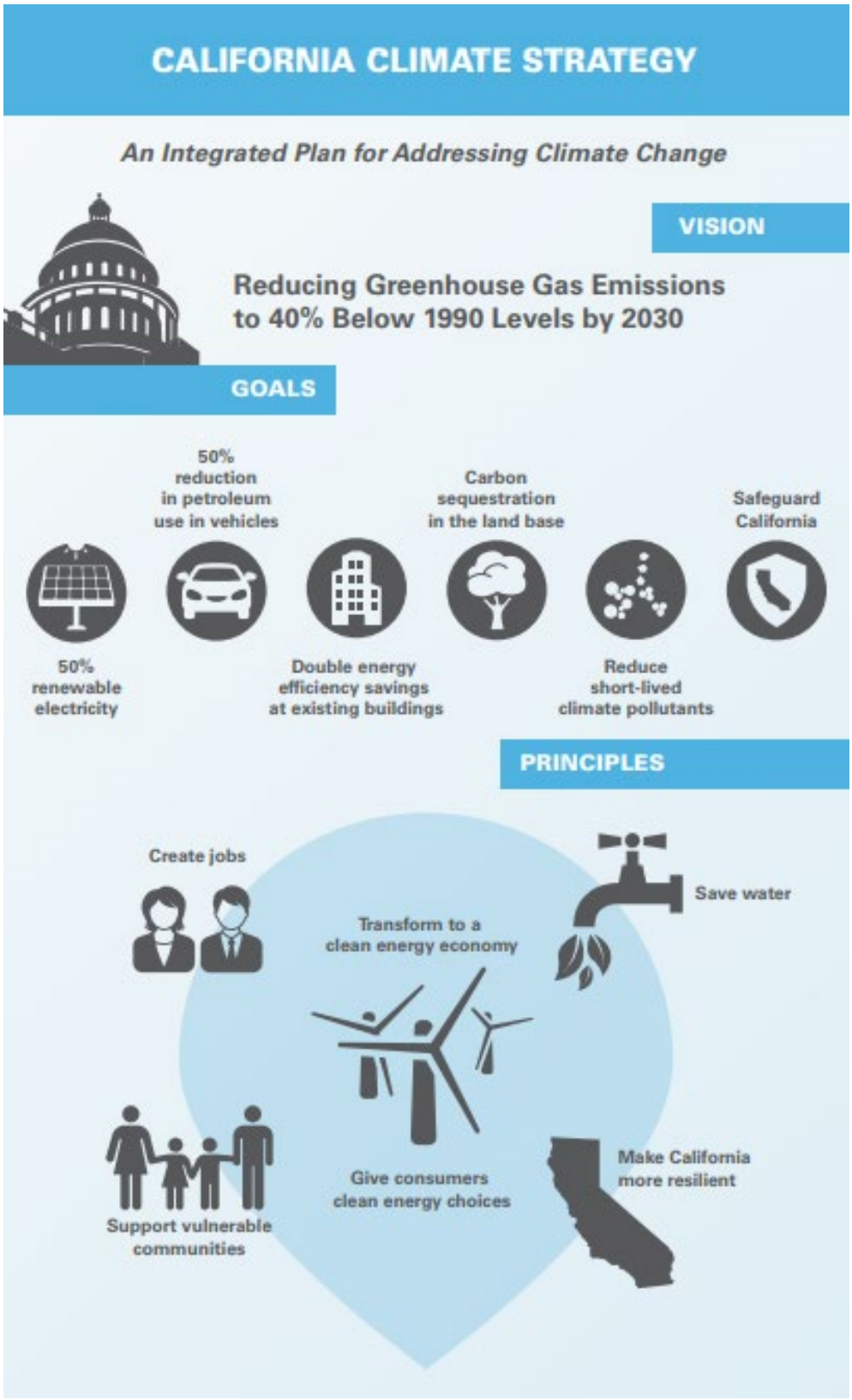

Figure 2-10 California Climate Strategy

2.24.4.1 CALTRANS ACTIVITIES

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EOs S-3 05 and S-01 07 and help achieve the targets set forth in AB 32. EO B-30 15, issued in April 2015, and SB 32 (2016), set an interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

2.24.4.2 CALTRANS STRATEGIC MANAGEMENT PLAN

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

2.24.4.3 FUNDING AND TECHNICAL ASSISTANCE PROGRAMS

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several sustainable transportation planning grants. These grants encourage local and regional multimodal transportation, housing, and land use planning that furthers the region's RTP/SCS; contribute to the State's GHG reduction targets and advance transportation-related GHG emission reduction project types/strategies; and support other climate adaptation goals (e.g., Safeguarding California).

2.24.4.4 CALTRANS POLICY DIRECTIVES AND OTHER INITIATIVES

Caltrans Director's Policy 30 (DP 30) Climate Change (June 22, 2012) is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of Caltrans' statewide activities to reduce GHG emissions resulting from agency operations.

2.24.5 Project-Level GHG Reduction Strategies

The following measures will be implemented in the project to reduce GHG emissions and potential climate change impacts from the project.

1. Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, require contractors to comply with all laws applicable to the project and to certify they are aware of and would comply with all California Air Resources Board (ARB) emission reduction regulations (see Feature GHG-1).

2. A TMP will be prepared during the design phase of the project to minimize traffic disruptions from project construction. Minimizing traffic delays during construction will help reduce GHG emissions from idling vehicles (see AMM TRANS-1).

3. BMPs for air quality will be incorporated during construction activities such as limiting the idling of vehicles and equipment onsite and maintaining vehicles and equipment.

2.24.5.1 Adaptation

Adaptation strategies refer to how Caltrans and others can plan for the effects of climate change on the State's transportation infrastructure and strengthen or protect the facilities from damage or, planning and design for resilience. Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

2.24.5.2 Federal Efforts

Under NEPA Assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The U.S. Global Change Research Program delivers a report to Congress and the president every 4 years, in accordance with the Global Change Research Act of 1990 (15 USC Ch. 56A § 2921 et seq). The Fourth National Climate Assessment, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national

topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways." Chapter 12, "Transportation," presents a key discussion of vulnerability assessments. It notes that "asset owners and operators have increasingly conducted more focused studies of particular assets that consider multiple climate hazards and scenarios in the context of asset-specific information, such as design lifetime" (USGCRP 2018).

The United States Department of Transportation (U.S. DOT) Policy Statement on Climate Adaptation in June 2011 committed the federal Department of Transportation to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of U.S. DOT to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions" (U.S. DOT 2011).

FHWA order 5520 (Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events, December 15, 2014) established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

2.24.5.3 STATE EFFORTS

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. California's Fourth Climate Change Assessment (State of California 2018) is the state's effort to "translate the state of climate science into useful information for action" in a variety of sectors at both statewide and local scales. It adopts the following key terms used widely in climate change analysis and policy documents:

- Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

- Adaptive capacity is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."

- Exposure is the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.
- Resilience is the “capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience”. Adaptation actions contribute to increasing resilience, which is a desired outcome or state of being.
- Sensitivity is the level to which a species, natural system, or community, government, etc., would be affected by changing climate conditions.
- Vulnerability is the “susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt.” Vulnerability can increase because of physical (built and environmental), social, political, and/or economic factor(s). These factors include, but are not limited to ethnicity, class, sexual orientation and identification, national origin, and income inequality. Vulnerability is often defined as the combination of sensitivity and adaptive capacity as affected by the level of exposure to changing climate.

Several key state policies have guided climate change adaptation efforts to date. Recent state publications produced in response to these policies draw on these definitions.

EO S-13 08, issued by then-governor Arnold Schwarzenegger in November 2008, focused on sea-level rise and resulted in the California Climate Adaptation Strategy (2009), updated in 2014 as Safeguarding California: Reducing Climate Risk (Safeguarding California Plan). The Safeguarding California Plan offers policy principles and recommendations and continues to be revised and augmented with sector-specific adaptation strategies, ongoing actions, and next steps for agencies.

EO S-13 08 also led to the publication of a series of sea-level rise assessment reports and associated guidance and policies. These reports formed the foundation of an interim State of California Sea-Level Rise Interim Guidance Document in 2010, with instructions for how state agencies could incorporate “sea-level rise projections into planning and decision making for projects in California” in a consistent way across agencies. The guidance was revised and augmented in 2013. Rising Seas in California – An Update on Sea-Level Rise Science was published in 2017 and its updated projections of sea-level rise and new understanding of processes and potential impacts

in California were incorporated into the State of California Sea-Level Rise Guidance Update in 2018.

EO B 30 15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change other than sea-level rise also threaten California's infrastructure. At the direction of EO B-30 15, the Office of Planning and Research published Planning and Investing for a Resilient California: A Guidebook for State Agencies in 2017, to encourage a uniform and systematic approach. Representatives of Caltrans participated in the multi-agency, multidisciplinary technical advisory group that developed this guidance on how to integrate climate change into planning and investment.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group, which in 2018 released its report, Paying it Forward: The Path Toward Climate-Safe Infrastructure in California. The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts.

2.24.6 Caltrans Adaptation Efforts

2.24.6.1 Caltrans Vulnerability Assessments

Caltrans conducted climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects including precipitation, temperature, wildfire, storm surge, and sea-level rise. The approach to the vulnerability assessments was tailored to the practices of a transportation agency, and involves the following concepts and actions:

- Exposure – Identify Caltrans assets exposed to damage or reduced service life from expected future conditions.
- Consequence – Determine what might occur to system assets in terms of loss of use or costs of repair.
- Prioritization – Develop a method for making capital programming decisions to address identified risks, including considerations of system use and/or timing of expected exposure.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments will guide analysis of at-risk assets and development of adaptation plans to reduce the likelihood of damage to the State Highway System, allowing Caltrans to both reduce the costs of storm damage and to provide and maintain transportation that meets the needs of all Californians.

2.24.7 Project Adaptation Analysis

2.24.7.1 Sea-Level Rise Analysis

The California Ocean Protection Council (OPC) provides the most current accepted estimates for sea level rise in California. Projected sea level rise based on the OPC State of California Sea Level Rise Guidance 2018 Update (OPC 2018) at the nearest tide gauge (San Francisco) assuming a high emissions scenario to end of century (i.e., the year 2100) with a 1-in-20 (5 percent) probability indicates that sea level rise would rise to meet or exceed 4.4 feet above current conditions. To analyze how this level of impact would have impact on the project area, the National Oceanic and Atmospheric Administration (NOAA) Sea Level Rise viewer (https://coast.noaa.gov/digitalcoast/tools/slr.html) and Point Blue's Our Coast Our Future viewer (https://data.pointblue.org/apps/ocof/cms/index.php?page=flood-map) were used to review SR 1 in the project area. Both tools were examined using the nearest sea level rise scenario to the OPC projection identified above that was available in each viewer (5 feet of modeled sea level rise using the NOAA viewer and 4.9 feet using the Point Blue viewer). After reviewing the entire SR 1 corridor using both tools, Caltrans determined that the project is not in an area subject to sea level rise at the conservatively estimated highest potential sea level increase to end of century. Accordingly, there are no anticipated direct impacts on transportation facilities due to sea level rise as a result of the project.

2.24.7.2 Floodplains

Reference was made to Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) numbers, 06081C0117F and 06081C0109F, both dated 8/2/17. Based on these FIRMs, there are no locations where project work is within a base floodplain. Therefore, the proposed work is not expected to have any impacts to these floodplains.

Chapter 3 Comments and Coordination

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners to determine the necessary scope of environmental documentation and the level of analysis required; and to identify potential impacts and avoidance, minimization, and/or mitigation measures and related environmental requirements. Consultation and public participation for this project will be accomplished through a variety of formal and informal methods. This chapter summarizes the results of Caltrans' preliminary efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

3.1 Consultation and Coordination with Public Agencies

3.1.1 U.S. Fish and Wildlife Service Consultation Summary

Consultation with the USFWS has not yet been initiated; however, official species lists were acquired on February 10, 2021, June 23, 2021, and November 30, 2021. Technical assistance with the USFWS Coast-Bay division was requested on May 26, 2021.

Designated critical habitat is present in the BSA for California red-legged frog, and the project may have adverse effects to the California red-legged frog and San Francisco garter snake. Caltrans has made the following determinations for USFWS jurisdictional resources:

- ***May affect, and is likely to adversely affect,*** the California red-legged frog
- ***Will not affect,*** federally designated critical habitat for the California red-legged frog
- ***May affect, and is likely to adversely affect,*** the San Francisco garter snake

A Biological Assessment is being prepared pursuant to Section 7 of FESA for effects to the California red-legged frog. Take (including harassment, harm, wound, and kill) is anticipated with implementation of either alternative. No effects to any other listed, candidate, or proposed species are anticipated. Caltrans biologists have worked closely with project engineers to limit the size and scope of the project. In addition, AMMs, including but not limited to, training for construction personnel, seasonal avoidance, environmentally sensitive area fencing, entrapment avoidance, preconstruction surveys,

and biological monitoring, will be implemented to reduce impacts to listed, candidate, and proposed species and their habitats.

By implementing these measures, Caltrans anticipates minimal adverse direct impacts to the California red-legged frog and its habitat, and San Francisco garter snake.

Caltrans obtained official NMFS species lists on February 10, 2021, June 23, 2021, and November 30, 2021. The project does not overlap with any waterways that support listed fish species. Caltrans has determined there will be no effect on listed species under NMFS' jurisdiction.

3.1.2 California Department of Fish and Wildlife Consultation Summary

State-listed species that have the potential to occur within the BSA, including Hickman's cinquefoil (at locations 1 and 6) and coast yellow leptosiphon. Potential to occur is moderate, and plants were not observed during spring 2021 rare plant surveys. State-level take of California Endangered Species Act (CESA) species is not anticipated. However, if project activities are later determined to rise to the level of "take" of state-listed species, Caltrans will coordinate with the California Department of Fish and Wildlife (CDFW) to determine the next steps.

3.1.3 Coastal Zone Coordination

The project is within the jurisdiction of the San Mateo LCP and the CCC.

On September 23, 2021, Caltrans hosted a preliminary stakeholder outreach meeting to provide a summary of the project. Attendees included representatives from the following agencies:

- California Coastal Commission
- San Mateo County
- City of Half Moon Bay
- Midcoast Community Council
- Half Moon Bay Coastside Chamber of Commerce

Caltrans presented an overview of the project and solicited feedback and questions from the meeting attendees. Although attendees voiced support for the project, they also expressed concerns regarding aesthetic characteristics of the proposed safety barriers.

Caltrans will continue to coordinate with all stakeholders as the project moves forward.

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Appendix A Title VI Policy Statement

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY Gavin Newsom, Governor

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Making Conservation a California Way of Life.

August 2020

NONDISCRIMINATION POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964, ensures "*No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.*"

Caltrans will make every effort to ensure nondiscrimination in all of its services, programs and activities, whether they are federally funded or not, and that services and benefits are fairly distributed to all people, regardless of race, color, or national origin. In addition, Caltrans will facilitate meaningful participation in the transportation planning process in a nondiscriminatory manner.

Related federal statutes, remedies, and state law further those protections to include sex, disability, religion, sexual orientation, and age.

For information or guidance on how to file a complaint, or obtain more information regarding Title VI, please contact the Title VI Branch Manager at (916) 324-8379 or visit the following web page: https://dot.ca.gov/programs/civil-rights/title-vi.

To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Civil Rights, at 1823 14th Street, MS-79, Sacramento, CA 95811; (916) 324-8379 (TTY 711); or at <Title.VI@dot.ca.gov>.

Toks Omishakin
Director

"Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability"

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Appendix B Summary of Project Features, Avoidance and Minimization Measures, and Mitigation Measures

Project Features

Project Feature AES-1: Construction Work Areas. During construction operations, unsightly material and equipment in staging areas shall be placed where it is less visible and/or covered where possible. Construction activities shall limit all construction lighting to within the area of work and avoid light trespass in residential areas through directional lighting, shielding, and other measures as needed.

Project Feature AQ-1: Control Measures for Construction Emissions of Fugitive Dust. Dust control measures would be implemented to minimize airborne dust and soil particles generated from graded areas. For disturbed soil areas, the use of an organic tackifier to control dust emissions would be included in the construction contract. Watering guidelines would be established by the contractor and approved by the Caltrans resident engineer. Any material stockpiles would be watered, sprayed with tackifier, or covered to minimize dust production and wind erosion.

Project Feature AQ-2: Air Pollution Control. Caltrans Standard Specifications Section 14-9.02, Air Pollution Control, requires contractors to follow all air pollution control rules, regulations, ordinances, and statutes.

Project Feature BIO-1: Worker Environmental Training. Construction personnel will attend a mandatory environmental education program delivered by a qualified Caltrans biologist prior to taking part in site construction. The program will focus on the conservation measures that are relevant to an employee's personal responsibilities and will include an explanation as how to best avoid take of California red-legged frog and San Francisco garter snake. At a minimum, the training will include a description of species; how they might be encountered within the project area; their status and protection. A fact sheet conveying this information will be prepared and distributed to all construction and project personnel. Distributed materials will include cards with distinctive photographs of the California red-legged frog and San Francisco garter snake, compliance reminders, and relevant contact information. Documentation of the

training, including sign-in sheets, will be kept on file and made available to regulatory agencies upon request.

Project Feature BIO-2: Proper Use of Erosion Control Devices. To avoid entanglement or injury of susceptible, protected biological resources, erosion control materials that use plastic or synthetic monofilament netting will not be used during the project's construction.

Project Feature BIO-3: Bird Protection Measures. To avoid take of migratory birds during the bird nesting season (February 1 to September 30): a qualified biologist(s) would conduct preconstruction nesting bird surveys no more than three days prior to construction. If an active nest is discovered, the biologists would establish an appropriate exclusion buffer around the nest. The area within the buffer would be avoided until the young are no longer dependent on the adults or the nest is no longer active. If a nesting special-status bird species is discovered, an agency approved biologist would notify the USFWS and/or CDFW for further guidance. Partially constructed and inactive nests would be removed to prevent occupation.

Project Feature BIO-4: Night Lighting. Artificial lighting during nighttime hours will be minimized to the maximum extent practicable. Lighting must be directed to illuminate the immediate work area only, while minimizing spillage into adjacent areas.

Project Feature BIO-5: Trash Control. Food and food related trash items would be secured in sealed trash containers and removed from the site at the end of each day.

Project Feature BIO-6: Pets. Pets would be prohibited from entering the project limits.

Project Feature BIO-7: Firearms. Firearms would be prohibited within the project limits except for those carried by authorized security personnel or local, state, or federal law enforcement.

Project Feature CULT-1: Stop Work Upon Discovery of Cultural Materials. If cultural materials are discovered during construction, all earth-moving activities within a sixty-foot radius would be halted until a Caltrans Professionally Qualified Staff (PQS) can assess the nature and significance of the find.

Project Feature CULT-2: Additional Actions if Cultural Materials Contain Human Remains. If Caltrans PQS determines that cultural materials contain human remains, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains. Caltrans'

OCRS would contact the San Mateo County Coroner. Pursuant to PRC Section 5097.98, if the remains are thought by the coroner to be Native American, the coroner would notify the Native American Heritage Commission, which would then notify the Most Likely Descendent. OCRS would work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Project Feature GHG-1: Emissions Reduction. Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, require contractors to comply with all laws applicable to the project and to certify they are aware of and would comply with all ARB emission reduction regulations.

Project Feature HAZ-1: Unanticipated Hazardous Waste. Caltrans standards will be followed for the proper handling and disposal of any unanticipated hazardous waste discovered during construction.

Project Feature HAZ-2: Aerial Deposited Lead (ADL). The project will implement BMPs according to Caltrans specifications special provision 12-11.09 “Minimal Disturbance of Regulated Material Containing ADL.”

Project Feature WQ-1: Water Quality BMPs. The potential for adverse effects to water quality will be avoided by implementing temporary and permanent BMPs outlined in Section 7-1.01G of the Caltrans Standard Specifications. Caltrans erosion control BMPs will be used to minimize any wind or water related erosion. The State Water Resources Control Board has issued a National Pollution Discharge Elimination System Statewide Storm Water Permit to Caltrans to regulate storm water and non-stormwater discharges from Caltrans facilities. A Water Pollution Control Plan would be developed for the project, as one is required for all projects that have less than one acre of soil disturbance.

Protective measures will be included in the contract, including, at a minimum:

- No discharge of pollutants from vehicle and equipment cleaning are allowed into the storm drain or water courses.
- Vehicle and equipment fueling and maintenance operations must be 50 feet away from water courses.
- Concrete wastes are collected in washouts and water from curing operations is collected and disposed of and not allowed into water courses.

- Dust control will be implemented, including use of water trucks and tackifiers to control dust in excavation and fill areas, rocking temporary access roads entrances and exits, and covering temporary stockpiles when weather conditions require.

Project Feature TRIBE-1: Protect Discovered Tribal Cultural Resources with Temporary Fencing. If any tribal cultural resources are found during construction, a Caltrans PQS archaeologist shall determine whether the resources can be avoided by the project. If the resources can be avoided, the resources would be delineated on the ground with temporary fencing and avoided by construction. No construction-related activities or staging are permitted within these areas.

Avoidance and Minimization Measures

AMM AES-1: Guardrail, Safety Barrier, and Retaining Wall Design. New guardrail and safety barriers will be open, see-through type barriers to maintain views to scenic vistas beyond. New guardrail and safety barriers will include a matte finish on exposed metal to reduce glare. New concrete safety barrier may include context-sensitive color and/or texture surface treatments to aid in visual blending. New guardrails shall be terminated at buried end sections where feasible. Inline end treatments shall be used where buried end sections are not feasible. Newly constructed and replacement retaining walls will be buried to the extent feasible and exposed portions of retaining walls will include materials, color, and/or surface treatments to aid in visual blending.

AMM AES-2: Erosion Control. All disturbed ground surfaces would be restored and treated with erosion control.

AMM BIO-1: Pre-construction Plant Survey. A plant survey will be performed before construction can begin. Special-status plants will be flagged and avoided. If a species cannot be avoided, then consultation with USFWS/CDFW will be done to develop a translocation plan as appropriate. Should a state-listed or federal-listed plant be destroyed, work will stop and the USFWS and/or CDFW will be contacted within one business day. The proposed project anticipates both permanent and temporary disturbances to the sensitive Seaside Daisy Alliance/Coastal Bluff Scrub habitat. Caltrans will re-seed all areas of disturbed soil with a local native hydroseed mix that includes species from the Seaside Daisy Alliance. Caltrans will remove invasive plants within the Caltrans right-of-way at the 11 work locations and hydroseed with a native seed mix.

AMM BIO-2: Special-Status Species on Site. If a special-status species is observed within a construction zone, construction activities within a 50-foot radius of the animal will be suspended until the animal leaves the site voluntarily or an agency-approved protocol for removal has been established.

AMM BIO-3: Restoration/Revegetation. Upon project completion, all temporarily disturbed vegetated areas will be contoured to preconstruction grades, where appropriate, and replanted with appropriate native vegetation as described in the revegetation plan that will be developed in the next phase (Plans, Specification, and Estimates).

AMM BIO-4: Invasive Plant Removal. Plant species identified by the Cal-IPC as "high" (such as *C. edulis* [highway iceplant]) will be removed from the project footprint by bagging vegetative parts of the plant and removing the entire root system if possible. The disturbed area would be replanted with native vegetation that can establish before the invasive species, if possible.

AMM BIO-5: Revegetation Plan. Invasive plants within work areas will be removed at all locations and temporarily-disturbed areas will be re-seeded post-construction with a native and local hydroseed mix that includes fast-growing species and species from the Seaside Daisy Alliance/ Coastal Bluff Scrub habitat.

AMM BIO-6: California red-legged frog and San Francisco garter snake Seasonal Avoidance. All construction activities off of paved surfaces within the project limits will be performed between April 15th and October 15th to minimize effects to California red-legged frog and San Francisco garter snake. Designated staging areas may be utilized outside of this work window once cleared by the USFWS-approved biologist and will have approved fencing installed around the perimeter. Any construction activities that occur in aquatic habitat will occur between June 15th and October 15th to minimize effects to federally listed species including California red-legged frog and San Francisco garter snake. It is anticipated that the implementation of Alternative 1 would require one construction season and the implementation of Alternative 2 would require one construction seasons.

AMM BIO-7: California red-legged frog and San Francisco garter snake Inclement Weather Restriction. No work will occur during or within 24 hours following a rain event exceeding 0.2 inch as measured by The National Oceanic and Atmospheric Administration National Weather Service for San Mateo, CA (KSFO) base station available at Zone Area Forecast for Coastal Waters from Point Reyes to Pigeon Point

California out to 10 nm (weather.gov). USFWS/CDFW approval to continue work during or within 24 hours of a rain event will be considered on a case-by-case basis.

AMM BIO-8: California red-legged frog and San Francisco garter snake Proper Use of Erosion Control Devices. To avoid entanglement or injury of the California red-legged frog, San Francisco garter snake, and other amphibian and reptile species, erosion control materials that use plastic or synthetic monofilament netting will not be used.

AMM BIO-9: California red-legged frog and San Francisco garter snake Avoidance of Entrapment. To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than one-foot deep will be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps constructed of earth fill or wooden planks at an angle no greater than 30 degrees. Before such holes or trenches are filled, they must be thoroughly inspected for trapped animals. All replacement pipes, hoses, culverts, or similar structures less than 12 inches in diameter will be closed, capped, or covered upon entry to the project site. All similar structures greater than 12 inches must be inspected before they are subsequently moved, capped, or buried.

AMM BIO-10: Biological Monitor. The names and qualifications of proposed biological monitor(s) will be submitted to the USFWS for approval prior to the start of construction. The agency-approved biological monitor(s) will keep a copy of the USFWS Biological Opinion in their possession when on site. Through communication with the Resident Engineer, the biological monitor(s) will be on site during all work that could reasonably result in the take of the California red-legged frog or San Francisco garter snake. The monitor(s) will have the authority to stop work that may result in the unauthorized take of special-status species. If the biological monitor exercises this authority, the USFWS will be notified by telephone and e-mail message within one (1) working day.

AMM BIO-11: Pre-Construction/Daily Surveys. Pre-construction surveys for special status species, including the California red-legged frog and San Francisco garter snake will be conducted by the agency-approved biological monitor no more than 20 calendar days prior to any initial ground disturbance and immediately prior to ground-disturbing activities (including vegetation removal and fence installation) within the project footprint. These efforts will consist of walking surveys of the project limits and, if possible, accessible adjacent areas within at least 50 feet of the project limits. The biological monitor will investigate potential cover sites when it is feasible and safe to do

so. This includes thorough investigation of mammal burrows, rocky outcrops, appropriately sized soil cracks, tree cavities, and debris. Native vertebrates found in the cover sites within the project limits will be documented and relocated to an adequate cover site in the vicinity. Safety permitting, the agency-approved biological monitor will also investigate areas of disturbed soil for signs of California red-legged frog or San Francisco garter snake within 30 minutes following initial disturbance of the given area. The need for further pre-construction surveys will be determined by the biologist based upon on site conditions and realized construction timelines.

AMM BIO-12: Protocol for Species Observation. The agency-approved biological monitor(s) will have the authority to halt work through coordination with the Resident Engineer in the event that California red-legged frog(s) or San Francisco garter snake(s) is observed in the project footprint. The Resident Engineer will keep construction activities suspended in a 50-foot radius of the California red-legged frog or San Francisco garter snake in any construction area where the biologist has determined that a potential take of the species could occur. Work will resume after observed listed individuals leave the site voluntarily, the biologist determines that no wildlife is being harassed or harmed by construction activities, or the wildlife is relocated by the biologist to a release site using agency-approved handling techniques.

AMM BIO-13: Handling of Listed Species. If a listed species is discovered, the Resident Engineer and agency-approved biological monitor will be immediately informed.

- If a California red-legged frog or San Francisco garter snake gains access to a construction zone, work will be halted immediately within 50 feet until the animal leaves the site or is captured and relocated by the agency-approved biological monitor.
- The USFWS will be notified within one (1) working day if a California red-legged frog or San Francisco garter snake is discovered within the construction site. CDFW will be notified if a San Francisco garter snake is observed onsite.
- The captured California red-legged frog or San Francisco garter snake will be released within appropriate habitat outside of the construction area but nearby the capture location. The release habitat will be determined by the agency-approved biological monitor.

- The agency-approved biological monitor will take precautions to prevent introduction of amphibian diseases in accordance with the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (USFWS 2005).

AMM BIO-14: Injured Animals. Injured California red-legged frog or San Francisco garter snake will be cared for by an agency-approved biological monitor(s) or a licensed veterinarian, if necessary. Any deceased California red-legged frog or San Francisco garter snake will be preserved according to standard museum techniques and will be held in a secure location. The USFWS will be notified within one (1) working day of the discovery of a death or an injury to any listed species resulting from project-related activities or if a listed species is observed at a construction site. Notification will include the date, time, and location of the incident or the finding of a deceased or injured animal, clearly indicated on a USGS 7.5-minute quadrangle and other maps at a finer scale, as requested by the USFWS, and any other pertinent information.

AMM BIO-15: Reporting. Caltrans will submit post-construction compliance reports prepared by the agency-approved biological monitor to the USFWS within 60 calendar days following completion of project activities or within 60 calendar days of any break in construction activity lasting more than 60 calendar days. This report will detail (1) dates that relevant project activities occurred; (2) pertinent information concerning the success of the project in implementing avoidance and minimization measures for listed species; (3) an explanation of failure to meet such measures, if any; (4) known project effects on listed species, if any; (5) occurrences of incidental take of any listed species, if any; (6) documentation of employee environmental education; and (7) other pertinent information.

AMM BIO-16: USFWS Access. If requested, before, during, or upon completion of groundbreaking and construction activities, Caltrans will allow access by USFWS personnel into the project footprint to inspect the project and its activities.

AMM BIO-17: Badger Den Sites. Active Badger den sites will be marked with flagging and avoided and a buffer zone will be established in coordination with CDFW.

AMM BIO-17: California red-legged frog Upland Habitat and San Francisco garter snake. To minimize impacts to California red-legged frog and San Francisco garter snake upland habitat, areas of unpaved ground-disturbing activities (areas with work but no additional pavement or structure), will be treated with permanent erosion control within one calendar year, if feasible.

AMM TRANS-1: Develop a Traffic Management Plan. To offset temporary disruption during construction, a TMP would be developed by Caltrans with input from the local community during the design phase. The TMP would include one-way traffic controls, flaggers, and construction phasing to reduce impacts to residents and maintain access for emergency services. The TMP would also include coordination with San Mateo County and public notification in the event of an emergency. The TMP would also ensure access to residential driveways that are near construction activities. The TMP would have the added benefit of reducing construction GHG emissions by limiting traffic delays.

Mitigation Measures

MM BIO-1: Compensatory Mitigation for California Red-legged Frog and San Francisco garter snake. Formal consultation with USFWS is anticipated. A Biological Opinion from the USFWS will be obtained prior to construction. Through consultation with USFWS, compensatory habitat mitigation may be provided for the California red-legged frog and San Francisco garter snake. Measures will be implemented before and during construction to avoid and minimize potential impacts to California red-legged frog and San Francisco garter snake.

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Appendix C List of Abbreviations

AB	Assembly Bill
ADA	Americans with Disabilities Act
ADL	Aerial Deposited Lead
AMM	Avoidance and Minimization Measure
APE	Area of Potential Effect
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BC	black carbon
BMP	Best Management Practice
BSA	Biological Study Area
BTU	British thermal units
C/CAG	City/County Association of Governments of San Mateo County
Caltrans	California Department of Transportation
CB	Concrete Barrier
CCA	California Coastal Act of 1976
CCC	California Coastal Commission
CCT	California Coastal Trail
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit

CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	methane
CIDH	cast-in-drilled hole
CNDDB	California Natural Diversity Database
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
dBA	A-weighted decibel
DP 30	Director's Policy 30
DTSC	California Department of Toxic Substances Control
EOP	Emergency Operations Plan
EOs	executive orders
EQ Zapp	Earthquake Hazards Zone Application
FESA	federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
GHG	greenhouse gas
GO	Goal and Objective
H&SC	Health and Safety Code
HFCs	hydrofluorocarbon
IS	Initial Study

K-rail	temporary safety barrier
LCP	Local Coastal Program
L_{max}	Maximum Noise Level
MBGR	metal beam guardrail
MGS	Midwest guardrail system
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
MSATs	mobile source air toxics
N_2O	nitrous oxide
MND	Mitigated Negative Declaration
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCRS	Office of Cultural Resource Studies
OPC	Ocean Protection Council
PM	post mile
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PQS	Professionally Qualified Staff
PRC	Public Resources Code

Programmatic Agreement	First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and Caltrans regarding compliance with Section 106 of the NHPA, as it pertains to the Administration of the Federal Aid Highway Program in California
project	SM 1 Safety Barrier Project
RCEM	Road Construction Emissions Model
ROW	right-of-way
RTP	Regional Transportation Plan
Safeguarding California Plan	Safeguarding California: Reducing Climate Risk
SB	Senate Bill
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SHOPP	State Highway Operation and Protection Program
SM	San Mateo
SMCTA	San Mateo County Transportation Authority
SMLCP	San Mateo County Local Coastal Program
SR	State Route
SSC	State Species of Special Concern
ST	state listed as threatened
TCE	temporary construction easement
TMC	Transportation Management Center

TMP	Traffic Management Plan
U.S. DOT	United States Department of Transportation
U.S. EPA	United States Environmental Protection Agency
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
VIA	Visual Impact Assessment
VMT	vehicle miles traveled

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Appendix E Special-Status Plant and Wildlife Species

Table E-1 List of Special-Status Animal Species Potential to Occur in the BSA

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Acipenser medirostris	Green sturgeon – southern Distinct Population Segment	FT	Sacramento River and near shore marine environment, coastal bays and estuaries along the west coast of North America (NMFS 2018).	Absent	*None.* Work will not occur in the ocean or in streams leading to the ocean. Suitable habitat is not present at stream outlets.
Agrostis blasdalei	Blasdale's bent grass	1B.2, G2, S2	Coastal bluff scrub; Coastal dunes; Coastal prairie. Sandy or gravelly soil close to rocks; often in nutrient-poor soil with sparse vegetation. 5-365 m.	Present	*Low.* Nearest CNDDB-documented occurrence is occurrence #60. Site date is 2015, approximately 1.5 miles from project site in Moss Beach (CDFW 2021). Soil within the BSA is clay and hard sand with dense and low-growing native and invasive vegetation.
Allium peninsulare var. franciscanum	Franciscan onion	1B.2, G5T2, S2	Cismontane woodland; Ultramafic; Valley & foothill grassland. Clay soils; often on serpentine; sometimes on volcanics. Dry hillsides. 5-320 m.	Absent	*Low*. Nearest CNDDB-documented occurrences are about 5 miles away and are from 1950 and 2016. Record #26 details that it was found in an oak woodland (CDFW 2021).
Amsinckia lunaris	Bent-flowered fiddleneck	1B.2, G3, S3	Cismontane woodland; Coastal bluff scrub; Valley & foothill grassland. 3-795 m.	Present	*Low*. Nearest CNDDB documented occurrence (#6) is over 8 miles away from project site and is from 1963. The location of the occurrence was in San Bruno Mountain, "North Tank Hill" (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Antrozous pallidus	Pallid bat	SSC, G4, S3	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites. Coastal scrub Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, riparian woodland, Sonoran desert scrub, upper montane coniferous forest valley and foothill grassland	Present	*Low*. Nearest CNDDB- documented occurrence is occurrence #294 about 6.5 miles away from project site and is from 1947 found in Millbrae (CDFW 2021).
Arctostaphylos franciscana	Franciscan manzanita	FE, 1B.1, GHC, S1	Chaparral, Serpentine outcrops in chaparral. 30-215 m.	Absent	*None*. The nearest CNDDB occurrence (#4) is over 12 miles away and is from 1918, the location of the occurrence was in Mt. Davidson, San Francisco (CDFW 2021). Not seen during 2021 rare plant survey.
Arctostaphylos imbricata	San Bruno Mountain manzanita	SE, 1B.1, G1, S1	Chaparral, coastal scrub. Mostly known from a few sandstone outcrops in chaparral. 275-305 m.	Present	*Low*. The nearest CNDDB occurrence (#4) is over 9 miles away and is from 1981. Location was in San Bruno Mountain, near powerlines on east slope, above Brisbane (CDFW 2021).
Arctostaphylos montana ssp. *ravenii*	Presidio manzanita	FE, SE, 1B.1, G3T1, S1	Chaparral, coastal prairie, coastal scrub. Open, rocky serpentine slopes. 20-215 m.	Present	*Low*. The nearest CNDDB occurrence is over 12 miles away located in Mount Davidson, San Francisco. The occurrence (#1) is from 1923 (CDFW 2021). Not seen during 2021 rare plant survey.
Arctostaphylos montaraensis	Montara manzanita	1B.2, G1, S1	Chaparral; Coastal scrub. Slopes and ridges. 270-460 m.	Present	*Low*. The nearest CNDDB occurrence (#2 from 2014) is less than a mile from the project site and is on the north side of Montara Mountain, between old San Pedro Rd and Middle Fork San Pedro Creek, South of San Francisco at about 300m (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Arctostaphylos pacifica	Pacific manzanita	SE, 1B.1, G1, S1	Chaparral; Coastal scrub. 320 m.	Present	*Low*. The nearest CNDDB occurrence (#1) is near summit of San Bruno Mountain just below parking lot over 9 miles from project site (CDFW 2021).
Arctostaphylos regismontana	Kings mountain manzanita	1B.2, G2, S2	Broadleaved upland forest; Chaparral; North coast coniferous forest. Granitic or sandstone outcrops. 240-705 m.	Absent	*None*. Elevation of project is outside of range. Nearest CNDDB occurrence is from 1993 (#15), is less than 1 mile from project in the middle summit of Montara Mountain (CDFW 2021).
Astragalus pycnostachyus var. *pycnostachyus*	Coast marsh milk- vetch	1B.2, G2T2, S2	Coastal dunes; Coastal scrub; Marsh & swamp, Wetland. Mesic sites in dunes or along streams or coastal saltmarshes. 0-155 m.	Present	*None*. Nearest CNDDB occurrence is from 2004 (#8) and is 35 miles away in Pillar point (CDFW 2021).
Astragalus tener var. *tener*	Alkali milk-vetch	1B.2, G2T1, S1	Alkali playa; Valley & foothill grassland; Vernal pool; Wetland. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-170 m.	Absent	*None*. Nearest CNDDB occurrence (#19) is from 1868 in Potrero, San Francisco. It is over 13 miles away from BSA (CDFW 2021).
Athene cunicularia	Burrowing owl	SSC, G4, S3	Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel. Coastal prairie Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub Sonoran Desert scrub, Valley & foothill grassland	Absent	*None*. Occurrence #2,049 from 2017 is over 13 miles away from BSA, about 5 miles south of HalfMoon Bay (CDFW 2021).
Bombus occidentalis	Western bumblebee	SCE, G2, G3, S1	Once common & widespread, species has declined precipitously from central CA to southern British Columbia, perhaps from disease (CDFW 2020). Open grassy areas, urban parks and gardens, chaparral, shrub, mountain meadows. Nests usually underground. Example food plants: ceanothus, centaurea, chrysothamnus, Cirsium, geranium, grindelia, lupinus, melilotus, mondardella, rubus, solidago, trifolium (Williams et al. 2014)	Absent	*None*. Nearest CNDDB-documented occurrence is about 1.5 miles away and is from 1968. Occurrence #245 details that it was found in Pacifica (CDFW 2021). Small amounts of food plants were recorded at first site visit in March 2021. However, the project impact area is not consistent with the species' needs.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Brachyramphus marmoratus	Marbled murrelet	FT, SE, G3, S2	Coastal waters, bays, mature old-growth forests, low amounts of edge habitats, in coastal mountains	Absent	*None*. Habitat is not present. Nearest CNDDB documented occurrence is from 2011 about 6 miles away. Occurrence #41 details that it was found along Pilarcitos Creek NE of Half Moon Bay (CDFW 2021).
Callophrys mossii bayensis	San Bruno elfin butterfly	FE, G4T1, S3	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County; colonies are located on steep, north-facing slopes within the fog belt; Larval host plant is *Sedum spathulifolium* (bloom April-July)	Present	*Low*. Ground cover in the BSA is shrub. CNDDB recent records #1, 14, and 23 are within 1 mile of the BSA from 2018 and 2017 (CDFW 2021). This species was not seen during the 2021 rare plant survey. AMMs will be in place during construction.
Carex comosa	Bristly sedge	2B.1, G5, S2	Coastal prairie; Freshwater marsh; Marsh & swamp; Valley & foothill grassland; Wetland. Lake margins, wet places; site below sea level is on a Delta island. -5-1,010 m.	Present	*Low*. Freshwater marshes may be present in the BSA, however, the nearest CNDDB record (#10) is extirpated from 1866 and over 9 miles away (CDFW 2021).
Centromadia parryi ssp. *Parryi*	Pappose tarplant	1B.2, G2T2, S2	Chaparral; Coastal prairie; Marsh & swamp; Meadow & seep; Valley & foothill grassland. Vernally mesic, often alkaline sites. 1-500 m.	Absent	*None*. Nearest CNDDB occurrence is #1 from 2006 and is over 3 miles away near Rockaway Beach, North side of State Highway 1 near Quarry (CDFW 2021).
Charadrius nivosus	Western snowy plover	FT, SSC, G3T3, S2	Sandy beaches, salt pond levees and shores of large alkali lakes	Present	*Low*. The nearest CNDDB is over 7 miles away. The occurrence (#148) is from 2016 and is located on the mouth of Pilarcitos Creek, at Half Moon Bay State Beach (CDFW 2021). Two iNaturalist accounts within 4 miles of project. Could occur as fly-over.
Chelonia mydas	Pacific green sea turtle	FT	Found in tropic and subtropical waters in the Mediterranean, Pacific, Atlantic, and Indian Oceans. Found along California coast. No known breeding sites in California (biologicaldiversity.org 2021)	Present	*None.* Although a sandy shore is present for breeding, there are no occurrences in California. Work will not be in the ocean, and water quality BMPs will be in place.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Chorizanthe cuspidata var. *cuspidata*	San Francisco Bay spineflower	1B.2, G2T1, S1	Coastal bluff scrub; Coastal dunes; Coastal prairie; Coastal scrub. Closely related to *C. pungens*. Sandy soil on terraces and slopes. 2-550 m.	Present	*Low*. Latest CNDDB occurrence is from 200X (#2), in Salada over 3.5 miles from project (CDFW 2021).
Chorizanthe robusta var. *robusta*	Robust spineflower	FE, 1B.1, G2T1, S1	Cismontane woodland, coastal dunes, coastal scrub, chaparral. Sandy terraces and bluffs or in loose sand. 5- 245 m.	Present	*Low*. The nearest CNDDB occurrence (#2) is over 7 miles away from the BSA and is from 1913 in Colma (CDFW 2021). Not seen during 2021 rare plant survey.
Cirsium andrewsii	Franciscan thistle	1B.2, G3, S3	Broadleaved upland forest; Coastal bluff scrub; Coastal prairie; Coastal scrub; Ultramafic. Sometimes serpentine seeps. 0-295 m.	Present	*Moderate*. Nearest CNDDB occurrence is within the project footprint in the drainage at Green Valley recorded in 2000 (CDFW 2021). This species was not seen during the 2021 rare plant survey.
Cirsium occidentale var. *compactum*	Compact cobwebby thistle	1B.2, G3, G4T2, S2	Chaparral; Coastal dunes; Coastal prairie; Coastal scrub. On dunes and on clay in chaparral; also in grassland. 5- 245 m.	Present	*Low*. The nearest CNDDB occurrence (#15) is over 10 miles away from 1957 and located in Stanley Drive east of Lake Merce, San Francisco (CDFW 2021).
Collinsia corymbosa	Round-headed Chinese-houses	1B.2, G1, S1	Coastal dunes. 0-30 m.	Absent	*None*. The nearest CNDDB occurrence (#9) is from 1919 in Lake Merced. The occurrence is over 10 miles away (CDFW2021).
Collinsia multicolor	San Francisco Collinsia	1B.2, G2, S2	Closed-cone coniferous forest; Coastal scrub; Ultramafic. 10-275 m.	Present	*Low*. Nearest CNDDB-documented occurrence is at Pedro Point (exact location unknown), within 1 mile of project location. It is from 1998 and presumed extant (CDFW 2021).
Corynorhinus townsendii	Townsend's big-eared bat	SSC, G4, S2	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	Absent	*None.* No Impact. Nearest CNDDB-occurrence is from 2011 and over 4 miles from the BSA, about 0.2 mi ese of Crestmoor Drive at I-280 and about 1.6 mi w of Millbrae City Hall (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Danaus plexippus pop. 1	Monarch – California overwintering population	FC, G4T2T3, S2, S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Closed- cone coniferous forest.	Present	*Moderate*. CNDDB occurrence #64 is within 0.25 mile of location 1 at Martini Creek. The record says 50 or so butterflies from 1984 to 1997. The Park ranger has not seen or received any reports of clusters. The site was visited in 2015 and noted eucalyptus and rich streamside vegetation in a protected gully (CDFW 2021). The vegetation in the gully will not be affected by the project. Large trees near the road will not be affected and are not protected by wind.
Dicamptodon ensatus	California giant salamander	SSC, G3, S2, S3	Aquatic Meadow & seep North coast coniferous forest Riparian forest. Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County, and east to Napa County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	Absent	*None*. No impact. Habitat not present. Nearest CNDDB-documented occurrence (occ #85) is over 5 miles away (CDFW 2021).
Dirca occidentalis	Western leatherwood	1B.2, G2, S2	Broadleaved upland forest; Chaparral; Cismontane woodland; Closed-cone coniferous forest; North coast coniferous forest; Riparian forest; Riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 20-640 m.	Absent	*None*. The nearest CNDDB is occurrence #3 from 1975 0.5 mile below Lake Pilarcitos Dam and is 1.7 miles from BSA (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Emys marmorata	Western pond turtle	SSC, G3, G4, S3	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Absent	*None*. No impact. Habitat is not present. Nearest CNDDB-documented occurrence is over 5 miles away, occurrence number 1,2223 in 2005 (CDFW 2021).
Eriophyllum latilobum	San Mateo woolly sunflower	FE, SE, 1B.1, G1, S1	Cismontane woodland, coastal scrub, lower montane coniferous forest; often on roadcuts; found on and off serpentine; 30-610 m.	Absent	*None*. Habitat absent. Nearest known CNDDB occurrences are over 6 miles away near Crystal Springs Reservoir (CDFW 2021). Not seen during 2021 rare plant survey.
Eucyclogobius newberryi	Tidewater goby	FE, SSC, G3, S3	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River; found in shallow lagoons and lower stream reaches, need fairly still, but not stagnant water and high oxygen levels	Present	*None*. The nearest CNDDB record is #22 from 1984 in Lake Merced, San Francisco and is 10.6 miles away from project site (CDFW 2021). Work will not be in water.
Euphydryas editha bayensis	Bay checkerspot butterfly	FT, G5T1, S1	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay; Bay checkerspot butterfly may also feed on nectar from plants located on adjacent, non-serpentine soils (USFWS 1998). *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* & *O. purpurescens* are the secondary host plants	Absent	*None*. The nearest CNDDB record is over 9 miles away and is occurrence #5 from 2000 in San Bruno Mountain, South slope alone ridge line (CDFW 2021). Not seen during 2021 rare plant survey.
Falco columbarius	Merlin	WL, G5, S3, S4	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Estuary, Great Basin grassland, Valley & foothill grassland. Clumps of trees or windbreaks are required for roosting in open country.	Absent	*None*. Nearest CNDDB occurrence #12 is 3.5 miles away from project (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Falco peregrinus anatum	American peregrine falcon	FD, SD, FP, G4T4, S3, S4	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	Present	*Low*. The nearest CNDDB occurrence is #55 over 8 miles from project site from 2014 located in the San Francisco Airport (CDFW 2021). Known occurrences near Gray Whale Cove State Beach just north of project site. AMMs will be in place.
Fritillaria biflora var. *ineziana*	Hillsboro chocolate lily	1B.1, G3, G4T1, S1	Cismontane woodland; Ultramafic; Valley & foothill grassland. Probably only on serpentine; most recent site is in serpentine grassland. 90-170 m.	Absent	*None.* Nearest CNDDB-documented occurrence is over 7 miles away from the Town of Hillsboro, occurrence #1. (CDFW 2021).
Fritillaria liliacaea	Fragrant fritillary	1B.2, G2, S2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. 3-385 m.	Present	*Low*. Nearest CNDDB occurrence is #37 and is over 3.5 miles away (CDFW 2021). Not seen during 2021 rare plant survey.
Geothlypis trichas sinuosa	Salt marsh common yellowthroat	SSC, G5T3. S3	Resident of the San Francisco Bay region, in fresh and salt-water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	Absent	*None*. No impact. Habitat for this species does not exist within the BSA. Nearest occurrence (#5) is about 3.5 miles North (CDFW 2021).
Gilia capitata ssp. *chamissonis*	Blue coast gilia	1B.1, G5T2, S2	Coastal dunes, coastal scrub. 3-200 m.	Present	*None*. The nearest CNDDB occurrence is #31 from 2001 and is over 10 miles away from project site. (CDFW 2021). Not seen during 2021 rare plant survey.
Gilia millefoliata	Dark-eyed gilia	1B.2, G2, S2	Coastal dunes. 1-60 m.	Absent	*None*. The nearest CNDDB occurrence is #42 from 1903 and is in San Bruno Hills, San Francisco. It is over 9 miles away (CDFW 2021). Not seen during 2021 rare plant survey.
Grindelia hirsutula var. *maritima*	San Francisco gumplant	3.2, G5T1Q, S1	Coastal scrub, coastal bluff scrub, valley and foothill grassland. Sandy or serpentine slopes, sea bluffs. 15-305 m.	Present	*Moderate*. CNDDB occurrence #11 is within the BSA and is from 1972 in Ocean Bluff (CDFW 2021). Not seen during 2021 rare plant survey.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Haliotis cracherodii	Black abalone	FE	Rocky substrates on intertidal and shallow subtidal reefs to about 18 feet deep along the coast. Typically in areas of complex surfaces and deep crevices. Found from Point Arena south to Bahia Tortugas, Mexico. Populations in decline due to withering disease from warmer ocean temperatures, overfishing, and pollutants (NOAA 2020).	Absent	*None*. Habitat is not present in the work area. The nearest CNDDB occurrence is record #11 and is from 1920 in Bay View Hills, San Francisco. It is over 9 miles away (CDFW 2021).
Helianthella castanea	Diablo helianthella	1B.2, G2, S2	Broadleaved upland forest; Chaparral; Cismontane woodland; Coastal scrub; Valley & foothill grassland. Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. 45-1,070 m.	Present	*Low*. The nearest CNDDB record (#12) is over 9 miles away and is from 2012 in East end of San Bruno Mountain, between South San Francisco and Brisbane (CDFW 2021).
Hemizonia congesta ssp. *Congesta*	Congested-headed hayfield tarplant	1B.2, G5T2, S2	Valley and foothill grassland. Grassy valleys and hills, often in fallow fields; sometimes along roadsides. 5-520 m	Absent	*None*. Habitat is not within the BSA. The nearest CNDDB occurrence is #1 and is from 1909 in summit, between Coloma and San Bruno and is over 6 miles away (CDFW 2021).
Hesperevax sparsiflora var. *brevifolia*	Short-leaved evax	1B.2, G4T3, S3	Coastal bluff scrub, coastal dunes, coastal prairie. Sandy bluffs and flats. 0-640 m.	Present	*Low*. The nearest CNDDB occurrence is #2 and is from 1956 in McLaren Park, San Francisco and is over 11 miles from project site (CDFW 2021).
Heteranthera dubia	Water star-grass	2B.2, G5, S2	Marshes and swamps. Alkaline, Still or slow-moving water. Requires a pH of 7 or higher, usually in slightly eutrophic waters. 15-1,510 m.	Absent	*None.* Habitat is not present in the BSA. The nearest CNDDB occurrence is near San Francisco over 9 miles away. Record #1 from 1879 (CDFW 2021)

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Horkelia cuneata var. *sericea*	Kellogg's horkelia	1B.1, G4T1?, S1?	Closed-cone coniferous forest, coastal scrub, coastal dunes, chaparral. Old dunes, coastal sandhills; openings. Sandy or gravelly soils. 5-430 m.	Present	*Moderate*. CNDDB occurrence #60 is within the BSA. The location of this occurrence is in Montara Mountain, includes Devils Slide, McNee Ranch State Park, San Pedro County Park, and Pedro Point Headlands. Unknown when and how many plants were seen. Mapped as best guessed by the CNDDB at the center of the areas mentioned. Source of information for this site is from a 2001 checklist. (CDFW 2021). This species was not seen during thespring 2021 rare plant survey.
Horkelia marinensis	Point Reyes horkelia	1B.2, G2, S2	Coastal dunes, coastal prairie, coastal scrub. Sandy flatsand dunes near coast; in grassland or scrub plant communities. 2-775 m.	Present	*Low*. The nearest CNDDB occurrence is #26 and is over 5 miles away from BSA in Junipero Serra Park and is from 2015 (CDFW 2021).
Hypogymnia schizidiata	Island tube lichen	1B.3, G2, G3, S2	Chaparral, closed-cone coniferous forest. On bark andwood of hardwoods and conifers. 260-540 m.	Absent	*None*. Habitat is not present within the BSA. Nearest CNDDB occurrence is within 1 mile from theBSA. Occurrence #5's location is 0.4 mile west of North Peak and 2.6 miles ne of Point Montara (CDFW 2021).
Hypomesus transpacificus	Delta Smelt	FT, SE,G1, S1	Sacramento- San Joaquin Delta. Seasonally in Suisun Bay, Carquinez, Strait and San Pablo Bay. Seldom found at Salinities>10 ppt. Most often at salinities<2 ppt.	Absent	*None.* The Nearest CNDDB record is #24 from 1937in Merced Lake and is over 10 miles from BSA (CDFW 2021). Project has not in-water work.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Lasthenia californica ssp. *macrantha*	Perennial goldfields	1B.2, G3T2, S2	Coastal bluff scrub, coastal dunes, coastal scrub. 5-185 m.	Present	*Moderate*. The nearest CNDDB occurrences are #45 located within the BSA south of location 1 and #46 located in less than a mile north of the BSA. #45 is from 2015 and was a population of over 500 plants forming a dense mat on the top of the bluff. #46 was found on Devil's Slide trail in 2014. This species was not seen during the spring 2021 rare plant survey.
Laterallus jamaicensis coturniculus	California Black Rail	ST, FP, G3, G4T1, S1	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Absent	*None*. The nearest CNDDB record is #24 and is from 1937 in Lake Merced and is over 10 miles from BSA (CDFW 2021).
Layia carnosa	Beach layia	FE, SE, 1B.1, G2, S2	Coastal dunes, coastal scrub. On sparsely vegetated, semi-stabilized dunes, usually behind foredunes. 3-30 m.	Present	*None*. The nearest CNDDB record is over 10 miles away. Occurrence #6 from 1987 in San Francisco Sand Dunes (CDFW 2021).
Leptosiphon croceus	Coast yellow leptosiphon	SE, 1B.1, G1, S1	Coastal bluff scrub, coastal prairie. 10-150 m. blooms April-May	Present	*Moderate*. Nearest CNDDB occurrence is 1.6 miles south at Moss Beach found in 2015 (CDFW 2021). This species was not seen during the spring 2021 rare plant survey. AMMs will be in place during construction.
Leptosiphon rosaceus	Rose leptosiphon	1B.1, G1, S1	Coastal bluff scrub. 10-140 m.	Present	*Moderate*. Nearest CNDDB record is over a mile south of the project and is from 1903 and 1950, possibly extirpated. Second nearest occurrences are #3 and #27 which are over 3 miles from the BSA. This species was not seen during the spring 2021 rare plant survey.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Lessingia arachnoidea	Crystal Springs lessingia	1B.2, G2, S2	Coastal sage scrub, valley and foothill grassland, cismontane woodland. Grassy slopes on serpentine; sometimes on roadsides. 90-200 m.	Present	*None*. The elevation onsite is outside of the plant's normal range. The nearest CNDDB record is over 6 miles away. Occurrence #6 is from 2014 in Buri Buri Ridge area, approximately 0.8 to 1.5 miles south of the south end of lake San Andreas (CDFW 2021).
Lessingia germanorum	San Francisco lessingia	FE, SE, 1B.1, G1, S1	Coastal scrub. On remnant dunes. Open sandy soils relatively free of competing plants. 3-155 m.	Present	*None*. The nearest CNDDB is over 10 miles from BSA. Occurrence #4f is from 1947 in Lake Merced, Upper end, San Francisco (CDFW 2021). Not seen during 2021 rare plant survey.
Limnanthes douglasii ssp. *ornduffii*	Ornduff's meadowfoam	1B.1, G4T1, S1	Meadows and seeps, agricultural fields. 5-15 m.	Absent	*None*. The nearest record is 2 miles away and is from 2011. The occurrence #1's location is east side of Hwy 1, Moss Beach (CDFW 2021).
Malacothamnus arcuatus	Arcuate bush-mallow	1B.2, G2Q, S2	Chaparral, cismontane woodland. Gravelly alluvium. 1-735 m. Chaparral, Cismontane woodland.	Absent	*None*. Habitat absent. Nearest CNDDB occurrence is #32 NW of San Andreas Lake, West of Skyline Blvd, near the San Francisco jail site (CDFW 2021).
Melospiza melodia pusillula	Alameda Song Sparrow	SSC, G5T2?, S2, S3	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	Absent	*None.* No impact. The habitat needs of the species do not exist within the BSA. Nearest CNDDB occurrences are over 6 miles away in the SF Bay (CDFW 2021).
Monardella sinuata ssp. *nigrescens*	Northern curly- leaved monardella	1B.2, G3T2, S2	Coastal dunes, coastal scrub, chaparral, lower montane coniferous forest. Sandy soils. 10-245 m.	Present	*Low*. The Nearest CNDDB record is #12 from 1933 (possibly extirpated) in Lake Merced, SF. The occurrence is over 10 miles away from BSA (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Monolopia gracilens	Woodland woollythreads	1B.2, G3, S3	Chaparral, valley and foothill grassland, cismontane woodland, broad-leafed upland forest, North Coast coniferous forest. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns, but may have only weak affinity to serpentine. 120-975 m.	Absent	*None*. Project is not within the known elevation range of the species. The nearest CNDDB record is #40 from 1949 in Pilarcitos Lake and Canyon and is over 4 miles from the project site (CDFW 2021). Was not documented in the 2021 plant surveys.
Mylopharodon conocephalus	Hardhead	SSC, G3, S3	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Also present in the Russian River.	Absent	*None*. The nearest CNDDB record is #33 from 1989 in Lake Merced, Harding Park, San Francisco and is over 10 miles from project site (CDFW 2021).
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	SSC, G5T2T3, S2, S3	Forest habitats of moderate canopy & moderate to dense understory. May prefer chaparral & redwood habitats. Chaparral Redwood. Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.	Absent	*None*. No impact. Habitat does not exist within the BSA. Numerous CNDDB-documented occurrences along SM-280 (CDFW 2021) over 5 miles east of the BSA.
Nyctinomops macrotis	Big free-tailed bat	SSC, G5, S3	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths (CDFW 2019).	Absent	*None*. Habitat is not present in the BSA. CNDDB occurrence #20 in 1984 is a little over 2 miles away from the project site (CDFW 2021).
Oncorhynchus kisutch	Coho salmon - central California coast ESU	FE, SE	Approximately first half of life cycle spent rearing and feeding in streams and small freshwater tributaries; spawning habitat is in small streams with stable gravel substrates; remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean	Present	*None.* The freshwater stream Martini Creek is at locations 1 and 2, however, it is inaccessible to fish and may not hold water for periods long enough to support all life stages of coho.
Oncorhynchus mykiss irideus pop. 8	Steelhead – central California coast Distinct Population Segment (DPS)	FT, G5T2T3Q, S2, S3	From the Russian River southward to Soquel Creek and to, but not including, Pajaro River; San Francisco and San Pablo Bay basins	Absent	*None.* Accessible streams are not within the BSA. Nearest CNDDB-documented records are within 2 miles North of the BSA in San Pedro Creek (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Pentachaeta bellidiflora	White-rayed pentachaeta	FE, SE, 1B.1, G1, S1	Valley and foothill grassland, cismontane woodland; open, dry, rocky slopes and grassy areas, often on soils derived from serpentine bedrock; 100 to 200 feet above mean sea level	Absent	*None.* This habitat does not exist within the BSA. Nearest extant population is over 4.5 miles north of BSA occurrence #2 located in Skyline Blvd above San Andreas Lake (CDFW 2021).
Phalacrocorax auritus	Double-crested cormorant	WL, G5, S4	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Riparianforest Riparian scrub Riparian woodland. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Present	*Moderate*. While the nearest CNDDB occurrence (#34) is over 10 miles away (CDFW 2021), there aremultiple iNaturalist documented occurrences at Moss Beach to the south where rocky intertidal habitat is present, several near Gray Whale Cove State Beach, and one near the BSA. Likely to occuras a fly-over only.
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	1B.2, G3T1Q, S1	Chaparral, coastal scrub, coastal prairie. Mesic sites. 5-705 m.	Present	*Moderate*. Nearest CNDDB occurrence is #43 from 2015, about 0.16 mile from BSA (CDFW 2021). Thisspecies was not seen during the spring 2021 rare plant survey.
Plebejus icarioides missionensis	Mission blue butterfly	FE, G5T1, S1	Inhabits grasslands of the San Francisco Peninsula; three larval host plants: *Lupinus albifrons*, *L. variicolor*, and *L. formosus*, of which *L. albifrons* is favored	Absent	*Low.* Grasslands does not exist within the BSA. Nearest extant population is over 4.5 miles north ofBSA (CDFW 2021). However, L albifrons and L. variicolor were detected during the 2021 rare plantsurveys. It is not likely San Bruno elfin butterfly would occupy scrub habitat in the BSA.
Polemonium carneum	Oregon polemonium	2B.2, G3, G4, S2	Coastal prairie, coastal scrub, lower montane coniferousforest. 0-1,830 m.	Present	*Very Low*. Nearest CNDDB occurrence is #2 from 1916 in Pilarcitos Stone Dam nearly 5 miles from the BSA (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Potentilla hickmanii	Hickman's potentilla	FE, SE, 1B.1, G1, S1	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, marshes and swamps. Freshwater marshes, seeps, and small streams in open or forested areas along the coast. 5-125 m. bloom: Apr-Aug	Present	*Moderate*. Habitat is found within the BSA. Nearest occurrence #6 is within 0.28 mile of the BSA, next nearest occurrence is #1 at 1.3 miles from the BSA and extirpated; It is threatened by trampling, non- native plant encroachment, and harding grass infestation (CDFW 2021). This species was not seen during the spring 2021 rare plant survey. AMMs will be in place during construction.
Rallus obsoletus obsoletus	California Ridgway's rail	FE, SE, FP, G3T1, S1	Salt-water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay; associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs	Absent	*None*. No suitable habitat is present within BSA. Nearest CNDDB record (#43) is over 7 miles east of the BSA in the SF Bay (CDFW 2021).
Rana boylii	Foothill yellow-legged frog	SE, SSC, G3, S3	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest Meadow & seep, Riparian forest, Riparian woodland, Sacramento/San Joaquin flowing waters. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	Absent	*None*. Martini Creek likely does not support the habitat required for this species. Nearest CNDDB occurrence is #2133 and is over 4 miles from the BSA (CDFW 2021).
Rana draytonii	California red-legged frog	FT, SSC, G2G3, S2, S3	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation (upland) habitat.	Present	*High*. Five CNDDB occurrences are within or near the BSA (CDFW 2021).

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Riparia riparia	Bank swallow	ST, G5, S2	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole. Riparian scrub, Riparian woodland	Absent	*None*. The nearest CNDDB is over 10 miles away and record #64 was from 2012 in Fort Funston, just west of Lake Merced, San Francisco (CDFW 2021).
Sanicula maritima	Adobe sanicle	SR, 1B.1, G2, S2	Meadows and seeps, valley and foothill grassland, chaparral, coastal prairie. Moist clay or ultramafic soils. 15-215 m. Chaparral Coastal prairie Meadow & seep Ultramafic, Valley & foothill grassland	Absent	*None*. The nearest CNDDB record is #5 from 1895 in Potrero Hills, San Francisco and is over 10 miles from BSA (CDFW 2021).
Senecio aphanactis	Chaparral ragwort	2B.2, G3, S2	Chaparral, cismontane woodland, coastal scrub. Drying alkaline flats. 20-855 m.	Present	*None*. Habitat is only partially there as the BSA is a mesic site. The nearest CNDDB record is over 12 miles away in Mount Davidson, the occurrence (#83) is from 1956 (CDFW 2021).
Silene scouleri ssp. scouleri	Scouler's catchfly	2B.2, G5T4T5, S2, S3	Coastal bluff scrub, coastal prairie, valley and foothill grassland. 5-315 m.	Present	*Moderate*. Three recent CNDDB occurrences from 0.6 to 1.5 miles from BSA (#2, 3, and 4) between San Pedro Mountain and Montara Mountain from 2003 (CDFW 2021). This species was not seen during the spring 2021 rare plant survey.
Silene verecunda ssp. *verecunda*	San Francisco campion	1B.2, G5T1, S1	Coastal scrub, valley and foothill grassland, coastal bluff scrub, chaparral, coastal prairie. Often on mudstone or shale; one site on serpentine. 30-645 m.	Present	*Moderate*. Nearest CNDDB occurrence is #17 from 2007 in Devils Slide (CDFW 2021); about 0.5 miles from the BSA. This species was not seen during the spring 2021 rare plant survey.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Speyeria callippe callippe	Callippe silverspot butterfly	FE, G5T1, S1	Restricted to the northern coastal scrub of the San Francisco peninsula. Host plant is *Viola pedunculata*. Most adults found on E-facing slopes; males congregate on hilltops in search of females.	Present	*None*. Habitat is marginal. The slopes in the BSA are mostly west-facing. Host plant was not found during spring 2021 plant survey. The nearest CNDDB occurrence is #6 from 2006 and is over 8 miles away from BSA. The location of record is San Bruno Mountain, South of Hillside Blvd, and north of Park Way, South San Francisco (CDFW 2021).
Speyeria zerene myrtleae	Myrtle's silverspot butterfly	FE, G5T1, S1	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Associated with coastal terrace prairie, stabilized sand dunes, and grassland habitats with larval foodplant, *Viola adunca*	Present	*None*. Considered extirpated from San Mateo County. Nearest CNDDB record (#13) is 3 miles away in Pacifica and has unknown occurrence date (CDFW 2021).
Spirinchus thaleichthys	Longfin smelt	FC, ST, G5, S1	Euryhaline, nektonic and anadromous; found in open waters of estuaries, mostly in middle or bottom of water column; prefer salinities of 15-30 parts per trillion, but can be found in completely freshwater to almost pure seawater	Absent	*None*. Found in the SF Bay. Nearest CNDDB occurrence is #22 in 1995 South San Francisco Bay (CDFW 2021).
Suaeda californica	California seablite	FE, 1B.1, G1, S1	Marshes and swamps. Margins of coastal salt marshes. 0-5 m.	Absent	*None*. Nearest CNDDB occurrence is over 14 miles from BSA. The record #18 is from 2013 and located in vicinity of Herons Head Park/Pier 98, port of San Francisco (CDFW 2021).
Taxidea taxus	American badger	SSC, G5, S3	Inhabits herbaceous, shrub, and open stages of most habitats with dry, friable soils. Burrows are dug in relatively dry, often sandy, soil, usually in areas with sparse overstory cover.	Present	*Moderate*. Nearest CNDDB record is #127, 1.5 miles away from project site, in McNee Ranch State Park (CDFW 2021). Nearest iNaturalist record is roadkill near location 10 (iNaturalist 2021). May occur as a traveler but burrows are not expected due to steep cliffs.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occurand Rationale
Thamnophis sirtalis tetrataenia	San Francisco garter snake	FE, SE, FP, G5T2Q, S2	Vicinity of freshwater marshes, ponds, and slow-moving streams in San Mateo County and extreme northern Santa Cruz County; prefer dense cover and water depths of at least one foot; upland areas near water are also very important. SFGS are most active near aquatic habitats in spring and fall, with peak activity between March and July (USFWS 2006). Winter months they spend in uplands and are less active.	Present	*Low*. The nearest CNDDB-documented occurrence (occ #7 and #56) from 1979 and 2006, in the upper Denniston Creek and Denniston Creek Reservoir, East of half Moon Bay airport between Moss Beach and El Granada (CDFW 2021). iNaturalist has a June 3, 2016 record Near Pacifica State Beach 2.5 miles north of the project; two other records from 1985 and 2018 show up in the ocean. All three iNaturalist accounts are over 2 miles from the BSA. The next nearest occurrences are over 3 miles north in Pacifica. While SFGS are expected to be seen near CRLF populations, the lack of SFGS documentation in the area lower the potential to occur.
Trifolium amoenum	Showy Indian (two-fork) clover	FE, 1B.1, G1, S1	Valley and foothill grassland, coastal bluff scrub. Sometimes on serpentine soil, open sunny sites, swales. Most recently cited on roadside and eroding cliff face. 5- 310 m.	Present	*Very Low*. Habitat is marginal since the area typically receives fog, and the project is not located in swales. The nearest CNDDB occurrence is over 7 miles away and is record #28 from 1907 located in Coloma (CDFW 2021).
Triphysaria floribunda	San Francisco owl's-clover	1B.2, G2?, S2?	Coastal prairie, coastal scrub, valley and foothill grassland. On serpentine and non-serpentine substrate (such as at Pt. Reyes). 1-150 m.	Present	*Very low*. Nearest CNDDB occurrence is #53 from year 1900 (CDFW 2021). Next nearest occurrences are over 5 miles from the BSA.
Triquetrella californica	Coastal triquetrella	1B.2, G2, S2	Coastal bluff scrub, coastal scrub. Grows within 30 m from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. 10-100 m.	Present	*Very Low*. CNDDB latest occurrence #8 is from 2006 off of restricted use road to ridge just west of Bay Discovery Commemorative site, Sweeney Ridge, Golden Gate National Recreation Area (CDFW 2021). It is over 3.75 miles from the BSA.

Critical Habitat

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occur and Rationale
Acipenser longirostrus	Green sturgeon critical habitat	FT	US marine waters within 60 m depth from the California/Mexico border north to Monterey Bay, Ca and from the Alaska/Canada border northwest to the Bering Strait; the lower Columbia River from river kilometer 74 to the Bonneville Dam; and certain coastal bays and estuaries in California including the Elkhorn Slough and Tomales Bay. (NMFS 2020).	Absent	*None*. The project impact area does not include ocean waters.
Haliotis cracherodii	Black abalone critical habitat	FE	Critical habitat is designated for this species in California in coastal marine waters above the benthos at mean higher high water line or average high tide line to 20 feet below sea level in certain areas including the southern point of the mouth of the San Francisco Bay to Natural Bridges State Beach (NOAA 2011).	Absent	*None*. The project impact area does not include intertidal waters. The BSA does not include rocky intertidal zones.
Oncorhynchus mykiss and Oncorhynchus tshawytscha	Steelhead and Coho–central California coast Distinct Population Segment critical habitat	FT	The Federal Register designated final critical habitat for two ESUs of chinook salmon and five ESUs of steelhead in the SF Bay. (Federal Register 2005).	Absent	*None*. CNDDB latest occurrence is 2 miles away, occurrence #12 (CDFW 2021). The location of #12 is Anapolia Creek, Tributary to Pilarcitos Creek, 2.4 miles sse of Scraper Peak, about 3.5 mile NNE Half Moon Bay (CDFW 2021). Critical habitat for steelhead is located 1.5 miles north of the BSA (San Pedro Creek) and 3.5 miles south of the BSA (Denniston Creek). Steelhead and coho are not known to use Martini Creek and cannot access it due to the fish passage barrier.

Natural Habitat/Communities

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occur and Rationale
Oncorhynchus kisutch and *Oncorhynchus tshawytscha*	Central California Coast ESU Coho and California Coastal Chinook Essential Fish Habitat	Central California Coast ESU Coho-FE California Coastal Chinook-FT	EFH for these species occurs from the SF Bay west to the Santa Cruz Mountain ridge.	Present	*None*. Chinook and coho are not known to use Martini Creek and cannot access it due to the fish passage barrier.
Artemisia californica – Salvia leucophylla	California Sagebrush Shrubland Alliance	G5 S5	California sagebrush covers the landscape 3 times more than coyote brush and other shrub species. Found on steep slopes that are rarely flooded. And low-gradient deposits along streams (CNPS 2021).	Present	*High.* This Alliance occurs throughout the project footprint and is expected to be affected by the project. Due to its ranking, further analysis is not required, however, areas with this resource that are temporarily disturbed will be re-seeded with local flora post-construction.
Baccharis pilularis	Northern coastal bluff scrub/ Coyote brush Scrub Alliance	G5 S5	Found in river mouths, stream sides, terraces, stabilized dunes of coastal bars, coastal spits, coastal bluffs, open slopes, ridges. Soils are sandy to heavy clay. Vegetation cover contains Baccharis pilularis greater than 15% cover over grassy understory and over 50% cover relative to other shrubs (CNPS 2021).	Present	*High.* This Alliance occurs throughout the project footprint and is expected to be affected by the project. Due to its ranking, further analysis is not required, however, areas with this resource that are temporarily disturbed will be re-seeded with local flora post-construction.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occur and Rationale
Eriophyllum staechadifolium – *Erigeron glaucus* – *Eriogonum latifoli* Alliance	Seaside Woolly Sunflower – Seaside Daisy – Buckwheat Patches / Beach Sand or Coastal Bluff Scrub	G3 S3	This alliance can be found in sand dunes (Beach Sand) coastal bars, river mouths, spits along coastlines, steep coastal bluffs, and terraces immediately adjacent to the ocean. Soils are coarse to fine-textured sands. Herbs are less than 1.5 meters tall and cover is sparse to continuous. Emergent shrubs may be present at low cover	Present	*High.* This Alliance occurs throughout the project footprint and is expected to be affected by the project. Areas with this resource that are temporarily disturbed will be re-seeded with local flora post-construction. Efforts will be made to include species consistent with the Alliance.
-	Estuarine and Marine wetland		Consists of the open ocean overlying the continental shelf and its associated high-energy coastline. Typically flooded by ocean tides once daily. Water source is 30 parts per thousand (ppt) with little or no dilution, typically from ocean tides or splash. Bedrock, stones and/or boulders make up at least 75% of the landscape with less than 30% vegetated.	Present	*None.* This habitat type is in the BSA but is not where work will be done. Ocean spray is the only source of *salt* water that plants in the project limits receive, but plants also receive freshwater from seeps, rain, and fog.
-	Estuarine and Marine Deepwater Habitat		Consists of the open ocean overlying the continental shelf and its associated high-energy coastline. The substrate is continuously covered by ocean water. Water source is 30 parts per thousand (ppt) with little or no dilution, typically from ocean tides or splash. At least 25% of the habitat is covered by particles smaller than 6-7 cm, and less than 30% vegetated.	Present	*None.* This habitat is present in the BSA but not in the project footprint where work will occur.

Scientific Name[a]	Common Name[a]	Status[b]	General Habitat Preferences[c]	Suitable Habitat Present/ Absent	Potential to Occur and Rationale
-	Freshwater/ forested shrub wetland habitat	Jurisdictional water	Palustrine System that includes all nontidal wetlands dominated by trees, shrubs, persistent emergent, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand. Scrub-shrub. It includes areas dominated by woody vegetation less than 6 m (20 feet) tall. Surface water is present for brief periods (from a few days to a few weeks)	Present	*None.* This habitat is in the BSA near location 2. It will not be affected by the project. An ESA will be delineated in the project layouts, and a fence may be placed prior to start of construction
-	Riverine wetland habitat	Jurisdictional water	The Riverine System includes all wetlands and deep-water habitats contained within a channel except for wetlands dominated by trees, shrubs, emergents. Salinity level less than 0.5 ppt.	Present	*None.* This habitat is in the BSA near location 11. It will not be affected by the project. An ESA may be delineated in the project layouts, and a fence may be placed prior to start of construction

Notes:
[a] Scientific nomenclature based on the California Natural Diversity Database (CDFW 2021); common names from CNDDB and other sources.
[b] Acronym definitions are as follows: BSA Biological Study Area
- = not applicable
AMMs = Avoidance and Minimization Measure
BSA = Biological Study Area
cm = centimeters
CNDDB= California Natural Diversity Database
CRLF = California red-legged frog
DPS = Distinct Population Segment
ESA = Endangered Species Act
EFH = Essential Fish Habitat
ESUs = evolutionarily significant units
ft = feet
GHC = possibly extinct, cultivated only
km = kilometer
m = meters
NMFS = National Marine Fisheries Service
NNE = North Northeast

ppt = parts per thousand (
SFGS = San Francisco garter snake
WL = Watch List

United States Fish and Wildlife Service Designations:
FE Endangered: any species in danger of extinction throughout all or a significant portion of its range.
FT Threatened: any species likely to become endangered within the foreseeable future.
FC Federal Candidate: candidate for protection under the Federal Endangered Species Act.
FD Federal Delisted

California Department of Fish and Wildlife Designations:
SE Endangered: any species in danger of extinction throughout all or a significant portion of its range.
ST Threatened: any species likely to become endangered within the foreseeable future.
SCE State Candidate Endangered
SD State Delisted
SR State Rare
SSC Species of Special Concern
FP Fully Protected Species

California Rare Plant Ranks (CRPR):
1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
CRPR Threat Ranks:
.1: Seriously threatened in California (80-100% of occurrences threatened)
.2: Moderately threatened in California (20-28% of occurrences threatened)
.3: Not very threatened in California (<20% of occurrences threatened)
G1 Critically Imperiled
G2 Imperiled
G3 Vulnerable
G4 Apparently Secure
G5 Secure
Q Questionable taxonomy that may reduce conservation priority -
T# Infraspecific Taxon (trinomial)
S2 Imperiled
S3.1 sensitive natural community that is either rare or threatened in California
S4 Apparently Secure
S5 Secure

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Table E-2. Special-Status Plant Species' Potential to Occur in the BSA

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Acanthomintha duttonii	San Mateo thorn-mint	FE, CE, 1B.1	Apr-Jun	Chaparral, Valley and foothill grassland (serpentinite). 165 - 985 feet elevation.	**None.** There is no serpentine chaparral, and only limited ruderal grassland present in the BSA. There are two CNDDB occurrences within ten miles from the BSA, one from 1994 and1989.
Agrostis blasdalei	Blasdale'sbent grass	1B.2	May-Jul	Coastal bluff scrub,Coastal dunes, Coastal prairie. 0 - 490 feet elevation.	**Moderate.** There is potentially suitable coastal bluff scrub habitatpresent in the BSA. There is one CNDDB occurrence from 2015 located 3 miles south of the BSA.
Allium peninsulare var. *franciscanum*	Franciscan onion	1B.2	(Apr) May-Jun	Cismontane woodland, Valley andfoothill grassland (clay, serpentinite [often], volcanic). 170 – 1,000 feet elevation.	**Low.** Riparian woodlands and ruderal grassland habitats in the BSA could provide marginal habitat for this species. While there are no clay soils in the BSA,there is Rock Outcrop - Orthents Complex which may contain components of serpentinite and volcanic soils. There are eight CNDDB occurrences within ten miles of the BSA**.** The nearest CNDDB occurrence is from 2016, located 5 miles to the east of the BSA.
Amsinckia lunaris	bent-flowered fiddleneck	1B.2	Mar-Jun	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland. 10 – 1,640 feet elevation.	**Moderate.** There is potentially suitable coastal bluff scrub habitatpresent in the BSA. There are five CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 1963, located eight miles north of theBSA.
Arctostaphylos andersonii	Anderson's manzanita	1B.2	Nov-May	Broadleafed upland forest, Chaparral, North Coast coniferous forest (edges, openings). 195 – 2,495 feet elevation.	**Low.** Riparian woodlands in the BSA could provide marginal habitat for this species. The nearest occurrence is less than five miles from the BSA and was last seen in 2018 (Calflora 2021).

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Arctostaphylos franciscana	Franciscan manzanita	FE, 1B.1	Feb-Apr	Coastal scrub. 195 -985 feet elevation.	**Low.** This species is a strict endemic on ultramafic rocks, which are not present in the BSA.The only extant occurrence o located more than ten miles from the BSA in San Francisco.
Arctostaphylos imbricata	San Bruno Mountain manzanita	CE, 1B.1	Feb-May	Chaparral, Coastal scrub (rocky). 900 –1,215 feet elevation.	**Low.** Potentially suitable coastal scrub habitat is present in the BSA, but the elevation of the BSAis below this species' elevational range. There are two CNDDB occurrences within ten miles of the BSA, the nearest from 1981 and located 9 miles from the BSA.
Arctostaphylos montana ssp. *ravenii*	Presidio manzanita	FE, CE, 1B.1	Feb-Mar	Chaparral, Coastal prairie, Coastal scrub. 150 – 1,215 feet elevation.	**Low.** There is potentially suitable coastal scrub habitat present in the BSA. The nearest Consortiumof California Herbaria (CCH 2021)occurrence is from 1990, located more than ten miles from the BSA.
Arctostaphylos montaraensis	Montara manzanita	1B.2	Jan-Mar	Chaparral, Coastal scrub. 260 -1,640 feetelevation.	**Moderate.** There is potentially suitable coastal scrub habitat present in the BSA. There are fourCNDDB occurrence within ten miles of the BSA. The nearest CNDDB occurrence is from 2014, located less than two miles from the BSA.
Arctostaphylos pacifica	Pacific manzanita	CE, 1B.1	Feb-Apr	Chaparral, Coastal scrub. 1,085 feet elevation.	**Low.** There is potentially suitable coastal scrub habitat present in the BSA, however the elevation inthe BSA is below this species elevational range. This species is known from one occurrence on San Bruno Mountain, within ten miles of the BSA.
Arctostaphylos regismontana	Kings Mountain manzanita	1B.2	Dec-Apr	Broadleafed uplandforest, Chaparral, North Coast coniferous forest. 1,000 – 2,395 feet elevation.	**Low.** Riparian woodlands in the BSA could provide marginal habitat for this species. The BSA isbelow this species elevational range. There are two CNDDB occurrences within ten miles ofthe BSA.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	1B.2	(Apr) Jun-Oct	Coastal dunes, Coastal scrub, Marshes and swamps. 0 - 100 feetelevation.	**Low.** Potentially suitable coastal scrub habitat is present in the BSA, but there are very limited areas that are sufficiently mesic tosupport this species. There are two CNDDB occurrences within ten miles of the BSA.
Astragalus tener var. *tener*	alkali milk-vetch	1B.2	Mar-Jun	Playas, Valley and foothill grassland, Vernal pools. 5 - 195 feet elevation.	**None.** Playas and vernal pools are not present in the BSA and limited ruderal grassland habitat inthe BSA is not likely suitable for this species. The nearest CCH occurrence is from 1868, located more than ten miles from the BSA in San Francisco.
Carex comosa	bristly sedge	2B.1	May-Sep	Coastal prairie, Marshes and swamps, Valley and foothill grassland. 0 – 2,050 feet elevation.	**None.** The limited ruderal grassland habitat in the BSA is notsufficiently mesic to support this species. There is one CNDDB occurrence within ten miles of theBSA from 1866.
Centromadia parryi ssp. *parryi*	pappose tarplant	1B.2	May-Nov	Chaparral, Coastal prairie, Marshes andswamps, Meadows and seeps, Valley and foothill grassland. 0 – 1,380 feet elevation.	**Low.** Ruderal grassland in the BSA could provide marginal habitat for this species**.** There aretwo CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 1931,located three miles from the BSA.
Chloropyron maritimum ssp. *palustre*	Point Reyes salty bird's-beak	1B.2	Jun-Oct	Marshes and swamps. 0 - 35 feetelevation.	**None.** There is no suitable habitat present in the BSA. The nearest occurrence is from 1893, located more than ten miles from the BSAin San Mateo (CCH 2021)
Chorizanthe cuspidata var. *cuspidata*	San Francisco Bay spineflower	1B.2	Apr- Jul (Aug)	Coastal bluff scrub,Coastal dunes, Coastal prairie, Coastal scrub. 10 -705 feet elevation.	**High.** There is potentially suitablecoastal bluff scrub and coastal scrub habitat in the BSA. There are six CNDDB occurrence withinten miles of the BSA. The nearest CNDDB occurrence is from an unknown year (2000-2010) and islocated three miles from the BSA.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Chorizanthe robusta var. *robusta*	robust spineflower	FE, 1B.1	Apr-Sep	Chaparral, Cismontane woodland, Coastal dunes, Coastal scrub. 10 - 985 feet elevation.	**Low.** There is potentially suitablecoastal scrub habitat present in the BSA. There are two CNDDB occurrences within ten miles of the BSA, from 1899 and 1913.
Cirsium andrewsii	Franciscan thistle	1B.2	Mar-Jul	Broadleafed uplandforest, Coastal bluffscrub, Coastal prairie, Coastal scrub. 0 - 490 feet elevation.	**High.** There is potentially suitablecoastal bluff scrub and coastal scrub habitat present in the BSA. There are three CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from an unknown year, located less than two miles from the BSA.
Cirsium fontinale var.*fontinales*	fountainthistle	FE, CE, 1B.1	(Apr) May-Oct	Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland (serpentine seeps and grassland). 150 -575 feet elevation.	**None.** There is no suitable serpentine seep or grassland habitat present in the BSA. Thereis one CNDDB occurrence withinten miles of the BSA from 2014.
Cirsium occidentale var. *compactum*	compact cobwebby thistle	1B.2	Apr-Jun	Chaparral, Coastal dunes, Coastal prairie, Coastal scrub. 15 - 490 feet elevation.	**Low.** There is potentially suitablecoastal scrub habitat present in the BSA. There is one CNDDB occurrence within ten miles of the BSA from 1957.
Collinsia corymbosa	round-headed Chinese-houses	1B.2	Apr-Jun	Coastal dunes. 0 - 65 feet elevation.	**None.** There is no suitable habitatpresent in the BSA. There is one CNDDB occurrence within tenmiles of the BSA from 1919.
Collinsia multicolor	San Francisco collinsia	1B.2	(Feb)Mar-May	Closed-cone coniferous forest, Coastal scrub. 100 -900 feet elevation.	**Moderate.** There is potentially suitable coastal scrub habitat present in the BSA. There are eight CNDDB occurrences withinten miles of the BSA, the nearest within 2 miles of the BSA from an unknown year.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Dirca occidentalis	western leatherwood	1B.2	Jan- Mar (Apr)	Broadleafed uplandforest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, North Coast coniferous forest, Riparian forest, Riparian woodland.80 – 1,395 feet elevation.	**Low.** Riparian woodland and coastal scrub within the BSA could provide suitable habitat, butall known occurrences are farther inland than the BSA. There are 15 occurrences within ten miles ofthe BSA. The nearest CNDDB occurrence is from 2020, locatedless than three miles from the BSA.
Eriophyllum latilobum	San Mateo woolly sunflower	FE, CE, 1B.1	May-Jun	Cismontane woodland, Coastal scrub, Lower montane coniferousforest. 150 – 1,085 feet elevation.	**Low.** Coastal scrub habitats in theBSA could provide suitable habitat, but all known occurrencesare at least six miles inland. Thereare six CNDDB occurrences within ten miles of the BSA. Nearest CNDDB occurrence is from 2009, located less than seven miles from the BSA.
Eryngium jepsonii	Jepson's coyote-thistle	1B.2	Apr-Aug	Valley and foothill grassland, Vernal pools. 10 - 985 feetelevation.	**None.** Marginal ruderal grasslandhabitat in the BSA is unlikely to support this species. The nearest occurrence is from 2008, located more than ten miles away from the BSA at Jasper Ridge Biological Preserve (recorded by JRBP Docent).
Fritillaria biflora var. *ineziana*	Hillsborough chocolate lily	1B.1	Mar-Apr	Cismontane woodland, Valley andfoothill grassland (serpentinite). 490 feet elevation.	**None.** There is no suitable serpentine habitat present in theBSA. There are two CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 1914 and located more than seven milesaway from the BSA.
Fritillaria liliacea	fragrant fritillary	1B.2	Feb-Apr	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland. 10 – 1,345 feet elevation.	**Moderate.** There is potentially suitable coastal scrub habitat andmarginally suitable ruderal grassland habitat present in the BSA. There are four CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 1931, located less than five miles from the BSA.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Gilia capitata ssp. *chamissonis*	blue coastgilia	1B.1	Apr-Jul	Coastal dunes, Coastal scrub. 5 - 655 feet elevation.	**Low.** There is potentially suitable coastal scrub habitat present in the BSA. The nearest CCH occurrence is from 1934, located more than ten miles from the BSAat Lake Merced.
Gilia millefoliata	dark-eyedgilia	1B.2	Apr-Jul	Coastal dunes. 5 - 100 feet elevation.	**None.** There is no coastal dune habitat present in the BSA. One CNDDB occurrence from 1903 is within ten miles of the BSA.
Helianthella castanea	Diablo helianthella	1B.2	Mar-Jun	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley andfoothill grassland (Azonal soils, Partial Shade (often), Rocky(usually)). 195 – 4,265 feet elevation.	**Low.** There is potentially suitablecoastal scrub habitat present in the BSA, but all occurrences are located farther inland than the BSA**.** The nearest occurrence is approximately 11 miles northeastof the BSA.
Hemizonia congesta ssp. *congesta*	congested-headed hayfield tarplant	1B.2	Apr-Nov	Valley and foothill grassland (sometimes roadsides). 65 – 1,835feet elevation.	**Low.** Ruderal grassland habitat inthe BSA could provide marginal habitat for this species. The nearest occurrence is approximately 8 miles north of the BSA and was last seen in 1909.
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	1B.2	Mar-Jun	Coastal bluff scrub,Coastal dunes, Coastal prairie. 0 - 705 feet elevation.	**Moderate.** There is potentially suitable coastal bluff scrub habitatin the BSA. The nearest occurrence is approximately ten miles east of the BSA and waslast seen in 1970.
Hesperolinon congestum	Marin western flax	FT, CT, 1B.1	Apr-Jul	Chaparral, Valley and foothill grassland (serpentinite). 15 – 1,215 feet elevation.	**None.** There is no suitable serpentine habitat present in theBSA. There are four CNDDB occurrences within ten miles of the BSA.
Heteranthera dubia	water star-grass	2B.2	Jul-Oct	Marshes and swamps. 100 – 4,905 feet elevation.	**None.** There are no marshes norswamps present in the BSA. There is one CNDDB occurrence within ten miles of the BSA from1879.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Horkelia cuneata var. *sericea*	Kellogg's horkelia	1B.1	Apr-Sep	Chaparral, Closed-cone coniferous forest, Coastal dunes, Coastal scrub. 35 - 655 feetelevation.	**Moderate.** There is potentially suitable coastal scrub habitat present in the BSA. There are fiveCNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from an unknown year, located less than amile from the BSA.
Horkelia marinensis	Point Reyes horkelia	1B.2	May-Sep	Coastal dunes, Coastal prairie, Coastal scrub. 15 – 2,475 feet elevation.	**Low.** There is potentially suitablecoastal scrub habitat present in the BSA. There are two CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 1962, locatedfive miles from the BSA.
Hypogymnia schizidiata	island rock lichen	1B.3		Chaparral, Closed-cone coniferous forest. 1,180 – 1,330 feet elevation.	**Low.** Isolated Monterey cypress trees in the BSA could provide marginal habitat for this species; the elevation in the BSA is below that of this species' elevational range. There are three CNDDB occurrences within one to two miles east of the BSA. These occurrences are all from maritime chaparral, which is absent fromthe BSA.
Lasthenia californica ssp. *macrantha*	perennial goldfields	1B.2	Jan-Nov	Coastal bluff scrub,Coastal dunes, Coastal scrub. 15 – 1,705 feet elevation.	**High.** There is potentially suitablecoastal bluff scrub and coastal scrub habitat present in the BSA. The nearest CNDDB occurrence is from 2014, located less than a mile from the BSA.
Layia carnosa	beach layia	FE, CE, 1B.1	Mar-Jul	Coastal dunes, Coastal scrub. 0 - 195 feet elevation.	**Moderate**. There is potentially suitable coastal scrub habitat present in the BSA. The nearest CNDDB occurrence is from 1987and is located more than eight miles south of the BSA.
Leptosiphon croceus	coast yellow leptosiphon	CE, 1B.1	Apr-Jun	Coastal bluff scrub,Coastal prairie. 35 -490 feet elevation.	**High.** There is potentially suitable coastal bluff scrub habitat present in the BSA. The nearest occurrence is located about 2 miles south of the BSA to the westof State Route 1 and was last seen in 2015.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Leptosiphon rosaceus	rose leptosiphon	1B.1	Apr-Jul	Coastal bluff scrub. 0 - 330 feet elevation.	**High.** Potentially suitable coastal bluff scrub habitat is present in theBSA. There are four CNDDB occurrences within ten miles of the BSA, the nearest less than two miles south of the BSA near State Route 1.
Lessingia arachnoidea	Crystal Springs lessingia	1B.2	Jul-Oct	Cismontane woodland, Coastal scrub, Valley and foothill grassland (serpentinite, often roadsides). 195 - 655 feet elevation.	**None.** There is no suitable serpentine habitat present in the BSA. There are five CNDDB occurrences within ten miles of the BSA. Nearest CNDDB occurrence is from 2014, located more than six miles away from theBSA.
Lessingia germanorum	San Francisco lessingia	FE, CE, 1B.1	(Jun)Jul-Nov	Coastal scrub. 80 - 360 feet elevation.	**Moderate.** There is potentially suitable coastal scrub habitat present in the BSA. The nearestoccurrence is approximately 11 miles north of the BSA and was last seen in 1999.
Limnanthes douglasii ssp. *ornduffii*	Ornduff's meadowfoam	1B.1	Nov-May	Meadows and seeps.35 - 65 feet elevation.	**None.** There are no meadows norseeps present in the BSA. The nearest CNDDB occurrence is from 2011 and is located four miles from the BSA.
Malacothamnus arcuatus	arcuate bush-mallow	1B.2	Apr-Sep	Chaparral, Cismontane woodland. 50 – 1,165 feet elevation.	**Low.** Riparian woodlands in the BSA could provide marginal habitat for this species. There arefour CNDDB occurrences within ten miles of the BSA. Nearest CNDDB occurrence is from 2000, located four miles from the BSA.
Monardella sinuata ssp. *nigrescens*	northern curly-leaved monardella	1B.2	(Apr) May-Jul (Aug-Sep)	Chaparral, Coastal dunes, Coastal scrub, Lower montane coniferousforest. 0 - 985 feet elevation.	**Low.** There is potentially suitablecoastal scrub habitat present in the BSA. The nearest occurrenceis located about 13 miles north ofthe BSA and was last seen in 1933.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Monolopia gracilens	woodland woollythreads	1B.2	(Feb) Mar-Jul	Broadleafed uplandforest, Chaparral, Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland (serpentine). 330 – 3,935 feet elevation.	**None.** There is no suitable serpentine habitat present in the BSA. There is one CNDDB occurrence from 1949, located less than five miles from the BSA.
Pentachaeta bellidiflora	white-rayed pentachaeta	FE, CE, 1B.1	Mar-May	Cismontane woodland, Valley andfoothill grassland (often serpentinite). 115 – 2,035 feet elevation.	**None.** Riparian woodlands and ruderal grassland in the BSA are unlikely to support this species. This plant is only known form three occurrences, all of which are within ten miles of the BSA but are at least five miles inland.
Plagiobothrys chorisianus var. chorisianus	Choris' popcornflower	1B.2	Mar-Jun	Chaparral, Coastal prairie, Coastal scrub. 10 - 525 feetelevation.	**Moderate.** There is potentially suitable coastal scrub in the BSA, while ruderal grassland in the BSA could provide marginal habitat for this species. There are ten CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 2002,located four miles from the BSA.
Polemonium carneum	Oregon polemonium	2B.2	Apr-Sep	Coastal prairie, Coastal scrub, Lowermontane coniferous forest. 0 – 6,005 feet elevation.	**Low.** There is potentially suitablecoastal scrub, and marginal coastal prairie habitat present in the BSA. The nearest occurrencewas last seen in 1916 and is located less than six miles from the BSA.
Potentilla hickmanii	Hickman's cinquefoil	FE, CE, 1B.1	Apr-Aug	Closed-cone coniferous forest, Coastal bluff scrub, Marshes and swamps, Meadows and seeps. 35 - 490 feet elevation.	**High.** There is potentially suitablecoastal bluff scrub present in the BSA. The nearest occurrence is located 0.3 mile east of the BSA and was confirmed as extant on reference population surveys.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Sanicula maritima	adobe sanicle	1B.1	Feb-May	Chaparral, Coastal prairie, Meadows and seeps, Valley and foothill grassland. 100 - 785 feet elevation.	**Low.** Ruderal grassland in the BSA could provide marginal habitat for this species. There isvery marginal coastal prairie habitat present in the BSA that may be suitable for this species.The nearest occurrence is from 1891, located approximately 17 miles from the BSA in San Francisco.
Senecio aphanactis	chaparral ragwort	2B.2	Jan- Apr (May)	Chaparral, Cismontane woodland, Coastal scrub	**Moderate.** Potentially suitable coastal scrub habitat is present inthe BSA. The nearest CCH occurrence is from 1970, located more than ten miles from the BSA in San Carlos.
Silene scouleri ssp. *scouleri*	Scouler's catchfly	2B.2	(Mar-May) Jun-Aug (Sep)	Coastal bluff scrub, Coastal prairie, Valley and foothill grassland. 0 – 1,970 feet elevation.	**High.** Potentially suitable coastal scrub habitat is present in the BSA. There are nine CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 2016 and located less than 2 miles from the BSA.
Silene verecunda ssp. *verecunda*	San Francisco campion	1B.2	(Feb) Mar-Jul (Aug)	Chaparral, Coastal bluff scrub, Coastal prairie, Coastal scrub, Valley and foothill grassland. 100 – 2,115 square feet	**High.** There is potentially suitablecoastal bluff scrub and coastal scrub habitat present in the BSA. There are five CNDDB occurrences within ten miles of the BSA. The nearest CNDDB occurrence is from 2007, located less than a mile from the BSA atDevil's Slide.
Suaeda californica	California seablite	FE, 1B.1	Jul-Oct	Marshes and swamps	**None.** There are no marshes nor swamps present in the BSA. Thenearest occurrence is from 1907, located more than ten miles fromthe BSA in Palo Alto.
Trifolium amoenum	two-forkclover	FE, 1B.1	Apr-Jun	Coastal bluff scrub, Valley and foothill grassland. 15 – 1,360 feet elevation.	**Moderate.** There is potentially suitable coastal bluff scrub habitatpresent in the BSA. There is one CNDDB occurrence within ten miles of the BSA from 2011.

Scientific Name	Common Name	Special Status[1]	Blooming Period[2]	Habitat	Potential to Occur
Trifolium hydrophilum	saline clover	1B.2	Apr-Jun	Marshes and swamps, Valley and foothill grassland, Vernal pools. 0 – 985 feet elevation.	**None.** There is no suitable habitatpresent in the BSA. The nearest occurrence is from 1996, located more than ten miles away from the BSA in Santa Clara.
Triphysaria floribunda	San Francisco owl's-clover	1B.2	Apr-Jun	Coastal prairie, Coastal scrub, Valley and foothill grassland. 35 - 525 feet elevation.	**Moderate.** There is potentially suitable coastal scrub habitat andmarginal ruderal grassland present in the BSA. There are nine CNDDB occurrences within ten miles of the BSA. The nearestCNDDB occurrence is from 1900,located less than four miles away from the BSA.
Triquetrella californica	coastal triquetrella	1B.2	N/A	Coastal bluff scrub,Coastal scrub. 35 -330 feet elevation.	**Moderate.** There is potentially suitable coastal bluff scrub and coastal scrub habitat present in the BSA. The nearest occurrence is located 5 miles northeast of the BSA and was last seen in 2006.

Notes:
BSA = Biological Study Area
CCH = define
CNDDB = California Natural Diversity Database
N/A = not applicable

[1] Special status abbreviations are defined as follows:
CE – State Endangered
CT – State Threatened
FE – Federally Endangered
FT – Federally Threatened

California Rare Plant Ranks (CRPR):
1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
CRPR Threat Ranks:
.1: Seriously threatened in California (80-100% of occurrences threatened)
.2: Moderately threatened in California (20-28% of occurrences threatened)
.3: Not very threatened in California (<20% of occurrences threatened)

[2] Months listed in parentheses denote that the plant has been infrequently observed to flower in that month.

Sources:
Calflora 2021
CCH 2021
JRBP Docent

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