

U.S. Highway 101 Cordilleras Creek Bridge Replacement Project

SAN MATEO COUNTY, CALIFORNIA
District 4-SM-U.S. 101 (PM 7.13)
04-2J730/0415000004

Initial Study with Mitigated Negative Declaration and Environmental Assessment with Finding of No Significant Impact



**Prepared by the
State of California, Department of Transportation**

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.



April 2021

This page intentionally left blank

General Information about This Document

What's in this document:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study / Environmental Assessment (IS/EA), which examines the potential environmental impacts of the project located in San Mateo County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The document explains the purpose and need of the project, what alternatives have been considered for the project, and how the existing environment could be affected by the project. It also describes the potential impacts of each of the alternatives, and avoidance, minimization, and/or mitigation measures. The proposed Initial Study/Environmental Assessment was circulated to the public for 30 days between July 31, 2020, and August 31, 2020. Comments received during this period are included in Appendix H. Elsewhere throughout this document, a vertical line in the margin indicates a change made since the draft document circulation. Minor editorial changes and clarifications have not been so indicated. This document may be downloaded at the following website: <https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs>.

Alternative Formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: John Seal, P.O. Box 23660 MS 8B, Oakland, CA, 94623-0660, e-mail John.Seal@dot.ca.gov, or John Seal at 510-549-6091 (Voice), or use California Relay Service 1 (800) 735-2929 (TTY to Voice), 1-800-735-2922 (Voice to TTY), 1 (800) 855-3000 (Spanish TTY to Voice and Voice to TTY), 1-800-854-7784 (Spanish and English Speech-to-Speech) or 711.

This page intentionally left blank

SCH: 2020070578
04-SM-101 PM 7.13
04-2J730K
0415000004

Reconstruct Cordilleras Creek Bridge on U.S. Highway 101 (U.S. 101) in the City of Redwood City in San Mateo County at Post Mile (PM) 7.13

Initial Study with Mitigated Negative Declaration/Environmental Assessment with Finding of No Significant Impact

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C)

THE STATE OF CALIFORNIA
Department of Transportation

Cooperating Agencies:

U.S. Army Corps of Engineers, National Marine Fisheries Service, United States Fish and Wildlife Service

Responsible Agencies: California Transportation Commission, San Francisco Bay Conservation and Development Commission, California Department of Fish and Wildlife, San Francisco Bay Regional Water Quality Control Board



5/6/2021

Dina El-Tawansy
District Director
Caltrans District 4
CEQA/NEPA Lead Agency

Date

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

John Seal
Department of Transportation, District 4
P.O. Box 23660 MS 8B
Oakland, CA 94623-0660
John.Seal@dot.ca.gov

This page intentionally left blank

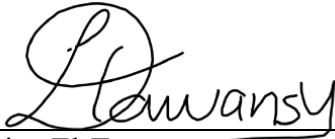
**CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT (FONSI)**

FOR

U.S. Highway 101 Cordilleras Creek Bridge Replacement Project

The California Department of Transportation (Caltrans) has determined that the preferred alternative (Alternative 2) would have no significant impact on the human environment. This FONSI is based on the attached Environmental Assessment (EA), which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA.

The environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.



Dina El-Tawansy
District Director
Caltrans District 4
CEQA/NEPA Lead Agency

5/6/2021

Date

This page intentionally left blank

Mitigated Negative Declaration
Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to replace the existing Cordilleras Creek Bridge on United States Highway 101 (U.S. 101) at post mile 7.13 in Redwood City in San Mateo County with a new bridge.

Determination

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

- The proposed project would have no effect on agricultural lands and forest resources, mineral resources, population and housing, tribal cultural resources, land use and planning, paleontology, and recreation.
- In addition, the proposed project would result in a less than significant impact on aesthetics, air quality, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, public services, transportation and traffic, utilities and service systems, and wildfire.

With the following mitigation measures incorporated, the proposed project would have a less than significant effect to biological resources and wetlands.



Dina El-Tawansy
District Director
Caltrans District 4
CEQA/NEPA Lead Agency

5/6/2021

Date

This page intentionally left blank

Summary

The California Department of Transportation (Caltrans) is the lead agency under CEQA and NEPA. Caltrans proposes to replace the existing Cordilleras Creek Bridge (Bridge #35-0019) located on United States Highway 101 at post mile (PM) 7.13 in the City of Redwood City in San Mateo County. The project is near the boundary of the City of San Carlos.

The project considered two Build Alternatives and would include the following:

- Replace the existing bridge with a new bridge that also consists of a triple-box culvert. The culverts would be 10 × 10 feet in size; the existing culverts are 8 × 10 feet (Alternative 1). Alternative 2 would consist of replacing the existing bridge with a single-span bridge (Alternative 2).
- Replace the existing drainage system.
- Implement a minor reconfiguration of Cordilleras Creek.
- Replace Median barrier guard rails (MBGR) with Midwest guardrail system (MGS).
- Replace existing vehicle detector loops.
- Install safety lighting in the median.
- Add new riprap along Cordilleras Creek on the west side of the bridge (Alternative 1). Add 210 square feet of riprap to be placed only at the bridge wingwalls to protect the abutments (Alternative 2).

The purpose of the project is to maintain connectivity and a safe highway facility for the traveling public along U.S. 101 by replacing the existing deteriorated bridge over Cordilleras Creek. The existing bridge is at the end of its service life and in need of replacement. The proposed project is needed because the existing bridge would remain and continue to deteriorate, and because structural conditions, if not addressed, would affect the structural integrity and ultimately the safety of the traveling public.

Caltrans has chosen Alternative 2 as the Preferred Alternative, because it would satisfy the project's purpose and need, would offer more flexibility related to the construction scheme and would reduce environmental impacts related to fish passage.

NEPA Assignment

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program) pursuant to 23 United States Code (USC) 327, for more than 5 years, beginning July 1, 2007, and ending September 30, 2012. The Moving Ahead for Progress in the 21st Century Act (MAP-21; P.L. 112-141), signed by President Barack Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a Memorandum of Understanding (MOU) pursuant to 23 USC 327 (National Environmental Policy Act [NEPA] Assignment MOU) with the Federal Highway Administration (FHWA). The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016, for a period of 5 years. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same

manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the state of California, except for certain categorical exclusions (CEs) that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

Project Impacts

Table S-1 summarizes and compares the effects of Alternative 1, Alternative 2, and the No Build Alternative. The proposed avoidance, minimization, and/or mitigation measures to reduce the effects of the Build Alternatives are also presented. This environmental document evaluates the potential effects of the Build Alternatives. A complete description of potential effects and recommended measures is provided in Chapter 2. Local, state, and federal permits are required for this project. Required permits are included in Table 1.5.6-1: Permits and Approvals Needed.

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|--|---|--|--|---|
| Existing and Future Land Use | None | None | None | None |
| Consistency with State, Regional and Local Plans and Programs | The No Build Alternative is not consistent with the California Transportation Plan's goals of preserving the multimodal transportation system and improving public safety and security. | None | None | None |
| Parks and Recreation Facilities | None | The Bay Trail provides a shared bicycle/pedestrian path that runs parallel to the east of US Highway 101. No construction staging or other construction impacts would affect the use or enjoyment of the trail. Users of the trail may momentarily see construction equipment as they pass by the project area to the west. However, visual effects would be temporary and short-term during construction. | Same as Alternative 1 | None |
| Growth | None. | None | None | None |
| Environmental Justice | None | None | None | None |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|--|---|--|--|---|
| Utilities/ Emergency Services | None | During construction activities, temporary and permanent utility relocations would be needed. The City of Redwood City’s 24-inch reclaimed waterline would be temporarily or permanently relocated. Overhead power lines and other utilities would not be affected. No service disruptions are anticipated as a result of construction. No permanent utility relocations are anticipated. | Same as Alternative 1 | None |
| Traffic and Transportation | None | Project construction may result in periodic short-term traffic delays on U.S. 101 near the project area. During stage construction, all lanes on both sides of the highway would remain open during weekdays. During weekends there will be lane closures. A Transportation Management Plan (TMP) would be developed to minimize construction-related delays. There would be no long-term impacts. | Same as Alternative 1 | None |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|--------------------------|---|---|--|--|
| Visual/Aesthetics | None | Construction work crews and equipment may be visible to viewers from the highway and other vantage points along the highway. The most obvious change on the highway would be the removal of large shrubs to accommodate lane shifts and staging of construction equipment. Permanent impacts to visual resources are not expected, as changes to the bridge would be minimal. Replacement planting would be provided. | Same as Alternative 1 | <p>VIS-1. Median barrier height shall be minimized to preserve San Francisco Bay (Bay) views for motorists on the southbound side of the highway. This was established by agreements made in EA 04-1J5604, SM101-Managed Lanes.</p> <p>VIS-2. Bridge design shall include measures to reduce the visual prominence of the City of Redwood City’s 24-inch reclaimed waterline.</p> <p>VIS-3. Tree and vegetation removal shall be minimized to the extent feasible.</p> <p>VIS-4. Trees and vegetation outside of clearing and grubbing limits shall be protected from the contractor’s operations, equipment, and materials storage.</p> <p>VIS-5. All disturbed ground surfaces shall be restored and treated with erosion control.</p> <p>VIS-6. Replacement planting shall be provided in areas where shrub removal is necessary.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|--|--|---|
| Visual/Aesthetics <i>(continued from previous page)</i> | | | | VIS-7. During construction operations, unsightly material and equipment in staging areas shall be placed where they are less visible and/or covered where possible. VIS-8. 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. |
| Cultural Resources | None | No historic properties or historical resources are present in the project’s Area of Potential Effect. The cultural resources finding for this proposed project is No Historic Properties Affected. The proposed project would not affect a tribal cultural resource. | Same as Alternative 1 | CUL-1. Avoidance of Cultural Resources: If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area shall be diverted until a qualified archaeologist can assess the nature and significance of the find. |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|--|---|--|---|--|
| Cultural Resources <i>(continued from previous page)</i> | None | No historic properties or historical resources are present in the project’s Area of Potential Effect. The cultural resources finding for this proposed project is No Historic Properties Affected. The proposed project would not affect a tribal cultural resource. | Same as Alternative 1 | CUL-2. Avoidance of Human Remains: The person who discovered the remains shall contact the Branch Chief of Cultural Resources, Archaeology, so that they may work with the Most Likely Descendant (MLD) on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code (PRC) 5097.98 are to be followed as applicable. |
| Hydrology and Floodplain | None | Alternative 1 would result in 0.162 acre of new impervious surface. Alternative 1 would not raise any water surface elevations or impede flows that pass the design-year flood events. | Alternative 2 would result in 0.452 acre of new impervious surface. Alternative 2 would not raise any water surface elevations or impede flows that pass the design-year flood events, and replacement work would not cause any significant or immediate hydraulic or scour-related issues. | None |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|---|--|--|
| Water Quality and Storm Water Runoff | None | Alternative 1 would result in 0.162 acre of new impervious surface. This acreage is based on the Municipal Regional Permit not recognizing removed impervious surfaces. Erosion from disturbed soil areas during project construction has the potential to cause sediment-laden runoff to enter storm drainage facilities and increase the turbidity and decrease the clarity and beneficial uses of receiving waterbodies. | Alternative 2 would result in 1.27 acres of disturbed soil. Erosion from disturbed soil areas during project construction has the potential to cause sediment-laden runoff to enter storm drainage facilities and increase the turbidity and decrease the clarity and beneficial uses of receiving waterbodies. Alternative 2 would result in 0.452 acre of new impervious surface. This acreage is based on the Municipal Regional Permit not recognizing removed impervious surfaces. | WQ-1. Water Quality/ Erosion Control BMPs: Implement temporary erosion control and water quality measures as required by the Construction General Permit. WQ-2: Implement treatment best management practices (BMPs) to address post-construction water-quality impacts and remove pollutants from stormwater runoff. |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|-------------------|---|--|--|---|
| Paleontology | None | During construction of the proposed project, ground-disturbing activities such as grading, drilling, and excavating have the potential to destroy paleontological resources (if any are present). However, the paleontological resources are unlikely to be encountered, as the project area is entirely underlain by artificial fill and Holocene-age deposits. | Same as Alternative 1. | None |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---------------------------------------|---|--|--|---|
| Hazardous Waste/ Materials | None | <p>Project construction activities are expected to involve the transport, use, and disposal of hazardous materials (e.g., fuels, paints, asphalt, and lubricants) that could pose a threat to human health or the environment if not properly managed.</p> <p>Construction of the proposed project could result in the potential disturbance of hazardous materials, such as DTSC-regulated levels of lead in the shallow soil to be excavated and asbestos-containing material in the existing triple box culvert to be removed and replaced. In addition, groundwater, which would likely be encountered during structure foundation work, could be affected by residual contamination from the sites identified in Section 2.2.3.2.</p> | Same as Alternative 1 | <p>WQ-1. <i>Water Quality/Erosion Control BMPs:</i> Implement temporary erosion control and water quality measures as required by the Construction General Permit. Additionally, a SWPPP would be prepared by the construction contractor and approved by Caltrans prior to construction.</p> <p>HAZ-1: Soil and groundwater testing and characterization would be required. In addition, a bridge survey would be needed to determine the presence or absence of asbestos-containing material (ACM) in the existing triple box culvert to be removed and replaced.</p> |
| Air Quality | None | Construction of Alternative 1 would generate emissions of criteria air pollutants and precursors that could potentially affect air quality. Therefore, there would be no long-term impacts associated with the project following construction activities. | Same as Alternative 1 | None |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|----------------------------|---|---|--|--|
| Noise and Vibration | Noise levels would increase with or without the project due to the projected increase in traffic volumes over time. | Construction activities such as pile driving, excavation, and grading would result in temporary increased ambient noise levels. The highest source of vibration anticipated is from pile driving. Use of CIDH would reduce vibration. There would be no long-term impacts associated with the proposed project following construction activities. | Same as Alternative 1 | <p>NOI-1. Public Notices: Require Public outreach to inform residents, business, and others about upcoming major activities and time frame.</p> <p>NOI-2. Noise Scheduling Measure: When possible, schedule major activities on a separate timeline from other activities to reduce significant vibration impacts.</p> <p>NOI-3. Use CIDH piles instead of concrete pile driving to reduce vibration. Contractor shall drill pile holes to a depth prescribed by the Engineer and then drive the concrete pile to the full depth.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|--|--|---|
| <p>Noise and Vibration <i>(continued from previous page)</i></p> | | | | <p>NOI-4. Noise Control Measure for pile driving. If Caltrans chooses pile driving operations as the method for drilling, the contractor shall provide Noise Control and Monitoring Plans to reduce/minimize noise below 86 dBA, per Caltrans Standard Specification.</p> <p>NOI-5. Noise Control Measure for CISS. If Caltrans chooses CISS as the method for drilling, the contractor shall also provide Noise Control and Monitoring Plans to reduce/minimize noise below 86 dBA, per Caltrans Standard Specification.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---------------------|---|--|--|--|
| Natural Communities | None | <p>The project would result in temporary impacts to riparian land, vegetation, wetlands and fish passage.</p> <p>The project would have permanent impacts on natural communities. A total of 1.246 acres of permanent impacts to unpaved land cover are anticipated as a result of the proposed project. Permanent impacts to 0.011 acre of riparian habitat are anticipated due to minor reconfiguration of Cordilleras Creek and installation of slope stabilization. Permanent impacts to 0.112 acre of wetland habitat are anticipated due to widening of the southbound highway shoulder to accommodate stage construction.</p> | Same as Alternative 1 | <p>Additional measures are included in: Wetlands and Other Waters of the United States; Plant Species; Animal Species; Threatened and Endangered Species; and Invasive Species in table, below.</p> <p>WQ-1. Water Quality/ Erosion Control BMPs</p> <p>BIO-1. Environmentally Sensitive Area Fencing: ESAs shall be clearly delineated using temporary high-visibility fencing.</p> <p>BIO-2. Avoidance and Minimization Measure for Plants: a qualified biologist shall conduct appropriately timed surveys for the listed plant before construction.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|--|--|--|
| <p>Natural Communities <i>(continued from previous page)</i></p> | | | | <p>BIO-3. Minimizing Tree Removal: The project minimizes tree removal to the maximum extent practicable, and no removal of trees is anticipated.</p> <p>BIO-4. Vegetation Removal: Vegetation removal shall be limited to the designated work areas needed for access and workspace.</p> <p>BIO-5. Fish Passage: Design of the proposed replacement structures would incorporate hydraulic modeling to ensure structures provide adequate fish passage.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|--|---|--|--|--|
| <p>Wetlands and Other Waters of the United States</p> | <p>None.</p> | <p>Temporary construction impacts to wetlands of approximately 0.104 acre are anticipated due to installation of the temporary creek dewatering system. Permanent impacts to wetlands are also anticipated during the construction of the project. Permanent impacts to wetlands of approximately 0.112 acre are anticipated due to widening of the southbound highway shoulder to accommodate stage construction.</p> | <p>Same as Alternative 1</p> | <p>BIO-1. Environmentally Sensitive Area Fencing: As described in Section 2.3.1, environmentally sensitive areas (ESAs) shall be clearly delineated using temporary high-visibility fencing. WQ-1. Water Quality/ Erosion Control BMPs. WET-1. Compensatory Mitigation Measure for Wetlands: Wetland impacts shall be mitigated at a minimum 1:1 ratio. A 1:1 ratio is standard for impacts to wetlands and other aquatic resources based on a project’s risk of failure to compensate for impacts to wetlands (mitigation project), and the temporal loss or reduction of functions during the time it takes a mitigation project to achieve the targeted level of performance for all of its functions.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|----------------------|---|--|--|--|
| Plant Species | None. | During construction of the proposed project, the removal of plants associated with ruderal habitats would occur. The majority of these plants are nonnative and invasive. The project is not expected to result in the permanent loss of rare or special-status plant species, as they are absent from the project area. | Same as Alternative 1 | <p>BIO-2. Avoidance and Minimization Measure for Plants</p> <p>BIO-3. Minimizing Tree Removal: The project minimizes tree removal to the maximum extent practicable, and no removal of trees is anticipated.</p> <p>BIO-4. Vegetation Removal: Vegetation removal shall be limited to the designated work areas needed for access and workspace.</p> <p>BIO-6. Replant, Reseed, and Restore Disturbed Areas: Where disturbance includes the removal of trees, native species shall be replanted at a 3:1 ratio for every native tree removed, and at a 1:1 ratio for every nonnative tree removed, based on the local species composition.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|-------------------|---|---|--|---|
| Animal Species | None | <p>Approximately 0.90 acre of temporary impacts to potential foraging habit for northern harrier, Alameda song sparrow and white-tailed kite are anticipated to occur due to construction activities.</p> <p>Construction activities also have the potential to affect these bird species due to construction-related noise, vibration, and increased human presence.</p> | Same as Alternative 1 | <p>BIO-7. Construction Site BMPs: The following site restrictions shall be implemented to avoid or minimize impacts on special-status species and their habitats.</p> <p>BIO-8. Entrapment Avoidance: To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1 foot deep shall be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps.</p> <p>BIO-9. Biological Monitor and Protocol for Observation: The names and qualifications of proposed biological monitor(s) shall be submitted to the United States Fish and Wildlife Service and California Department of Fish and Wildlife for approval prior to the start of construction.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|-----------------------|---|---|--|--|
| Animal Species | None | Approximately 0.90 acre of temporary impacts to potential foraging habit for northern harrier, Alameda song sparrow and white-tailed kite are anticipated to occur due to construction activities. Construction activities also have the potential to affect these bird species due to construction-related noise, vibration, and increased human presence. | Same as Alternative 1 | <p>BIO-10. Preconstruction/Daily Surveys: Preconstruction surveys for special-status wildlife species listed in this Natural Environmental Assessment, shall be conducted by the agency-approved biological monitor.</p> <p>BIO-11. Migratory Bird Treaty Act: To protect migratory birds and their nests, all initial major vegetation clearing, but not grubbing, shall be conducted between October 1 and January 31.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|--|--|---|
| <p>Threatened and Endangered Species</p> | <p>None</p> | <p>Habitat for threatened and endangered bird species and salt marsh harvest mouse would be disturbed during the construction of the proposed project, and impacts to these species could potentially occur if they are present during these activities.</p> | <p>Same as Alternative 1</p> | <p>BIO-1. <i>Environmentally Sensitive Area Fencing.</i> BIO-7. <i>Construction Site BMPs:</i> The following site restrictions shall be implemented to avoid or minimize impacts on special-status species and their habitats BIO-9. <i>Biological Monitor and Protocol for Observation</i> BIO-10. <i>Preconstruction/Daily Surveys:</i> Preconstruction surveys for special-status wildlife species listed in this NES shall be conducted by the agency-approved biological monitor.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|--|--|--|
| <p>Threatened and Endangered Species <i>(continued from previous page)</i></p> | | | | <p>BIO-12. Dry Season Work Window: Construction actions would be scheduled to minimize impacts to fish species and their habitat. To reduce impacts to fish species and habitat, construction activities within the Cordilleras Creek channel would be conducted during the dry season, between June 15 and October 15.</p> <p>BIO-13. Worker Environmental Awareness Training: The program shall focus on the conservation measures that are relevant to an employee’s personal responsibility and would include an explanation on how to avoid take of the Central California Coast steelhead, Ridgway’s rail, SMHM, and western snowy plover.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|--|--|---|
| <p>Threatened and Endangered Species <i>(continued from previous page)</i></p> | | | | <p>BIO-14. <i>Proper Use of Erosion Control Devices:</i> To avoid entanglement or injury of wildlife, including the salt marsh harvest mouse, erosion control materials that use plastic or synthetic monofilament netting shall not be used.</p> <p>BIO-15. Light restrictions shall be implemented during construction to avoid impacts to threatened and endangered species.</p> <p>BIO-16. All regulated species would be allowed to leave under their own volition unless otherwise approved by CDFW and/or USFWS.</p> <p>BIO-17. Vegetation where construction activities is closer than 50 feet of the edge of pickleweed vegetation would be removed at the location of the creek diversion system.</p> |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|---|---|--|--|--|
| Threatened and Endangered Species <i>(continued from previous page)</i> | | | | BIO-18. This measurement sets up protocols for vegetation removal to avoid impacts to harvest mouse and other sensitive species, such as requiring inspections for sensitive species before removing vegetation. BIO-19. Fish Passage Assessment. To evaluate potential impacts to native fish species and fisheries resources, Caltrans shall submit a fish passage assessment to CDFW and add it to the PAD database. |
| Invasive Species | None | Project construction activities have the potential to inadvertently spread noxious weed species. | Same as Alternative 1 | BIO-20. Invasive Species Management: Strategies shall be implemented during construction to avoid the potential of spreading invasive species. |
| Cumulative Impacts | None | None | None | None |

| Affected Resource | Potential Impact: No Build Alternative | Potential Impact: Build Alternative 1 | Potential Impact: Build Alternative 2 | Avoidance, Minimization, and/or Mitigation Measures |
|-----------------------|---|---|--|---|
| Wildfire | None | Alternative 1 would not impair implementation of an emergency response or emergency evacuation plan, exacerbate wildfire risks or expose project occupants to pollutants from a wildfire or the uncontrolled spread of a wildfire, increase wildland fire risk through installation or maintenance of associated infrastructure, or result in downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. | Same as Alternative 1 | None |
| Climate Change | None | Alternative 1 is estimated to generate a total of 1,936 metric tons per construction project (MT/construction project) of carbon dioxide equivalent (CO ₂ e). Greenhouse gas emissions would only be generated during the construction of the project. | Alternative 2 is estimated to generate 2,068 MT/construction project of CO ₂ e. GHG emissions would only be generated during the construction of the project. | None |

This page intentionally left blank

Table of Contents

| | |
|--|------------|
| Chapter 1 Proposed Project | 1-1 |
| 1.1 Introduction | 1-1 |
| 1.2 Corridor Overview..... | 1-1 |
| 1.3 Purpose and Need..... | 1-3 |
| 1.3.1 Project Purpose..... | 1-3 |
| 1.3.2 Project Need | 1-3 |
| 1.4 Project Description | 1-3 |
| 1.5 Project Alternatives | 1-4 |
| 1.5.2 Project Construction | 1-7 |
| 1.5.3 Estimated Project Cost and Funding | 1-14 |
| 1.5.4 Permits and Approvals Needed | 1-14 |
| Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures | 2-1 |
| 2.1 Human Environment | 2-3 |
| 2.1.1 Existing and Future Land Use | 2-3 |
| 2.1.2 Consistency with State, Regional, and Local Plans and Programs | 2-5 |
| 2.1.3 Coastal Zone..... | 2-7 |
| 2.1.4 Growth..... | 2-10 |
| 2.1.5 Environmental Justice | 2-12 |
| 2.1.6 Utilities/Emergency Services | 2-14 |
| 2.1.7 Traffic and Transportation/Pedestrian and Bicycle Facilities | 2-15 |
| 2.1.8 Visual/Aesthetics | 2-17 |
| 2.1.9 Cultural Resources..... | 2-20 |
| 2.2 Physical Environment..... | 2-23 |
| 2.2.1 Hydrology and Floodplain..... | 2-23 |
| 2.2.2 Water Quality and Storm Water Runoff..... | 2-27 |
| 2.2.3 Hazardous Waste/Materials..... | 2-37 |
| 2.2.4 Air Quality..... | 2-41 |
| 2.2.5 Noise and Vibration..... | 2-45 |
| 2.2.6 Energy..... | 2-51 |
| 2.3 Biological Environment..... | 2-53 |
| 2.3.1 Natural Communities..... | 2-53 |
| 2.3.2 Wetlands and Other Waters of the United States | 2-58 |
| 2.3.3 Plant Species..... | 2-62 |
| 2.3.4 Animal Species..... | 2-65 |
| 2.3.5 Threatened and Endangered Species | 2-71 |
| 2.3.6 Invasive Species | 2-84 |
| 2.4 Cumulative Impacts..... | 2-86 |
| 2.4.1 Regulatory Setting | 2-86 |
| 2.4.2 Cumulative Impact Analysis | 2-86 |
| Chapter 3 California Environmental Quality Act Evaluation | 3-1 |
| 3.1 Determining Significance under CEQA..... | 3-1 |

| | | |
|--|---|------------|
| 3.2 | CEQA Environmental Checklist | 3-1 |
| 3.3 | Wildfire..... | 3-35 |
| 3.3.1 | Regulatory Setting..... | 3-35 |
| 3.3.2 | Affected Environment | 3-35 |
| 3.3.3 | Environmental Consequences | 3-35 |
| 3.3.4 | Avoidance, Minimization, and/or Mitigation Measures..... | 3-35 |
| 3.4 | Climate Change | 3-36 |
| 3.4.1 | Regulatory Setting..... | 3-36 |
| 3.4.2 | Environmental Setting..... | 3-39 |
| 3.4.3 | Project Analysis..... | 3-42 |
| 3.4.4 | Greenhouse Gas Reduction Strategies..... | 3-43 |
| 3.4.5 | Adaptation | 3-46 |
| Chapter 4 Comments and Coordination | | 4-1 |
| 4.1 | Public Participation | 4-1 |
| 4.2 | Consultation and Coordination with Public Agencies..... | 4-2 |
| 4.2.1 | Federal Agencies | 4-2 |
| 4.2.2 | State Agencies | 4-2 |
| 4.2.3 | Regional Agencies..... | 4-3 |
| 4.3 | Circulation, Review, and Comment on the Draft Environmental Document..... | 4-3 |
| Chapter 5 List of Preparers..... | | 5-1 |
| Chapter 6 Distribution List | | 6-1 |
| Chapter 7 References | | 7-1 |

List of Appendices

| | |
|-------------|---|
| Appendix A. | Title VI Policy Statement |
| Appendix B. | Avoidance, Minimization, and/or Mitigation Measures |
| Appendix C. | Species Lists |
| Appendix D. | List of Acronyms |
| Appendix E. | List of Technical Studies |
| Appendix F. | Section 4(f) |
| Appendix G. | Public Comments |
| Appendix H. | Consultation and Coordination |

List of Tables

| | | |
|----------------|--|------|
| Table S-1: | Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures | iii |
| Table 1.5.6-1: | Permits and Approvals Needed..... | 1-15 |
| Table 2.1.4-1: | Redwood City Population and Housing Growth | 2-11 |
| Table 2.1.5-1: | Summary of Race, Ethnicity, and Poverty Status in the Study Area | 2-13 |
| Table 2.1.7-1: | Current and Forecasted Traffic Indicators on U.S. 101 at PM 7.13 | 2-15 |
| Table 2.2.2-1: | Hydrologic Sub-Area for Neighboring Bodies of Water..... | 2-31 |
| Table 2.2.2-2: | Pollutants that Impair the Lower San Francisco Bay..... | 2-31 |
| Table 2.2.2-3: | Waterbody with Beneficial Uses | 2-32 |
| Table 2.2.4-1: | Total Construction-Related Criteria Pollutants..... | 2-43 |
| Table 2.2.5-1: | Noise Abatement Criteria | 2-46 |
| Table 2.3.1-1: | Temporary Impacts to Natural Communities | 2-55 |
| Table 2.3.1-2: | Permanent Impacts to Natural Communities | 2-56 |
| Table 2.4.2-1: | Projects Considered for Cumulative Impacts Analysis | 2-87 |
| Table 3.4.5-1: | Sea Level Rise Scenarios By Year..... | 3-50 |

List of Figures

| | | |
|-----------------|--|------|
| Figure 1.1-1: | Project Location | 1-2 |
| Figure 1.5.1-1: | Alternative 1 Site Plan | 1-5 |
| Figure 1.5.1-2: | Alternative 2 Site Plan | 1-6 |
| Figure 1.5.2-1: | Project Footprint | 1-9 |
| Figure 2.1.1-1: | Land Use of Surrounding Area | 2-4 |
| Figure 2.1.3-1: | BCDC Jurisdiction..... | 2-8 |
| Figure 2.2.1-1: | FEMA Floodplain Zones in the Project Vicinity | 2-26 |
| Figure 2.2.5-1: | Noise Levels of Common Activities..... | 2-47 |
| Figure 2.2.5-2: | Map of Representative Properties for Vibration Impacts | 2-49 |
| Figure 2.3.1-1: | Biological Habitat Map..... | 2-54 |
| Figure 3.4.2-1: | U.S. 2018 Greenhouse Gas Emissions..... | 3-40 |
| Figure 3.4.2-2: | California 2017 Greenhouse Gas Emissions..... | 3-40 |
| Figure 3.4.2-3: | Change in California GDP, Population, and GHG Emissions since 2000 | 3-41 |
| Figure 3.4.4-1: | California Climate Strategy | 3-44 |
| Figure 3.4.5-1: | Sea Level Rise (mean higher high water + 12 inches)..... | 3-51 |
| Figure 3.4.5-2: | Sea Level Rise (mean higher high water + 24 inches)..... | 3-52 |
| Figure 3.4.5-3: | Sea Level Rise (100-year storm surge +12 inches Sea Level Rise) | 3-53 |

This page intentionally left blank

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) proposes to replace the existing Cordilleras Creek Bridge (Bridge #35-0019) located on United States Highway 101 (U.S. 101) at post mile (PM) 7.13 in Redwood City in San Mateo County. The project is also near the City of San Carlos. Figure 1.1-1 shows the project location.

The existing 180-foot-long bridge that spans Cordilleras Creek is a reinforced-concrete triple 10-by-8-foot box culvert under 1.6 feet of embankment with straight stepped wing walls at the upstream end, and straight end walls at the downstream end. The original structure built in 1930 was 100 feet long and was widened 55 feet on the downstream (right) side in 1958. Also, a straight end wall was placed at the downstream end of the culvert in 1958. The structure was again widened by an additional 25 feet on the downstream (right) side in 1971, for a total width of 180 feet. The original bridge was completed in 1930 under Contract 24TC1.

Maintenance inspections reports have shown the bridge is beyond the end of its service life and is structurally deficient. The bridge needs to be replaced to prevent its failure and preserve a facility safe for the traveling public.

Caltrans, as assigned by the Federal Highway Administration (FHWA), is the lead agency under the National Environmental Policy Act (NEPA). Caltrans is also the lead agency under the California Environmental Quality Act (CEQA).

The project is to be funded from the 2018 State Highway Operations and Protection Program (SHOPP) Program Code 201.110 for the Fiscal Year 2021/2022. This project is also eligible for Federal-aid and Federal Transportation Improvement Program (FTIP) funding.

1.2 Corridor Overview

The stretch of U.S. 101 near Redwood City and San Carlos is also known as the Bayshore Freeway and is a vital link between Silicon Valley to the south and San Francisco to the north. U.S. 101 is also the main access route to both San Francisco International Airport (SFO) and Norman Y. Mineta San Jose International Airport. U.S. 101 connects to the East Bay via the Dumbarton Bridge (State Route [SR] 84), the San Mateo-Hayward Bridge (SR 92), and the San Francisco–Oakland Bay Bridge (Interstate 80 [I-80]). The portion of U.S. 101 in San Mateo County is an eight- to ten-lane freeway as it runs through Redwood City. After the completion of Caltrans' San Mateo-101 Managed Lanes Project (MLP), the project limits between Brittan Avenue and Whipple Avenue, would expand U.S. 101 to a 12-lane facility (five general purpose lanes and one Express Lane in each direction). MLP would be implemented before construction of this project begins.

There is substantial travel use along the corridor. The current traffic volume along U.S. 101 in the project vicinity averages 240,000 vehicles per day (Annual Average Daily Traffic), as shown in Table 2.1.7-1 in Section 2.1.7 (AADT; Caltrans 2020a). U.S. 101 is identified in the 2015 Interregional Transportation Strategic Plan as one of the Strategic Interregional Corridors that provide communities access to local and interregional markets, recreational facilities, and vital medical and social services, and that supports emergency response and disaster recovery activities. U.S. 101 is also identified as one of the Priority Interregional Facilities that are most critical in supporting interregional transportation and is a candidate for Interregional Transportation Improvement Program investment in the future.



FIGURE 1.1-1
Project Location

Caltrans
San Mateo 101 Cordilleras Creek Bridge Replacement Project
CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

1.3 Purpose and Need

1.3.1 Project Purpose

The purpose of the project is to maintain connectivity and a safe highway facility for the traveling public along U.S. 101 by replacing the existing deteriorated bridge over Cordilleras Creek. The existing bridge, built in 1930, is at the end of its 90-year service life and in need of replacement.

1.3.2 Project Need

On July 2002, a routine inspection of the Cordilleras Creek Bridge found cracks, delamination, and spalls in the structure, especially in the two sections that were previously widened in 1958 and 1971. Delamination is a type of failure where a material fractures into layers. Spalls are small flakes of a material that are broken off a larger solid body. The report concluded that if not addressed, the structural conditions would affect the structural integrity of the bridge and the safety of the traveling public. Additionally, the report concluded that it is more cost effective to remove and replace the triple-box culvert with a new structure rather than repair the existing structure. A Project Initiation Report Review convened by Structure Maintenance and Investigations on June 13, 2011, reaffirmed the 2002 recommendation. The project has independent utility and logical termini and is not dependent upon any other project for its completion.

1.4 Project Description

This section describes the proposed action and the project alternatives developed to meet the purpose and need of the project. Caltrans proposes to replace the existing Cordilleras Creek Bridge on U.S. 101 at PM 7.13. The project as proposed has two Build Alternatives and one No Build Alternative. Specific details involved in replacing the existing bridge are discussed in Section 1.5.2, *Project Construction*. The proposed project would include the following.

- Remove existing triple box culvert bridge.
- Replace the existing bridge in-kind with another three-box culvert (Alternative 1) or with a single-span bridge (Alternative 2). Alternative 2 was chosen as the Preferred Alternative. The installation of a longer bridge would occur to accommodate standard road shoulders within the project limits.
- Replace existing drainage inlets and construct one or more bioswales to treat runoff from the new and reworked impervious area. Implement a minor reconfiguration of Cordilleras Creek.
- Replace Median barrier guard rail (MBGR) with Midwest guardrail system (MGS).
- Replace existing vehicle detector loops.
- Install safety lighting in the median.
 - Safety lights for the project would be installed in the median between Maple Street and Brittan Avenue, approximately 4,400 feet or 0.83 mile.
 - Twenty-two overhead “butterfly” lights are proposed in the new median barrier at an interval of every 200 feet.
 - These lights would improve visibility along U.S. 101. The safety lights would incorporate directional shielding to minimize spillover beyond U.S. 101.

- Riprap – or loose stones placed to form a foundation – would be placed along the steep slope of the creek to protect it from erosional forces.
 - A total of 126 square feet of riprap would be added along Cordilleras Creek on the west side of the bridge (Alternative 1; see Figure 1.5.1-1).
 - A total of 210 square feet of new riprap would be added to west side and east side at abutments (see Figure 1.5.1-2, Alternative 2). Riprap is no longer proposed along the bank on the east side of the creek.
- The project is required to incorporate full trash capture devices because the project is located within a significant trash generation areas (STGAs), and as required by the San Francisco Regional Water Quality Control Board. This requirement is described in more detail in Section 2.2.2 Water Quality and Storm Water Runoff.

1.5 Project Alternatives

Caltrans considered three alternatives, with two Build Alternatives and a No-Build Alternative (Figures 1.5.1-1 and 1.5.1-2 show layouts of the Build Alternatives). The alternatives are described below.

1.5.1.1 No Build (No Action) Alternative

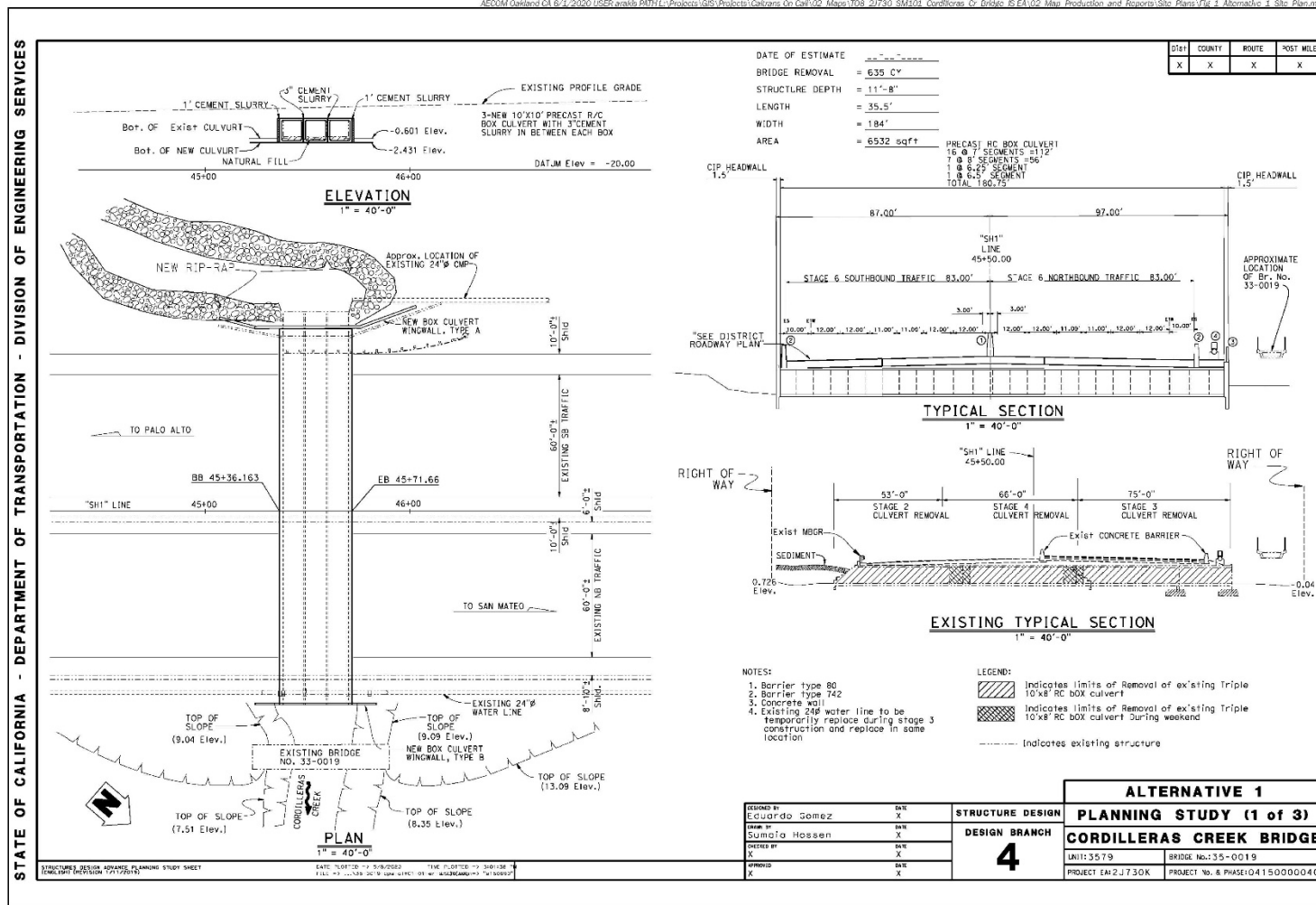
Under the No Build (No Action) Alternative, Cordilleras Creek Bridge would not be replaced. The existing bridge would remain in place and continue to deteriorate, and structural conditions would affect the integrity and ultimately the safety of the traveling public. The No Build Alternative would not meet the project's purpose and need.

1.5.1.2 Alternative 1

Under Alternative 1, Caltrans proposes to replace the existing triple box culvert with a new, pre-cast triple reinforced-concrete box culvert; each culvert would be 10 × 10 feet in size. Additionally, the width of the new bridge would be 4 feet wider than the existing bridge due to structural requirements. This alternative would also include replacing the existing drainage system; constructing new wing walls on the east and west side of the freeway; realigning Cordilleras Creek, and lining Cordilleras Creek west of the highway with vegetated riprap. The bottom of the culvert would be installed at a depth to allow for a natural channel bottom to persist post-construction.

1.5.1.3 Alternative 2

Alternative 2 would include replacing the existing triple box culvert with a new, 36-foot-10-inch single-span precast, pre-stressed bridge. The width of the new bridge would be 5 feet wider than the current bridge. Two new 30-foot approach slabs on each side of the structure would also be installed. The new bridge would be 185 feet long, measured from upstream to downstream, 5 feet longer than the existing culverts (1.5 feet to the east, 3.5 feet to the west). The channel underneath the new bridge would be comprised of natural substrate, and the finished grade would be completely flat; there would be no slope from left bank to right bank or from upstream to downstream. The new bridge ceiling would be 8 feet above the finish grade of the channel. The 36-foot 10-inch bridge width includes the width of the bridge walls. This alternative would also include replacing the existing drainage system; constructing new wing walls on the west side of the freeway; realigning Cordilleras Creek; and lining Cordilleras Creek with vegetated riprap. Alternative 2 has been identified as the Preferred Alternative, as discussed further in Section 1.5.4.



Caltrans
San Mateo 101 Cordilleras Creek Bridge Replacement Project
CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 1.5.1-1
Alternative 1 Site Plan

1.5.1.4 Identification of a Preferred Alternative

This section summarizes the reasons why the Project Development Team (PDT) has identified Alternative 2 as the preferred alternative. This alternative was selected over the No-Build Alternative and Alternative 1. The PDT formally identified Alternative 2 (single-span bridge) as the Preferred Alternative. This decision was made on September 16, 2020 by the PDT after considering findings from the technical studies, comments received on the draft environmental document during the public comment period, and discussions and input from PDT members. The following impacts were also considered during the decision-making process: hydrology and water quality impacts, noise and vibration impacts, sea level rise, biological impacts (including fish passage), right-of-way, stage construction, traffic operations, constructability, and construction cost.

The No-Build Alternative did not meet the project's purpose and need, as described in Section 1.5.1.1. Alternative 1 would have greater impacts related to fish passage, would require more maintenance and would not give Caltrans the option for using other construction schemes, such as the accelerated bridge construction concept, described below. For these reasons, Alternative 2 was selected as the Preferred Alternative.

The design features of the Preferred Alternative provide the following benefits:

- Provides the most environmentally friendly design to eliminate any structural obstacles in the middle of the creek.
- Improves fish passage by minimizing environmental impacts by using stage construction and providing wider bridge opening. The new bridge would be a single span and would eliminate two concrete, box culvert walls from under the existing bridge, effectively increasing the width provided for the stream under the crossing by approximately 2 feet.
- Provides the Headquarters Structures Hydraulics team the ability to consider and adjust the construction staging to reduce the duration of construction. Structures Hydraulics is also investigating utilizing an accelerated bridge construction concept (ABC) to minimize the time it takes to construct this project within the overall footprint.
- Satisfies the design requirements for tidal impacts to the Cordilleras Creek Floodplain and/or account for sea level rise considerations.

In conclusion, Alternative 2 would satisfy the project's purpose and need, would offer Caltrans the option for utilizing other construction schemes, such as the ABC concept, and would reduce environmental impacts related to fish passage, as described in the above bullet. Adequate natural light would be provided on both sides of the bridge.

1.5.1.5 Alternatives Considered but Eliminated from Further Discussion

No additional alternatives were considered for the proposed project.

1.5.2 Project Construction

Construction of the proposed project is scheduled to commence in 2022 and would take up to 2 years to complete. Alternative 1 would require 185 working days, while Alternative 2 would

require 235 working days. However, Caltrans is considering other methods (like ABC) to reduce the duration of construction. This would be further explained during the project's design phase. With ABC the number of working days could be reduced to less than 185 working days.

Construction activities within the creek would be limited to the summer dry season or June 15 to October 15, except for clearing of vegetation and staging activities. Work in the creek would mostly be done during daytime hours. No structural work would occur at night. However, nightwork may be required for road activities, such as placing and moving K-rail or striping lanes. Construction of the temporary bridge would occur during the weekend. The bridge would be constructed in sections, starting on the southbound side, then moving to the northbound side, and ending in the middle section.

Construction equipment anticipated to be used on this project includes chainsaws, skip loaders, drill rigs/augers, excavators, skid steers, dozers, vibratory plate compactors, cranes, rollers, disc trenchers, concrete trucks, concrete saws, pavers, water trucks, sweepers, pile rigs, pile drivers, generators, concrete boom trucks, concrete vibrators, and flatbed trucks; standard two-axle vehicles and diesel-powered vehicles with air brakes (e.g. dump trucks) may also be used. The contractor may select alternate but similar vehicles or equipment based on site-specific considerations.

The construction footprint is defined as the maximum extent of construction-related, ground-disturbing activities, including staging and access. The project footprint is larger, which includes construction activities, staging for construction, and staging to maintain traffic during construction. For this project, the construction footprint is approximately 6 acres (see Figure 1.5.2-1).

The project would be constructed in six stages in order to maintain six general-purpose traffic lanes on U.S. 101 throughout construction. As the construction area moves, traffic lanes would be temporarily shifted to maintain all lanes. During some construction stages, temporary barriers would be used to shift traffic to the opposite side of the highway, while maintaining a barrier between north and southbound traffic. Stage construction activities are generally the same for both Build Alternatives; notable differences between the two alternatives are called out below.

The following activities and components are associated with each phase:

Stage 1

- There is an elevational difference of 1.38 feet between the northbound and southbound directions. To eliminate this elevation difference, the roadway on the southbound side would be modified with a permanent hot mix asphalt overlay of 1.38 feet. This modification would accommodate the proposed lane configuration shift during construction.
- Vegetation would be cleared along the southbound shoulder.
- Portions of Cordilleras Creek would be dewatered, and the creek would be reconfigured for the proposed bridge widening. To accomplish this, coffer dams on each side of the bridge would be set up and a new line would be installed to divert water out of the stream channel while maintaining creek flow. These components would be installed and removed at the beginning and end of each construction season.



AECOM
Caltrans
San Mateo 101 Cordilleras Creek Bridge Replacement Project
CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 1.5.2-1
Construction Footprint

- A temporary bridge would be built along the ditch on the southbound side of U.S. 101 from the southbound edge of shoulder for approximately 22 feet. This temporary bridge extension would be used in the next two stages to shift the lanes around future construction zones to maintain six lanes and 10-foot right shoulders in each direction.
- For Alternative 1, 126 square feet of riprap would be added along Cordilleras Creek on the west side of the bridge (Alternative 1). For Alternative 2, 210 square feet of riprap would be placed at the bridge wingwalls to protect the abutments. This includes 60 square feet on each side of the Cordilleras Creek channel at the west, or upstream, end of the bridge and 45 square feet on each side of the channel at the east, or downstream end of the bridge.

Stage 2

- The median concrete barrier would be removed and shifted to the east (toward the northbound direction).
- Six 11-foot-wide lanes would be established in the southbound and northbound directions.
- Install K-rail to delineate the 56-foot-wide construction zone (Alternative 1) or 52-foot-wide construction zone (Alternative 2) for the southbound direction.
- Install creek diversion system.
- Drive concrete piles for wingwall construction (Alternative 1) or drive concrete piles for new abutments and wingwall (Alternative 2).
- Remove the southbound portion of the existing triple-box culvert, and replace the existing bridge, consisting of a three-box culvert, with either another three-box culvert (Alternative 1), or with a single-span bridge (Alternative 2).
- Establish the final roadway structural section for the outside 54 feet of the southbound direction.
- Weekends (Friday midnight to Monday 5 a.m.): right-lane closure is planned on weekends in the southbound direction.

Stage 3

- Shift six lanes of southbound traffic to a new section with a 2-foot-wide inside shoulder and place K-rail toward the west end.
- Shift six lanes of northbound traffic to the middle section and provide a stage construction zone for the contractor on the east side of the bridge.
- A lane closure may be required from Friday night through Monday morning (one lane closed during weekend hours).
- Relocate Redwood City's reclaimed waterline on the northbound side. This would be a temporary relocation during construction activities.
- Additional dewatering of Cordilleras Creek.

- Provide a construction zone for the contractor on the east end portal.
- There may be a right lane closure on weekends in the northbound direction.
- Weekends (Friday midnight to Monday 5 a.m.): a right-lane closure is planned for the northbound direction.

Stage 4

- Using the new structural section from Stage 3 on the southbound side, establish six lanes of traffic for southbound traffic toward the outermost west side.
- Install K-rail to delineate a 2-foot shoulder on either side.
- Using the new structural section from Stage 2 on the northbound side, establish 6 travel lanes for northbound traffic toward the outermost east side.
- A lane closure may be required from Friday night to Monday morning, with one lane closed during weekend hours.
- Install K-rail to delineate a 2-foot-wide shoulder on either side.
- Additional dewatering of Cordilleras Creek.
- Remove and replace the existing culverts.
- Drive concrete piles for wingwall construction (Alternative 1) or drive concrete piles for new abutments and wingwall (Alternative 2)
- Using the new structural section toward the east side, establish six lanes of northbound traffic on the most eastern section of U.S. 101.
- Install K-rail to provide sufficient space for a 2-foot-wide shoulder on either side.
- Shift six lanes of southbound traffic toward the east to accommodate the contractor while the temporary staged-construction roadway is demolished.
- Weekends (Friday midnight to Monday 5 a.m.): a closure in each direction is planned.

Stage 5

- Establish six lanes of northbound traffic on most eastern section of U.S. 101.
- Shift six lanes of southbound traffic toward the east direction to accommodate the contractor to demolish the temporary bridge on the west most section.
- Install safety lighting in new median barrier.

Stage 6

- Demolish the temporary bridge along the southbound side of U.S. 101.
- Return roadway to existing configuration. Bring roadway back to original profile and place median barrier at its original location.
- The bioswales would be constructed.

1.5.2.1 Other Activities and Components

Right-of-Way

No permanent right-of-way (ROW) acquisitions, utility easements, or maintenance easements are anticipated for the Build Alternatives. A temporary construction easement would be needed.

Utilities

There is an existing 24-inch reclaimed water line owned by the City of Redwood City, fiber optic lines and overhead powerlines near the project area. Overhead powerlines are not expected to be impacted. Fiber optic lines would need to be rerouted. The water line would need to be temporarily or permanently relocated.

Coordination with Other Projects

The Project Initiation Document was developed in 2015, before the inception of the U.S. 101 Managed Lanes Project (MLP) in Santa Clara and San Mateo counties. The U.S. 101 MLP project would be changing the existing highway operation from 5 general purpose traffic lanes to 6 lanes including express lanes and general-purpose lanes. The design of the proposed project would be completed in coordination with the U.S. 101 MLP.

1.5.2.2 Other Construction Activities and Requirements

This project contains a number of standardized project measures that are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. These measures are addressed in more detail in the Environmental Consequences sections in Chapter 2. The construction contractor would be required to follow all standard requirements and procedures to be included during detailed design, specifications, and permits or other authorizations.

The following are examples of standardized project measures that would be implemented as part of the project.

Water Quality

Potential impacts to receiving waterbodies could occur during construction of the Build Alternatives related to sediment, turbidity, and pH from wet concrete and debris. A Storm Water Pollution Prevention Plan (SWPPP) would be prepared before project construction, and SWPPP requirements would be inspected and maintained during construction. The SWPPP would require the implementation of temporary BMPs for sediment control and material management. These BMPs would include a temporary creek diversion system, drainage inlet protection, the use of fiber rolls and silt fence, and street sweeping. Disturbed soil areas would be stabilized using paving, rock slope protection, or erosion control measures to minimize long-term impacts to water quality.

Occupational Safety and Health

Workers who handle hazardous materials are required to adhere to OSHA and California Division of Occupational Safety and Health (Cal/OSHA) health and safety requirements. Hazardous materials must be transported in accordance with RCRA and USDOT regulations and disposed of in accordance with RCRA and the California Code of Regulations at a facility that is permitted to accept the waste.

Transportation Management Plan

During the final design phase for the Build Alternative, a Transportation Management Plan (TMP) would be prepared in accordance with Caltrans requirements and guidelines to minimize construction-related delays. The TMP would address potential traffic impacts as they relate to stage construction and other traffic handling concerns associated with construction of the proposed project. It would include the use of portable Changeable Message Signs, California Highway Patrol (CHP) Construction Zone Enhanced Enforcement Program, and Freeway Service Patrol where possible to minimize delays. The project would limit road closures and maintain traffic during stage construction. Access would be maintained for emergency response vehicles.

Highway Planting

Vegetation removal would be minimized, and protection of remaining vegetation would be provided, as outlined in Sections 2.1.8.3 and 2.1.8.4. Replacement planting and revegetation activities would be completed. Shrubs and plants and associated irrigation facilities would be installed where plants are removed for construction activities. Impacted areas and the majority of vegetation removal are anticipated to occur primarily along the southbound side of the highway. Replacement planting activities would be a part of the construction contract and would include a one-year plant establishment period.

Erosion Control and Construction Discharges

Prior to commencement of construction activities, a SWPPP would be prepared by the Contractor and approved by Caltrans. The SWPPP addresses potential temporary impacts via implementation of appropriate BMPs to protect water quality. These BMPs include covering exposed soil, temporary creek diversion systems, drainage inlet protection, the use of fiber rolls, silt fence, street sweeping, and concrete washouts. Disturbed soil areas would be stabilized by paving, rock slope protection, or erosion control. The project proposes to use vegetated rock stabilized embankment for erosion control. Other erosion control methods may include the use of hydroseed, hydromulch, fiber rolls, and erosion control netting.

Geotechnical Design Standards

Caltrans' design and construction guidelines incorporate engineering standards that address seismic risks. Project elements would be designed and constructed to meet seismic design requirements for ground shaking and ground motions, as determined for the project vicinity and site conditions. Caltrans also requires additional geotechnical subsurface and design investigations to be performed during the final project design and engineering phase.

Executive Order 13112

Compliance with Executive Order (EO) 13112 on Invasive Species is a standard practice that Caltrans adheres to on all projects. In compliance with EO 13112, and subsequent guidance from the FHWA, the landscaping and erosion control included in the project would use species that are not listed as noxious weeds. The following methods would be used in accordance with standard construction practices:

- No disposal of soil and plant materials would be allowed from areas that support invasive species to areas dominated by native vegetation.
- Construction workers would be educated on weed identification and the importance of controlling and preventing the spread of identified invasive nonnative species.
- Gravel and/or fill material to be placed in relatively weed-free areas would come from weed-free sources. Certified weed-free imported materials (or rice straw in upland areas) would be used.

1.5.3 Estimated Project Cost and Funding

The current preliminary total capital cost for this project is estimated at \$33,000,000, which includes \$4,285,000 in ROW costs. Construction costs could increase by up to \$10,000,000, if a wider bridge is warranted. This would be determined during the design phase. Total escalated capital costs, including support costs and right of way, are estimated at \$51,100,000 to be funded under SHOPP Program Code 110 (Bridge Rehabilitation and Replacement). It would be programmed in the 2021/2022 Fiscal Year. The project is also eligible for federal-aid funding.

1.5.4 Permits and Approvals Needed

A number of permits would be needed for the proposed project from local, state and federal agencies. Table 1.5.6-1 shows the permits, reviews, and approvals that would be required for project construction.

Table 1.5.6-1: Permits and Approvals Needed

| Agency | Permit/Approval | Status |
|--|---|--|
| U.S. Army Corps of Engineers (USACE) | Concurrence on delineation of waters of the United States, and Section 404 permit for placement of fill within waters of the United States. | A wetland delineation would be submitted to USACE for concurrence. A permit application would be submitted during the project design phase. |
| U.S. Fish and Wildlife Service (USFWS) | Section 7 consultation for threatened and endangered species | USFWS issued a biological opinion on February 11, 2021 (see Appendix H). |
| National Marine Fisheries Service (NMFS) | Section 7 consultation for threatened and endangered species | NMFS issued a letter of concurrence on March 31, 2021 (see Appendix H). |
| San Francisco Bay Conservation and Development Commission (BCDC) | The project is in BCDC jurisdiction and requires a BCDC Permit per California Government Code Title 7.2; California Public Resources Code Division 19 | A permit application would be submitted during the design phase. |
| California Department of Fish and Wildlife (CDFW) | Section 1602 Lake and Streambed Alteration Permit and Consistency Determination | A permit application would be submitted during the design phase. |
| San Francisco Bay Regional Water Quality Control Board (RWQCB) | Section 401 Water Quality Certification and Construction General Permit | A joint “Application for 401 Water Quality Certification” and/or “Report of Waste Discharge” would be submitted during the design phase. An NPDES Stormwater Permit to regulate stormwater discharges from Caltrans facilities (Order No. 2102-0011-DWQ) permit application would be submitted during the project design phase. A Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) would be submitted prior to construction. |
| California Transportation Commission | CTC funding approval | Following the approval of the Final IS/EA the California Transportation Commission would vote to approve or deny funding for the project. |

This page intentionally left blank

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter addresses the environmental impacts of the proposed project. The environmental resource discussions presented in this chapter are based on the technical studies cited at the beginning of each discussion. An evaluation of the proposed project consistent with the CEQA checklist criteria is provided in Section 3.2. Avoidance, minimization, and/or mitigation measures are discussed in the following sections and summarized in Appendix B.

For the proposed project, the CEQA baseline for all resource areas is 2020, when environmental studies commenced. Environmental impacts are determined by comparing the difference between the Build and No Build Alternatives, consistent with the requirements of NEPA.

Resources Considered but Determined Not to Be Relevant

As part of the scoping and environmental analysis carried out for the project, the following environmental issues were considered but no adverse effects were identified. As a result, there is no further discussion about these issues in this document.

Wild and Scenic Rivers

No wild and scenic rivers are located in or adjacent to the project area and, therefore, this resource type would not be affected by the proposed project.

Parks and Recreation Facilities

The Bay Trail provides a shared bicycle/pedestrian path that runs parallel to the east of U.S. 101. No construction staging or other construction impacts would occur to the trail. Users of the trail may momentarily see construction equipment as they pass by the project area to the west. However, visual effects would be temporary and short-term during construction activities and would not prevent use of the trail. There are no other publicly owned parks or recreation areas within 0.25 mile of the project area.

Farmlands/Timberlands

There are no farmlands or timberlands adjacent to or within the general vicinity of the project area. Land uses adjacent to the project area are commercial uses. Therefore, farmlands and timberlands would not be affected by the proposed project.

Community Character and Cohesion

The proposed project would not change any existing community boundaries or physically divide an established community. The project would not change the existing character of the communities in the project area.

Relocations and Real Property Acquisition

The proposed project would not result in the relocations of homes or businesses, and no property acquisition is proposed. Two Temporary Construction Easements (TCEs) would be required for

staging to the west of the project on lots located on either side of Cordilleras Creek to allow for adequate access to both sides of the creek for construction and riprap installation.

Geology/Soils/Seismicity/Topography

Caltrans' design and construction guidelines incorporate engineering standards that address seismic risks. Project elements would be designed and constructed to meet seismic design requirements for ground shaking and ground motions, as determined for the project vicinity and site conditions. Caltrans also requires additional geotechnical subsurface and design investigations to be performed during the final project design and engineering phase. These standards and requirements would avoid the potential for adverse impacts.

Paleontology

During construction of the project, ground-disturbing activities such as grading, drilling, and excavating have the potential to destroy paleontological resources. However, paleontological resources are unlikely to be encountered as the project area is entirely underlain by artificial fill and Holocene-age deposits. Artificial fill has no potential to contain paleontological resources. Holocene sedimentary deposits are generally considered too young geologically speaking to contain fossils. Therefore, these deposits have a "low potential" to contain paleontologically sensitive geologic units. Thus, the proposed project would not impact paleontological resources.

2.1 Human Environment

2.1.1 Existing and Future Land Use

2.1.1.1 Affected Environment.

The project area is located along U.S. 101 in Redwood City and near the City of San Carlos, in San Mateo County. The majority of the project area would be located within Caltrans' ROW. However, some staging would occur on lots located on either side of Cordilleras Creek, which are outside of Caltrans' ROW. Adjacent land use consists of urban development, including commercial real estate, a hotel, and light industrial uses to the west and open space to the east, including Bay tidal areas and sloughs (see Figure 2.2.1-1).

Recreational and open space areas in the vicinity of the project area include: Bair Island Ecological Reserve, Don Edwards San Francisco Bay National Wildlife Refuge, and the San Francisco Bay Trail. Bair Island Ecological Reserve is an ecological reserve managed by CDFW. Don Edwards San Francisco Bay National Wildlife Refuge is a national wildlife refuge managed by USFWS. The San Francisco Bay Trail is a walking and biking path generally located along the shoreline of the Bay Area. These are considered Section 4(f) properties; refer to Appendix F.

The area immediately adjacent to the project site to the west is built land. In general, the areas near the project site continue to intensify existing land uses through the addition of new commercial space, dense residential and mixed-used developments, and supporting infrastructure. Proposed plans and amendments for growth in the future are described further in Section 2.4.

2.1.1.2 Environmental Consequences

Most of the project would be located within Caltrans' ROW. However, some staging would occur on lots located on either side of Cordilleras Creek, which are outside of Caltrans' ROW. TCEs would be required for staging. The project would not conflict with any existing land use designations or preclude the development of any of the proposed projects within the project vicinity.

2.1.1.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

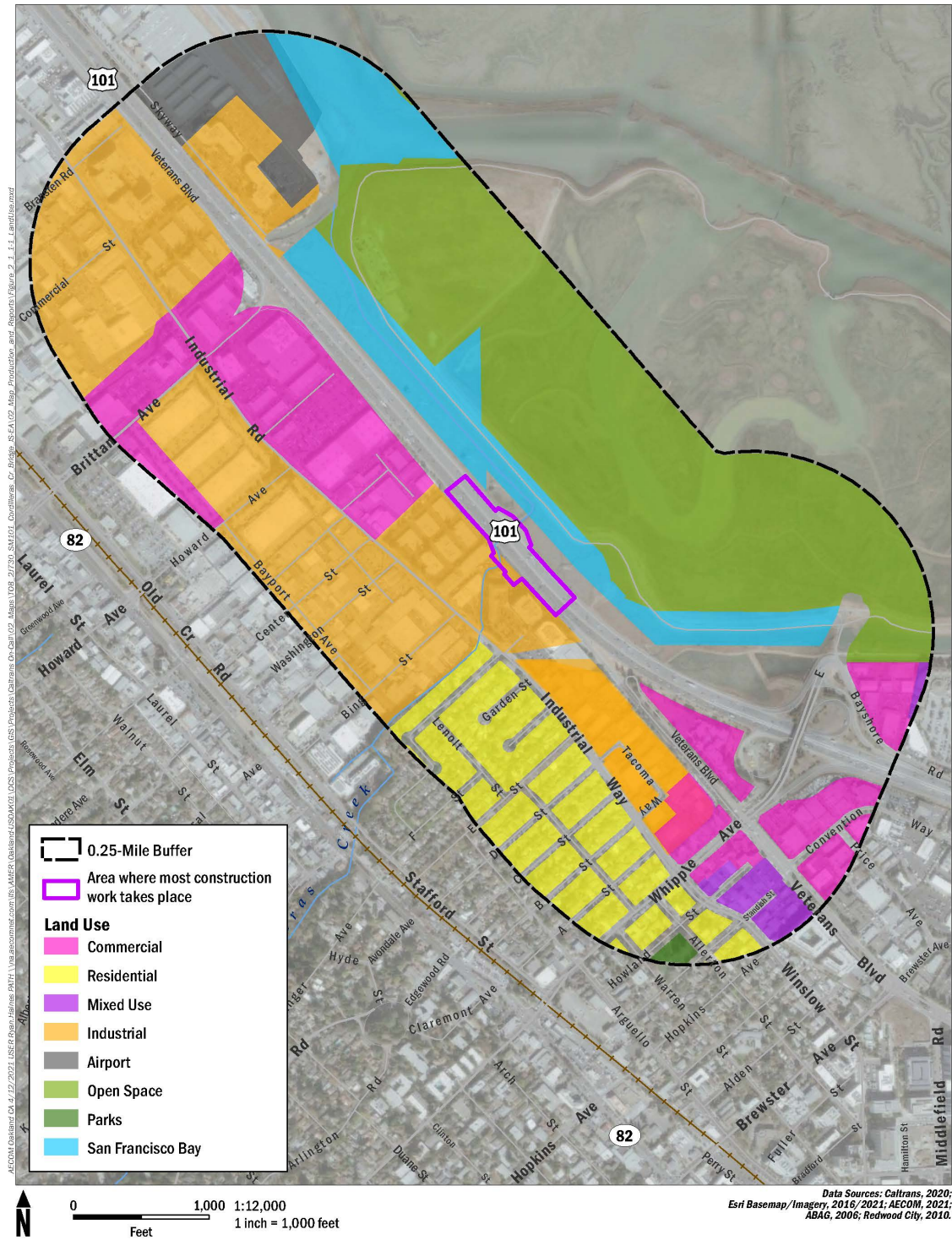


FIGURE 2.1.1-1
Land Use of Surrounding Areas

2.1.2 Consistency with State, Regional, and Local Plans and Programs

2.1.2.1 Affected Environment

There are several community, regional, and transportation plans that encompass the project area. The following types of plans were considered and are discussed in the subsections below:

- Transportation plans/programs
- Regional growth plans
- General and community plans
- Habitat Conservation Plans
- Other regulatory and planning influences

California Transportation Plan

The California Transportation Plan (CTP) provides a long-range policy framework to meet the state's future mobility needs and reduce greenhouse gas (GHG) emissions (Caltrans 2016). The CTP defines goals, performance-based policies, and strategies to achieve a collective vision for California's future statewide, integrated, multimodal transportation system. The CTP contains six goals. Preserving the multimodal transportation system is Goal 2 in the CTP. Improving public safety and security is Goal 4 in the CTP.

Regional Growth Plans

The Metropolitan Transportation Commission (MTC) is the State-designated Regional Transportation Planning Agency and the federally designated Metropolitan Planning Organization for the San Francisco Bay Area. *Plan Bay Area 2040* is the regional planning document of the MTC and Association of Bay Area Governments (ABAG). *Plan Bay Area 2040* functions as a regional growth plan for the nine-county San Francisco Bay Area, including San Mateo County (ABAG and MTC 2017). *Plan Bay Area* designates priority development areas (PDAs), which are areas within existing communities that have been identified and approved by a local city or county for future growth because of proximity to transit, jobs, shopping, and other services. Promoting compact development within PDAs is intended to take development pressure off the region's open space and agricultural lands. PDAs are located in areas to the east of the project area. No designated PDAs are within the project area.

General Plans and Community Plans

General and community plans in the project vicinity were reviewed, including San Mateo County and the cities of Redwood City and San Carlos. The plans generally focus on improving local circulation, encouraging multi-modal transportation, and encouraging projects that minimize vehicle trips and miles traveled. None of the plans specifically evaluate or reference the proposed project since the project would not result in any long-range change in U.S. 101 capacity or access. There are no policies within these general plans that are relevant to the proposed project.

Habitat Conservation Plans

The project would occur entirely within the Caltrans ROW. No Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans overlap with the proposed project area.

San Francisco Bay Conservation and Development Commission

The project is within San Francisco Bay Conservation and Development Commission (BCDC) jurisdiction. Fill and dredge of the Bay or project construction within 100-feet inland from the Bay requires a permit and review by BCDC. This jurisdiction includes tidal waters and wetlands (the Cordilleras Creek channel and banks).

2.1.2.2 Environmental Consequences

No Build Alternative

The No Build Alternative is not consistent with the CTP's goals of preserving California's multimodal transportation system and improving public safety and security.

Build Alternatives 1 and 2

The No Build and the Build Alternatives would be consistent with local or regional plans and policies. Applicable general plans focus on improving local circulation, encouraging multi-modal transportation, and encouraging projects that minimize vehicle trips and miles traveled. No policies in the referenced general plans are relevant to the proposed project. The project would not interfere with the implementation of policies and projects within *Plan Bay Area 2040*. The project would not conflict with any of the PDAs in the corridor or spur development into open space or public or private lands.

The project would involve work within BCDC jurisdiction for construction staging. Specifically, work would occur in Cordilleras Creek on the east side of the bridge and that work would require BCDC's review. The existing culverts would be removed and replaced, dewatering would be completed, and wing wall construction would require pile driving and the installation of coffer dams on the east side of the bridge. Therefore, a BCDC permit would be required, but the project would not conflict with BCDC's plans and policies.

The proposed project meets the CTP's goals of preserving the multimodal transportation system and improving public safety and security. Therefore, there would be no impacts related to consistency with state, regional and local plans.

2.1.2.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.1.3 Coastal Zone

2.1.3.1 Regulatory Setting

The Bay Conservation and Development Commission (BCDC), created prior to the California Coastal Act, retains oversight and planning responsibilities for development and conservation of coastal resources in the Bay Area. The regulatory authority for BCDC is the McAteer-Petris Act and the Suisun Marsh Protection Act. The proposed project is within BCDC jurisdiction and would require a BCDC permit.

2.1.3.2 Affected Environment

The Cordilleras Creek Bridge spans Cordilleras Creek on U.S. 101 and flows into Smith Slough and Steinberger Slough before flowing out to the lower San Francisco Bay (the Bay) to the northeast.

2.1.3.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect San Francisco Bay resources.

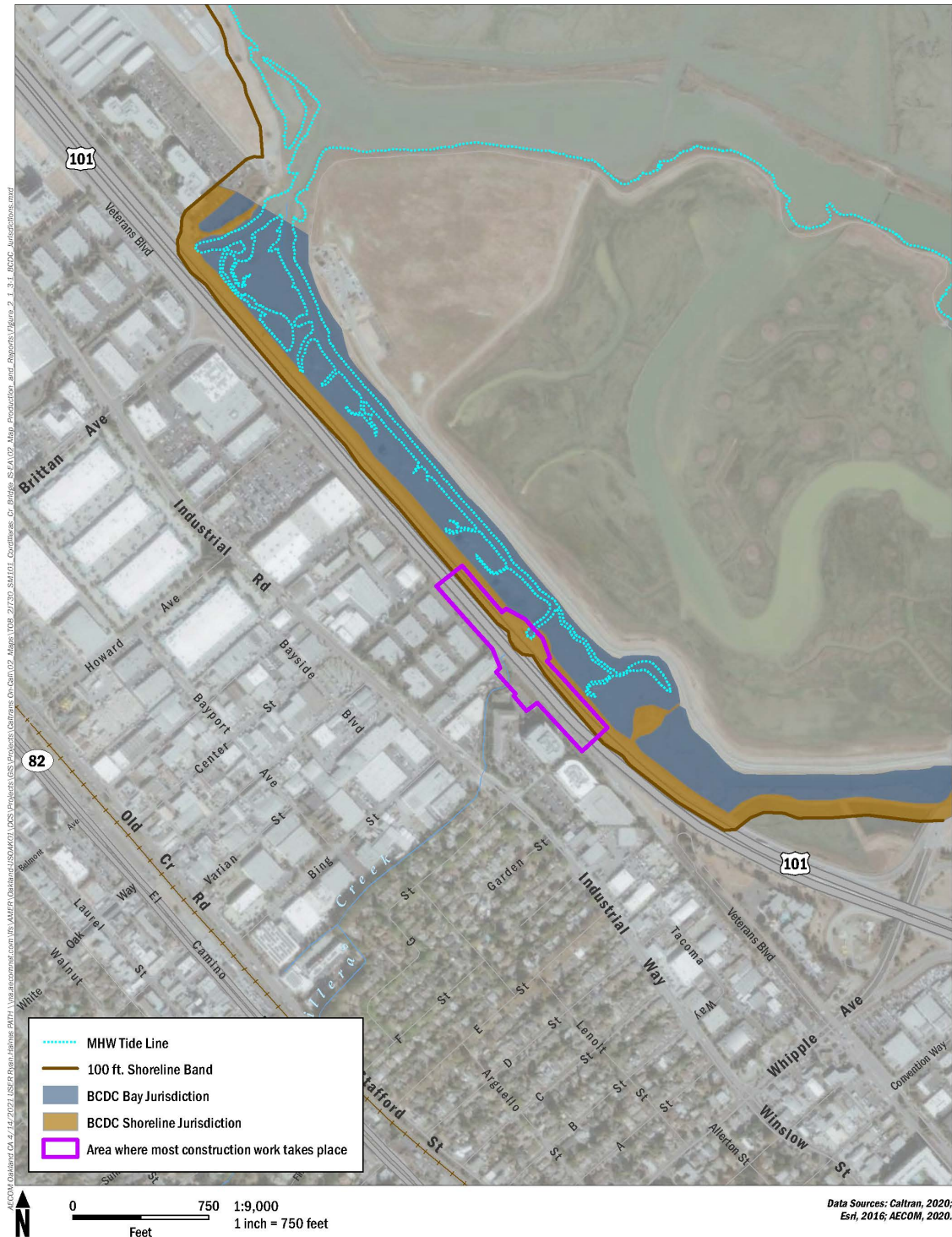
Build Alternatives 1 and 2

Short-Term Construction Impacts

The project would require work on the east side of the bridge adjacent to the Bay in BCDC jurisdiction, as shown in Figure 2.1.3-1. Work in the creek would include removing and replacing culverts; dewatering Cordilleras Creek; and driving piles for the wing wall construction. The bridge would also be widened by 1.5 feet toward the Bay. The project would require grading, excavation, trenching, clearing and grubbing of vegetation, and increasing impervious surfaces adjacent to the Bay shoreline. As a result, sedimentation and pollutants could enter neighboring bodies of water including Cordilleras Creek, Smith Slough, Steinberger Slough and lower San Francisco Bay.

Public access to the Bay shoreline in the project area is available at the Bay Trail that is located east of the project. This trail is east of the pipeline that parallels U.S. 101 in the vicinity of the project. Public access would be maintained during construction as there is no need to close the trail; all work would be completed within Caltrans' ROW. There would be no short-term impacts to shoreline access along the Bay Trail. Construction work may be briefly visible to users of the Bay Trail if they look inland (to the west) but trail users' views of the Bay looking to the east would not be impeded. There would be no impact with respect to shoreline access or views of the Bay from the Bay Trail.

Drivers on U.S. 101 toward the Bay may briefly see construction equipment if they are looking to the east. However, drivers' views of construction would be momentary and brief.



AECOM
 Caltrans
 San Mateo 101 Cordilleras Creek Bridge Replacement Project
 CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 2.1.3-1
 BCDC Jurisdiction

A permit from BCDC would be required for construction work within their jurisdiction. As part of the permit process, BCDC would require a Sea Level Rise (SLR) Assessment.

Long-Term Operation Impacts

Bay resources, views of the Bay, or access to the Bay (along the Bay Trail) would not experience any long-term impacts following construction activities. The median barrier would be minimized to preserve Bay views, as established by agreements made as part of the San Mateo U.S. Managed Lanes Project (EA 04-1J5604).

2.1.3.4 Avoidance, Minimization, and/or Mitigation Measures

No mitigation is proposed.

2.1.4 Growth

2.1.4.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

CEQA also requires the analysis of a project’s potential to induce growth. The CEQA guidelines (Section 15126.2[d]) require that environmental documents “...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment...”

2.1.4.2 Affected Environment

Plan Bay Area anticipates that San Mateo County’s population would increase by 26 percent between 2010 and 2040 (ABAG and MTC 2013). By comparison, the average population growth in the Bay Area’s nine counties is anticipated to be 30 percent. Employment is expected to increase in the San Mateo County by 29 percent and housing units are expected to increase by 20 percent from 2010 to 2040. Over the past 9 years, Redwood City has grown by 11.8 percent and has had an annual growth rate of 1.11 percent. The recorded population was 76,815 people in 2010 and 85,925 people in 2019. The projections indicate that recent growth in the project area is expected to continue. San Mateo County has grown by 6.7 percent over the past 9 years, with an annual rate of 0.74 percent. The recorded population was 718,517 people in 2010 and 766,573 people in 2019 (US Census 2019).

Growth in San Mateo County and Redwood City appears to be driven primarily by the technology, health care, education, and government sectors and financial business (EDD 2020). In 2010, there were about as many jobs in San Mateo County as housing units. However, because jobs are anticipated to grow faster than housing units between 2010 and 2040, more people would need to commute to San Mateo County in the future. This has the potential to increase congestion on U.S. 101.

Although population in Redwood City increased between 2000 and 2010, the growth rate in Redwood City substantially increased between 2010 and 2019. Table 2.1.4.2-1 shows growth in housing and population in the City of Redwood City between 2000 and 2010.

Table 2.1.4-1: Redwood City Population and Housing Growth

| Jurisdiction | 2000 Population | 2010 Population | Population Change | 2000 Housing Units | 2010 Housing Units | Housing Units Change | Travel Time to Work (minutes) |
|-------------------------|----------------------------|----------------------------|------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|--|
| City of Redwood City | 75,402 | 76,815 | +2% | 28,060 | 29,167 | +4% | 23.1 |

Source: Census 2000, Census 2010

2.1.4.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not increase the capacity of U.S. 101 in the project area. The No Build Alternative would not influence growth patterns in the project area.

Build Alternatives 1 and 2

The project is not a growth-inducing project. Neither alternative would increase the capacity of U.S. 101 in the project area and would not influence growth patterns in the project area.

2.1.4.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.1.5 Environmental Justice

2.1.5.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2019, this was \$25,750 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964, and related statutes, have also been included in this project. The Department's commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix A of this document.

2.1.5.2 Affected Environment

The environmental justice analysis for this project included a look at the Census Block Groups that border the project area. Block groups are divisions of census tracts that are delineated by local or regional organizations and usually consist of a cluster of several blocks. For the environmental justice analysis completed for this project, the study area block groups were compared to the county overall. Data for the analysis were derived from the U.S. Census Bureau's 2013-2017 American Community Survey 5-Year Estimates (Census 2017).

Caltrans identifies a community as an environmental justice community of concern if it meets one or both of the following criteria:

- The minority population exceeds 50 percent or is meaningfully greater (e.g., more than 10 percentage points) than the minority population percentage in the general population or other appropriate unit of geographic analysis (e.g., the counties overlapping the study area).
- The low-income population comprises more than 25 percent of the census block group or tract.

There are two block groups that border the project area. Neither one of these block groups meet the criteria of an environmental justice community of concern (Table 2.1.5-1).

Table 2.1.5-1: Summary of Race, Ethnicity, and Poverty Status in the Study Area

| Geography | Black | Native American | Asian | Native Hawaiian or Other Pacific Islander | Hispanic | Minority* | Below Poverty Level |
|---------------------|--------------|------------------------|--------------|--|-----------------|------------------|----------------------------|
| California | 5.8% | 0.7% | 14.1% | 0.4% | 38.8% | 39.4% | 15.1% |
| San Mateo County | 2.4% | 0.3% | 27.6% | 1.4% | 24.9% | 47.9% | 4.3% |
| Tract 6103.02, BG 1 | 1.3% | 2.8% | 12.3% | 1.5% | 49.5% | 49% | 12.9% |
| Tract 6091, BG 2 | 1.5% | 0% | 16.4% | 0.0% | 22.7% | 30.8% | 6.6% |

Notes: *Minority is the sum of all U.S. Census reported groups except White.

BG – Block Group

Source: Census 2017

2.1.5.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect an environmental justice community of concern.

Build Alternatives 1 and 2

The Build Alternatives would not result in disproportionately high and adverse effects on any minority or low-income populations. The project is not within an environmental justice community of concern. Construction activities would not adversely affect the surrounding environment as BMPs for water quality, air quality and noise would be implemented. Therefore, no effects would result from phased construction of the project. The project would not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898.

Long-Term Operation Impacts

The project would not change the long-term capacity or traffic flow on U.S. 101. There would be no impacts to an environmental justice community of concern.

2.1.5.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.1.6 Utilities/Emergency Services

2.1.6.1 Affected Environment

Utilities located within the project limits are owned and operated by Pacific Gas and Electric Company (PG&E), AT&T, the San Francisco Public Utilities Commission (SFPUC), San Mateo County, and the City of Redwood City Public Works Department. A Redwood City reclaimed waterline, overhead PG&E power lines, and telecommunication (fiber optics) are located within the project area.

Fire and police protection services in the project area are provided by the cities of Redwood City and San Carlos.

2.1.6.2 Environmental Consequences

No Build Alternative

As the No Build Alternative would not result in changes to U.S. 101, it would not require utility relocations or construction activities that could interfere with the provision of emergency services.

Build Alternatives 1 and 2

Short-Term Construction Impacts

Fiber optic lines would need to be rerouted during construction. A 24-inch water line owned by Redwood City would be temporarily or permanently relocated. Overhead power lines and other utilities would not be affected. No service disruptions are anticipated as a result of construction of the proposed project. No permanent utility relocations are anticipated.

Project construction may result in increased traffic delays on U.S. 101 near the project area that could affect response times of emergency response vehicles. However, a TMP would be developed for the project to minimize construction-related delays. The TMP would include using portable changeable message signs and ground mounted signs, CHP's Construction Zone Enhanced Enforcement Program, and Freeway Service Patrol where possible. It is anticipated that CHP would be required every day during construction for Construction Zone Enhanced Enforcement, due to the high traffic volumes and difficulty of staging. Furthermore, during stage construction and the widening of the southbound side of U.S. 101, all lanes would remain open on each side of the highway. Law enforcement, fire, and/or emergency services would be maintained during project construction and operation of the lanes. With the incorporation of the TMP, the project is not expected to result in substantially decreased response times. There would be no disruption of utility service, and minimal effect, if any, on emergency services.

Long-Term Operation Impacts

A 24-inch water line owned by Redwood City would be temporarily or permanently relocated. There would be no other long-term impacts to utilities and emergency services.

2.1.6.3 Avoidance, Minimization, and/or Mitigation Measures

A TMP is a standard project feature and is not considered a minimization or mitigation measure. No avoidance, minimization or mitigation is required.

2.1.7 Traffic and Transportation/Pedestrian and Bicycle Facilities

Caltrans, as assigned by the Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the USDOT issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

2.1.7.1 Affected Environment

Bicycle and Pedestrian Facilities

A shared bicycle/pedestrian path runs parallel to the east side of U.S. 101 (the northbound side of the freeway). This path is separated from the freeway by a utility pipeline. The path is part of the San Francisco Bay Trail.

Traffic Volumes

Currently, the average annual daily traffic (AADT) is 240,000 vehicles per day along U.S. 101 through the project area. In this area along the U.S. 101 corridor, traffic volumes are forecasted to increase by approximately 8,100 vehicles per day from 2020 to 2026 and 21,050 vehicles per day between 2020 and 2036. Between 2020 and 2046, there is projected to be an increase in traffic volumes of 34,000 vehicles per day. The percentage of truck traffic from 2020 to 2046 is anticipated to increase by 4.89%. Current and forecasted traffic volumes for Cordilleras Creek Bridge are shown in Table 2.1.7-1.

Table 2.1.7-1: Current and Forecasted Traffic Indicators on U.S. 101 at PM 7.13

| Year | Forecasted Traffic |
|-------------------------------|--------------------|
| Present year AADT (2020) | 240,000 |
| Construction year AADT (2026) | 248,100 |
| 10-year AADT (2036) | 261,050 |
| 20-year AADT (2046) | 274,000 |
| % trucks | 4.89% |

Source: Caltrans, 2020a

2.1.7.2 Environmental Consequences

No Build Alternative

The No Build Alternative would not result in traffic and transportation changes to U.S. 101. As discussed in the affected environment of this section, traffic volumes over Cordilleras Creek would continue to increase with or without the project.

Build Alternatives 1 and 2

Short-Term Construction Impacts

Project construction may result in periodic short-term traffic delays on U.S. 101 near the project area. During stage construction all lanes on both sides of the highway would remain open during the weekdays. During weekend work (Friday midnight to 5 am on Monday), only 5 traffic lanes on each side would remain open (see Section 1.5.2, Project Construction). The closure of one lane in each direction would result in traffic delays during the weekend between 0 and 29.5 minutes. However, a TMP would be developed for the project to minimize construction-related delays. The TMP would include using portable changeable message signs and ground mounted signs, CHP's Construction Zone Enhanced Enforcement Program, and Freeway Service Patrol where possible. It is anticipated that CHP would be required every day during construction for Construction Zone Enhanced Enforcement, due to the high traffic volumes and difficulty of staging. Furthermore, due to stage construction and the widening of the southbound side of U.S. 101, all lanes would remain open on each side of the highway during construction activities during the weekdays. Law enforcement, fire, and/or emergency services would be maintained during project construction and operation of the lanes on both weekdays and weekends. With the incorporation of the TMP, the project is not expected to result in significantly decreased response times. Effects of the project on transportation would be minimal.

The Bay Trail is expected to remain open during construction, and its use would not be affected. No impacts would occur during construction including accessibility for bicycles, and pedestrians. Bikes and pedestrians are not permitted on U.S. 101.

Long-Term Operation Impacts

The project would involve replacing Cordilleras Creek Bridge. The project is not a capacity increasing project and would not result in increased traffic volumes or vehicle miles traveled (VMT). Following construction activities, there would be no long-term impacts to traffic and transportation as a result of the project.

2.1.7.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization or mitigation measures are required.

2.1.8 Visual/Aesthetics

2.1.8.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically (emphasis added) and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA), in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

The California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state “with...enjoyment of aesthetic, natural, scenic and historic environmental qualities” (CA Public Resources Code [PRC] Section 21001[b]).

California Streets and Highways Code Section 92.3 directs Caltrans to use drought resistant landscaping and recycled water when feasible, and incorporate native wildflowers and native and climate-appropriate vegetation into the planting design when appropriate.

2.1.8.2 Affected Environment

The following discussion is based on the *Scenic Resources Evaluation and Visual Impact Assessment* completed for this project and signed on February 19, 2020.

The study area for the VIA is the area of land that is visible from, adjacent to, and just outside of U.S. 101. Viewers include motorists on the highway; bicyclists and pedestrians on the adjacent Bay Trail to the east; and members of the public on the adjacent commercial building grounds to the west.

U.S. 101 is a ten-lane facility (five northbound and four southbound plus an auxiliary lane) as it runs north and south at the project location. The San Francisco Bay provides a scenic view to motorists on U.S. 101 and users of the Bay Trail to the east. Bair Island Ecological Reserve in the San Francisco Bay is located the east of the highway. Salt ponds and tidal marshes to the east are visible in stretches, along with freeway signage, light posts, large power line structures and billboards to the east and west. Commercial land uses dominate the area along the highway to the west. There is ornamental landscaping associated with commercial buildings, as well as intermittent highway landscaping along the southbound side of the highway. There are no sensitive viewers such as residences, schools and hospitals near the project area.

The Cordilleras Creek Bridge is a relatively short span of 180 feet, and the bridge and creek below are not visible to drivers on the highway. U.S. 101 is not an Eligible or Officially Designated Scenic Highway within the project vicinity, and the bridge is not eligible for the National Register of Historic Places. The area is characterized as having flat terrain.

2.1.8.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect the aesthetics of the project area.

Build Alternatives 1 and 2

Short-Term Construction Impacts

During construction of the proposed project, construction work, crews and equipment may be visible to viewers from the highway and other vantage points that occur at the highway level. Work under the bridge and in the creek would not be visible from any vantage points. Temporary construction impacts would be visible from the vantage point along the Bay Trail's bicycle/pedestrian path. Construction materials and equipment in the staging areas would be placed where they are less visible and/or covered when possible.

No structural work would occur at night. However, nightwork may be required for roadwork, such as moving K-rail or lane striping. If any construction lighting is required, it shall be limited to the general work area through directional lighting, shielding, and other measures as needed. Furthermore, avoidance and minimization measures VIS-3 and VIS-4, described in Section 2.1.8.4, would be implemented. These measures would reduce construction-related impacts to trees and other vegetation. Therefore, impacts related to aesthetics and visual resources would be minor.

Long-Term Operation Impacts

Commercial businesses and a hotel adjacent to U.S. 101 on the southbound side would have blocked or screened views of the highway due to an existing slatted fence. Thus, a new bridge structure is not likely to be visible. The most obvious change on the highway would be from the removal of large shrubs for the temporary widening and staging of construction equipment. The loss of these shrubs would eliminate visual screening of adjacent commercial buildings and reduce visual quality along this portion of the highway. Permanent impacts to visual resources are not expected because changes to the bridge would be minimal. Avoidance and minimization measures VIS-1, VIS-2, and VIS-5, described in Section 2.1.8.4, would be implemented. These measures would preserve Bay views for motorists on U.S. 101 and require replacement screening planting. Furthermore, the visual prominence of the City of Redwood City's 24-inch reclaimed waterline would be reduced. Therefore, no adverse effects to aesthetics and visual resources would occur.

2.1.8.4 Avoidance, Minimization, and/or Mitigation Measures

The following short-term construction avoidance and minimization measures would be implemented:

Measure BIO-3, 4, and 6 (Section 2.3.3.4) provides for replacement planting in areas where plant removal is required.

VIS-1. Median Barrier height shall be minimized to preserve Bay views for motorists on the southbound side of the highway. This was established by agreements made under the San Mateo Managed Lanes Project (EA 04-1J5604).

VIS-2. Bridge design shall include measures to reduce visual prominence of Redwood City's 24-inch reclaimed waterline.

VIS-3. Tree and vegetation removal shall be minimized to the extent feasible.

VIS-4. Trees and vegetation outside of clearing and grubbing limits shall be protected from the contractor's operations, equipment, and materials storage.

VIS-5. All disturbed ground surfaces shall be restored and treated with erosion control.

VIS-6. Replacement planting shall be provided in areas where shrub removal is necessary.

VIS-7. During construction operations, unsightly material and equipment in staging areas shall be placed where they are less visible and/or covered where possible.

VIS-8. 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.

2.1.9 Cultural Resources

2.1.9.1 Regulatory Setting

The term “cultural resources,” as used in this document, refers to the “built environment” (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including “historic properties,” “historic sites,” “historical resources,” and “tribal cultural resources.” Laws and regulations dealing with cultural resources include the National Historic Preservation Act (NHPA) of 1966 and CEQA.

The NHPA, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. FHWA’s responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as “unique” archaeological resources. California Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill 52 (AB 52) added the term “tribal cultural resources” to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect state-owned historical resources that meet the NRHP listing criteria. It further requires the Department to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU) between the Department and SHPO, effective January

1, 2015. For most federal-aid projects on the State Highway System, compliance with the Section 106 PA would satisfy the requirements of PRC Section 5024.

2.1.9.2 Affected Environment

The following discussion is based on the *Office of Cultural Resource Studies (OCRS) Section 106 Memo for the Cordilleras Creek Bridge Replacement Project at Postmile 7.13 on U.S. 101 in San Mateo County* completed on April 20, 2020.

The Area of Potential Effects (APE) defined for the Cultural Resources study encompasses all areas within the physical footprint of improvements proposed for Alternative 1 and Alternative 2. For this project the APE is the same as the construction footprint. The APE was developed to in order to assess the project's potential effects on cultural resources. Construction-related activities include excavation, pile driving, wall construction, minor reconfiguration of Cordilleras Creek, and TCEs for staging. The APE is approximately 1,200 feet (365 meters) long from northwest to southwest, and 320 feet (97 meters) wide from northeast to southwest, for a total area of 6 acres. The APE consists of the existing Caltrans ROW (Cordilleras Creek Bridge and U.S. 101) along with portions of Cordilleras Creek, the San Francisco Bay Trail, salt marshes and private properties where temporary construction easements are proposed. Two TCEs would be required for staging to the west of the project. These would take place on lots located on either side of Cordilleras Creek to allow for adequate access to both sides of the creek for construction and riprap installation. The Cordilleras Creek Bridge is listed in the Caltrans Bridge Inventory as Category 5, not eligible for the National Register of Historic Places.

The Native American Heritage Commission (NAHC) was contacted on February 8, 2019, to request a search of their sacred lands file for any historically significant resources within or near the APE. The search result found no historically significant resources within or near the APE.

The NAHC provided a list of Native American parties and individuals with potential interest in the project and their contact information. On February 19, 2019, letters providing project information and requesting input were sent to each individual and organization on the list.

Representatives of the Galvan of the Ohlone Indian Tribe; Muwekma Ohlone Tribe of the San Francisco Bay Area; Amah Mutsun Tribal Band of Mission San Juan Bautista; and Indian Canyon Mutsun Band of Costanoan responded to the letter. Representatives of the Tribes requested to be informed about project developments and recommended monitoring of the project by Native Americans. Follow up phone calls to Native American parties who did not respond to the initial letter outreach were made on May 23, 2019. Consultation with Caltrans is ongoing. No consultation was conducted with historical societies or groups because there are no potentially historic cultural resources within the APE.

2.1.9.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect any cultural resources.

Build Alternatives 1 and 2

No historic properties or historical resources are present in the project's APE. The cultural resources finding for this project is No Historic Properties Affected. The project would not affect any tribal cultural resources. There are no 4(f) resources in the project area. Therefore, the project would not cause a substantial adverse change to a historical or archaeological resource as defined by CEQA, or affect or use any Section 4(f) historic resource. Avoidance Measures CUL-1 and CUL-2 would be incorporated during construction activities to avoid any effects to cultural resources if discovered. Therefore, there would be no impact to cultural resources.

2.1.9.4 Avoidance, Minimization, and/or Mitigation Measures

The following short-term construction avoidance and minimization measures would be implemented:

CUL-1. *Avoidance of Cultural Resources:* If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the nature and significance of the find.

CUL-2. *Avoidance of Human Remains:* If human remains are discovered, California 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. The Caltrans Branch Chief of Archaeology shall be notified, and then the County Coroner contacted. If the remains are thought by the County Coroner to be Native American, the County Coroner would notify the NAHC, who, pursuant to PRC Section 5097.98, would then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains would contact the Branch Chief of Cultural Resources, Archaeology, so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

2.2.1.1 Regulatory Setting

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration (FHWA) requirements for compliance are outlined in 23 Code of Federal Regulations (CFR) 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

2.2.1.2 Affected Environment

The following information has been taken from the *Structures Draft Final Hydraulic Report* for the proposed project; the report was completed on March 21, 2020.

Project Watershed

The proposed project is located within the Cordilleras Watershed Basin, which encompasses the headwaters of the Cordilleras Creek Basin. The Cordilleras Watershed is bounded on the east and southeast by San Carlos Airport, on the south by the City of Redwood City, and on the west by Interstate 280 (I-280). The watershed is roughly 50 percent urban and 50 percent undeveloped. The size of the watershed basin is 3.21 square miles. The Cordilleras Creek Bridge is located at the mouth of the watershed, in the urban area.

Cordilleras Creek

Cordilleras Creek is relatively straight where it approaches the Bay, except between 100 and 900 feet upstream from the existing structure where it makes two 90-degree bends to enter into a culvert. The existing culvert has no hydraulic skew, which means the culvert is perpendicular to the flow of the creek. The average stream slope is estimated to be 0.009 foot per foot. It is estimated the bed is composed of silt and clay.

Floodplains

The current Federal Emergency Management Agency (FEMA) Flood Insurance Study used for this report is 06081CV001D through 06081CV003D, effective April 2019. U.S. 101 is not located in a special flood zone. However, areas immediately adjacent to U.S. 101 are within Special Flood Hazard Area Zone AE and Zone X, which are at a lower elevation than U.S. 101. Cordilleras Creek is classified as a Regulatory Floodway. Figure 2.2.1-1 shows an aerial view of FEMA flood zones in the project vicinity. Zone AE regions represent areas subject to flooding by the 1% annual chance flood event, which is determined using a detailed method in which base flood elevations are provided. FEMA states that Zone AE refers to “Special Flood Hazard Areas inundated by the 100-year flood where base flood elevations are determined.” Zone X regions represent areas subject to flooding by the 0.2% annual chance flood. The Cordilleras Creek floodplain lies within Zone AE.

2.2.1.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect the floodplains located within the project limits.

Alternative 1

Alternative 1 would replace the existing triple box culvert with three new precast, reinforced-concrete box culverts and would widen the bridge by 4 feet. During construction, work in Cordilleras Creek would be required. Temporary dewatering and minor reconfiguration of Cordilleras Creek would occur. However, existing drainage patterns are not anticipated to be significantly affected in the long term, as the goal of the project’s drainage design is to maintain existing drainage patterns. Alternative 1 would be on the same alignment and use the same top-of-deck grades as the existing culvert and would perform similarly to existing conditions.

Alternative 1 would result in 0.002 acre of net impervious surface by removing 0.16 acre of impervious surface and adding 0.162 acre of new impervious surface. This added impervious area is not expected to result in substantially increased surface runoff volume and rate of flow, since the amount added is small. The proposed project does not involve pumping or using groundwater. However, the added impervious surface from the project has the potential to reduce the available unpaved area where runoff can infiltrate into native soils and recharge aquifers. Nonetheless, the additional impervious area is minimal in comparison with the total area of the local aquifers and groundwater basins.

U.S. 101 is adjacent but not within a Special Flood Hazard Area. Areas surrounding U.S. 101 are within Zones AE and X (see Figure 2.2.1-1). The project minimizes any increases to the existing base flood elevations for the Cordilleras Creek regulatory floodway. Through hydraulic modeling of the Cordilleras Creek Bridge floodplain, it was determined that the proposed work would not result in any changes to the floodplain. Alternative 1 would fulfill the flow needs for this project with no additional flood risk. Alternative 1 would not raise any water surface elevations or impede flows that pass the design-year flood events. Furthermore, replacement work for Alternative 1 would not cause any significant or immediate hydraulic or scour-related issues.

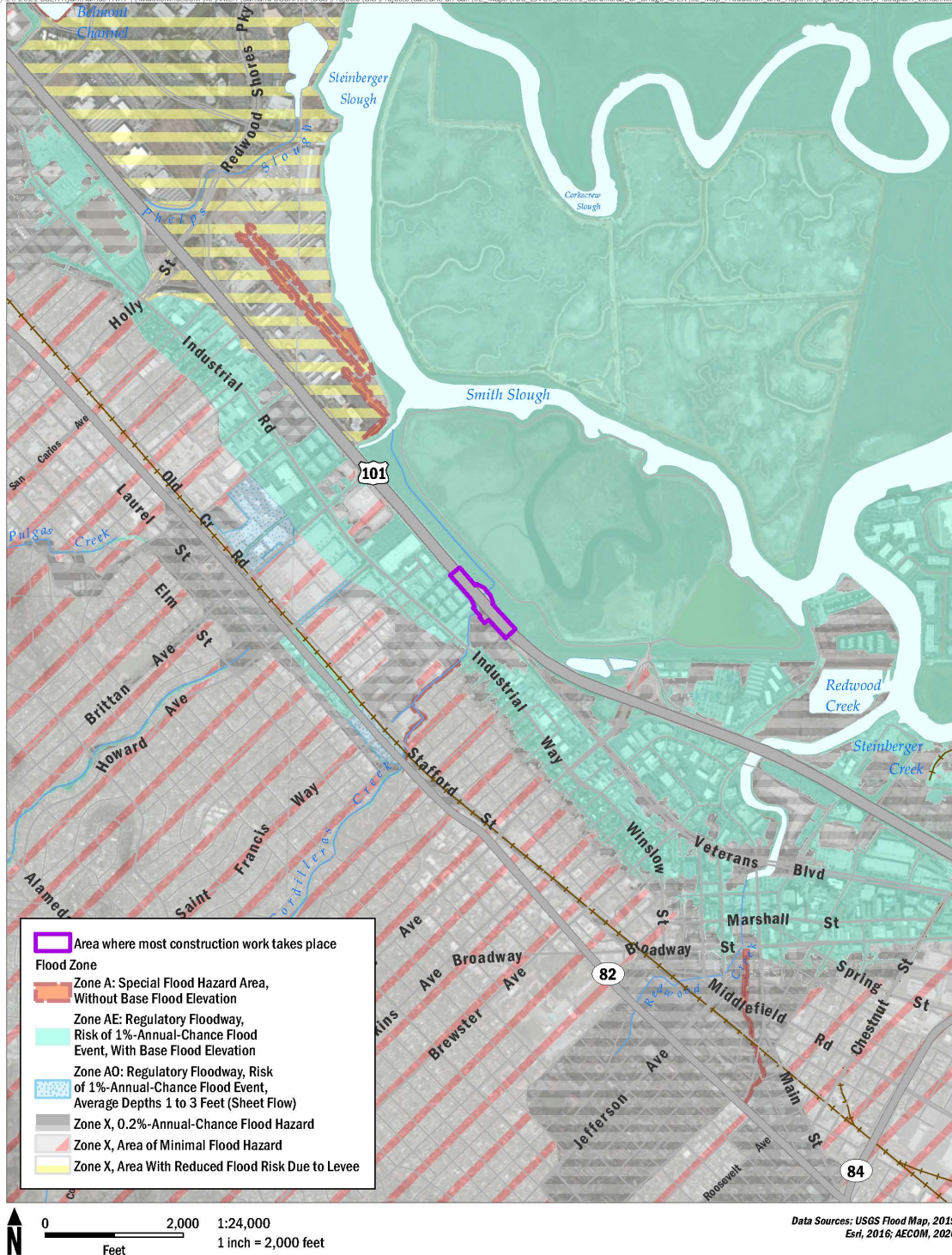
Alternative 2

Alternative 2 would replace the existing culvert with a new single-span, precast pre-stressed bridge and widen the south end of the bridge by 5 feet. The impacts of Alternative 2 would be similar to those of Alternative 1. Alternative 2 would be on the same alignment as Alternative 1 and would use the same top-of-deck grades as the existing culvert. Alternative 2 would fulfill the flow needs for this project with no additional flood risk, and the proposed work would not result in any changes to the floodplain. Alternative 2 would not raise any water surface elevations or impede flows that pass the design-year flood events, and replacement work would not cause any significant or immediate hydraulic or scour-related issues. Alternative 2 would result in 0.026 acre of impervious surface by removing 0.426 acre of impervious surface and adding 0.452 acre of new impervious surface.

2.2.1.4 Avoidance, Minimization and/or Mitigation Measures

No other avoidance, minimization, or mitigation is required.

AECOM Oakland CA 4/14/2021 USER:Ryan.Haines.PATH: \\va.aecomnet.com\2016\AMFR\Oakland\SDAK01\DCS\Projects\GIS\Projects\Caltrans On Call\02 Maps\TOB_21730_SM101_Cordilleras_Cr_Bridge_SF\02_Map_Production_and_Reports\Figure X FEMA Floodplain_Zones.mxd



AECOM
 Caltrans
 San Mateo 101 Cordilleras Creek Bridge Replacement Project
 CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 2.2.1-1
 FEMA Floodplain Zones in the Project Vicinity

2.2.2 Water Quality and Storm Water Runoff

2.2.2.1 Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the U.S. from any point source¹ unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme.

The following are important sections of the CWA:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge would comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The USACE issues two types of 404 permits: general and individual. There are two types of general permits: regional and nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effects. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a regional or nationwide permit may be permitted under one of the USACE’s individual permits. There are two types of individual permits: standard permits and letters of permission. For individual permits, the USACE’s decision to approve is based on compliance with U.S. Environmental Protection Agency’s (EPA) Section 404 (b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the EPA in conjunction with USACE, and allow the discharge of dredged or fill

¹ A point source is any discrete conveyance such as a pipe or a man-made ditch.

material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent² standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause “significant degradation” to waters of the U.S. In addition, every permit from USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California’s Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a “Report of Waste Discharge” for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of “waste” as defined, and this definition is broader than the CWA definition of “pollutant.” Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all waterbody segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQB are responsible for

² The U.S. EPA defines “effluent” as “wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.”

protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System (NPDES) Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including MS4s. An MS4 is defined as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water.” The SWRCB has identified the Department as an owner/operator of an MS4 under federal regulations. The Department’s MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

The Department’s MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012, and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014), Order No. 2015-0036-EXEC (conformed and effective April 7, 2015), and Order No. 2017-0026-EXEC (effective November 27, 2017) has four requirements:

- The Department must comply with the requirements of the Construction General Permit (see below);
- The Department must implement a year-round program in all parts of the state to effectively control storm water and non-storm water discharges;
- The Department’s storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) best management practices (BMPs), to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards; and
- Within the San Francisco Bay Region, the Department must comply with the trash reduction requirements. This is further reinforced by the San Francisco Bay RWQCB Cease and Desist Order (CDO) (Order No. R2-2019-0007) (effective February 13, 2019).

To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project would be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009, and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a disturbed soil area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to the Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with the Department's SWMP and Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with a DSA of less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 water quality certification, which certifies that the project would be in compliance with state water quality standards. The most common federal permits triggering 401 Water Quality Certifications are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.2.2.2 Affected Environment

The following discussion is based on Caltrans' *Water Quality Study* and Stormwater Data Report prepared for the proposed project (May 2020).

The project area is within the San Francisco Bay Basin (Region 2) and regulated by the San Francisco RWQCB. The RWQCB is responsible for implementing state and federal laws and regulations for water quality, as described in the regulatory setting section above. The project area is also within the San Mateo County MS4.

Neighboring bodies of water include Cordilleras Creek, Smith Slough, Steinberger Slough and Lower San Francisco Bay. The Cordilleras Creek flows into Smith Slough, Steinberger Slough and the Lower San Francisco Bay which flows to Central San Francisco Bay and ultimately to the Pacific Ocean. The watershed information is listed below in Table 2.2.2-1.

Table 2.2.2-1: Hydrologic Sub-Area for Neighboring Bodies of Water

| Watershed Information Heading | Hydrologic Sub-Area |
|---------------------------------------|-----------------------------|
| Hydrologic Unit | South Bay |
| Hydrologic Area | San Mateo Bayside |
| Hydrologic Sub-Area (HAS) # | 204.40 |
| HAS (acres) | 107,918 |
| Watershed | San Francisco Bay |
| Sub Watershed | San Francisco Bay Estuaries |
| Average Annual Precipitation (inches) | 14.86 |

Source: Caltrans, 2020

Waterbodies in and adjacent to the project area all flow into the Lower San Francisco Bay. The estimated size of the Lower San Francisco Bay is 92,274 acres. This part of the Bay is on the CWA 2014-2016 total maximum daily load (TMDL) and 303(d) lists of impaired waterbodies for polychlorinated biphenyls (PCBs) and mercury. TMDL establishes a maximum amount of a pollutant allowed to enter a waterbody so that the waterbody would meet and continue to meet water quality standards for that particular pollutant. Table 2.2.2-2 shows each pollutant that impairs the Lower San Francisco Bay.

Table 2.2.2-2: Pollutants that Impair the Lower San Francisco Bay

| Pollutant | Status |
|---|--|
| Chlordane | TMDL Required |
| DDT (Dichlorodiphenyltrichloroethane) | TMDL Required |
| Dieldrin | TMDL Required |
| Dioxin Compounds (including 2,3,7,8-TCDD) | TMDL Required |
| Furan Compounds | TMDL Required |
| Invasive Species | TMDL Required |
| Mercury | Being addressed with USEPA approved TMDL |
| PCBs (Polychlorinated biphenyls) | Being addressed with USEPA approved TMDL |
| PCBs (dioxin-like) | Being addressed with USEPA approved TMDL |
| Trash | TMDL Required |

Source: Caltrans, 2020

The Water Quality Control Plan (Basin Plan) for the San Francisco Basin establishes beneficial uses for waterways and waterbodies within the region. Beneficial uses of adjacent waterbodies include: Industrial Service Supply (IND); Navigation (NAV); Contact/Non-Contact Water Recreation (REC-1/REC-2); Commercial and Sport Fishing (COMM); Warm Freshwater Habitat (WARM); Estuarine Habitat (EST); Wildlife Habitat (WILD); Migration of Aquatic Organisms (MIGR), Spawning, Reproduction, and/or Early Development (SPWN), Shellfish Harvesting (SHELL; Caltrans 2020; SWRCB 2007). Table 2.2.2-3 shows waterbodies within and adjacent to the project area beneficial uses.

Table 2.2.2-3: Waterbody with Beneficial Uses

| Waterbody | Beneficial Uses | Sediments-Sensitive Waterbody | High-Risk Area |
|-------------------------|--|-------------------------------|----------------|
| Lower San Francisco Bay | COMM, EST, IND, MIGR, NAV, RARE, SPWN, REC1, REC2, SHELL, WILD | False | No |
| Cordilleras Creek | WARM, REC1, REC2, WILD | False | No |
| Smith Slough | EST, RAER, REC1, REC2, WILD | False | No |
| Steinberger Slough | EST, RAER, REC1, REC2, WILD | False | No |

Source: Caltrans, 2020

Within the project limits, U.S. 101 at PM 7.13 is identified as a significant trash generation area (STGA). The project is required to incorporate full trash capture devices, as required by the San Francisco RWQCB. This requirement would be part of the project design.

2.2.2.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not change current conditions related to water quality and storm water runoff.

Alternative 1

Short-Term Construction Impacts

Construction of the project has a potential to result in impacts to water quality; most of these potential impacts would be temporary in nature. Construction is estimated to take 185 working days. Erosion from disturbed soil areas during project construction has the potential to cause sediment-laden runoff to enter storm drainage facilities and increase water turbidity and decrease the clarity and beneficial uses of receiving waterbodies. Alternative 1 would result in approximately 1 acre of disturbed soil. Fueling or maintenance of construction vehicles could take place within the project area during construction, so accidental spills or releases of fuels, oils, or other potentially toxic materials could occur. An accidental release of these materials may pose a threat to water quality.

In consideration of the project scope, the following activities are of water quality concern:

- Grading and excavation for replacement of the existing box culvert
- Drilling, excavation, driving piles and pouring concrete for wing wall construction
- Shoulder widening
- Grading, excavation and pouring concrete for relocation of sign structures
- Replacement of the drainage system
- Minor reconfiguration of Cordilleras Creek
- Replacement of guardrails
- Construction of a temporary creek diversion system
- Storage of material and equipment
- General equipment movement and access

However, the project would comply with water quality requirements and implement BMPs to avoid adverse impacts to water quality such as fueling and maintenance operations of vehicles and equipment at least 50 feet away from watercourses; collecting concrete waste in washouts so they do not get into watercourses; implementing dust control measures and protecting graded areas.

As listed in Section 1.3.5, the project would require a Section 404 permit issued by USACE and a Section 401 certification and general construction permit issued by the RWQCB. Projects requiring 401 certifications are required to comply with local county stormwater treatment requirements. Furthermore, since the project would disturb at least 1 acre of soil, a SWPPP would be required as part of the Construction General Permit.

Measure WQ-1 would implement temporary erosion control and water quality measures as required by the Construction General Permit. A Temporary Water Pollution Control Plan has been produced for the project, which includes temporary construction site BMPs (such as the ones listed above) that would be implemented for sediment control and material management. Section 2.2.2.4 describes BMPs that would be utilized during construction of the project in more detail. In addition, a SWPPP would be prepared by the construction contractor and approved by Caltrans prior to construction. Requirements under the SWPPP would require the construction contractor to implement BMPs for water quality. The contractor would also comply with the following standards/objectives (or BMPs) including but not limited to the following:

- Where work areas encroach on wetlands, RWQCB-approved physical barriers adequate to prevent the flow or discharge of sediment into these systems would be constructed and maintained between working areas and streams, lakes, and wetlands.
- Discharge of sediment into culverts and storm drains would be held to a minimum during construction of the barriers.
- Discharge would be contained through the use of RWQCB-approved measures that would keep sediment from entering jurisdictional waters beyond the project limits.
- All off-road construction equipment should be cleaned of potential noxious weed sources (mud and vegetation) before entering the project footprint and after entering a potentially

infested area before moving on to another area. The contractor would employ whatever cleaning methods (typically spraying with a high-pressure water hose) are necessary to ensure that equipment is free of noxious weeds.

- Equipment should be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations would be placed in areas that afford easy containment and monitoring (preferably outside of the project footprint) and that do not drain into sensitive (riparian, wetland, etc.) areas.

Furthermore, disturbed soil areas would be stabilized by fiber rolls, cover and other methods used to control erosion. WQ-1 would prevent or reduce construction-related impacts to a minor level.

Long-Term Operation Impacts

Alternative 1 would result in an increase of 0.002 acre of net impervious surface by removing 0.16 acre of impervious surface and adding 0.162 acre of new impervious surface. However, this small amount of impervious surface added to the project area is not expected to result in substantial increases in stormwater runoff. The RWQCB Section 401 permit would require stormwater treatment of 0.162 acre, as it does not recognize net impervious surface.

Furthermore, the proposed project is required to construct stormwater treatment BMPs to treat runoff from 0.162 acre of impervious surfaces. Caltrans would implement WQ-2 or treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff. In addition, the project would implement full trash capture devices within the project limits. WQ-2 would prevent or reduce the post-construction impacts to a minor level.

Alternative 2

Short-Term Construction Impacts

Alternative 2 would result in similar impacts to that of Alternative 1, as described above. In contrast, construction for Alternative 2 is estimated to take 235 working days. Alternative 2 would result in 1.27 acres of disturbed soil. However, this slight difference between the two alternatives would not cause a substantial difference in impacts to water quality and stormwater runoff. The same permits would be required for Alternative 2, as described in Alternative 1.

Long-Term Operation Impacts

Alternative 2 would result in an increase of 0.026 acre of impervious surface by removing 0.426 acre of impervious surface and adding 0.452 acre of new impervious surface. This small amount of impervious surface added to the project area is not expected to result in substantial increases in stormwater runoff. The RWQCB Section 401 permit would require stormwater treatment of 0.452 acre, as it does not recognize net impervious surface. Furthermore, WQ-2 would implement treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff, as described in section 2.2.2.4, Avoidance, Minimization and/or Mitigation. In addition, Caltrans would be required to install full trash capture devices at this location. WQ-2 would prevent or reduce the post-construction impacts to a minor level.

2.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following BMPs would avoid or minimize adverse impacts to water quality and storm water runoff. These BMPs would be incorporated into the project's design as a matter of Caltrans standard practices and are not mitigation.

Short-Term Construction BMPs

WQ-1. *Water Quality/Erosion Control BMPs:* Implement temporary erosion control and water quality measures as required by the Construction General Permit as follows:

- **Temporary Creek Diversion System:** The system would consist of upstream and downstream berms, with a pipe conveying runoff to create a dry working environment for temporary access, pile driving, and bridge construction. The system would be required during each summer during construction and would be removed during each intervening winter.
- **Temporary silt fences:** A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff.
- **Street sweeping:** Street sweeping is a sediment and tracking control practice to remove tracked soil particles from paved roads to prevent the sediment from entering a storm drain or watercourse.
- **Temporary fiber rolls:** A fiber roll consists of straw or other similar materials placed on the face of the slopes at regular intervals to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff.
- **Temporary Cover:** Cover such as geosynthetic fabrics (geotextiles), plastic covers, or erosion control blankets/mats would be placed on the ground to stabilize DSAs and protect soil from erosion by wind or water.
- **Temporary concrete washout facilities:** This waste management BMP contains procedures and practices that would minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.
- **Job Site Management:** Management includes considerations for operations, illicit discharge detention and reporting, vehicle and equipment cleaning, vehicle and equipment fueling, and material use.

Long-Term BMPs

WQ-2: *Implement treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff.* Treatment BMPs address post-construction water quality impacts and remove pollutants from storm water runoff before it is discharged to receiving waters. This project is required to construct stormwater treatment BMPs to treat runoff from (0.162 or 0.452 acre for Alternative 1 and Alternative 2, respectively). One location to be considered for a treatment BMP is the shoulder on the north and southbound shoulder of the project area. A biofiltration swale is being considered for this location and is expected to treat the runoff from the new and reworked impervious area. Alternatively, the project could address long-term treatment via stormwater alternative compliance (e.g., partnership with local partners).

The San Francisco Regional Water Quality Control Board adopted Order No. R2-2019-0007 (effective in February 2019) and requires Caltrans to provide trash control in areas identified as STGA. The proposed project is located within a STGA. Opportunities have been preliminarily identified to install full trash capture devices within the project limits inside the Caltrans ROW. These would be defined during the PS&E phase. If with further analysis, it is found that installing full trash capture devices would not be feasible, opportunities to construct trash capture devices elsewhere would be further investigated with local partner agencies.

2.2.3 Hazardous Waste/Materials

2.2.3.1 Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and the Resource Conservation and Recovery Act (RCRA) of 1976. The purpose of CERCLA, often referred to as “Superfund,” is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for “cradle to grave” regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the CA Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

2.2.3.2 Affected Environment

The review of Department of Toxic Substances Control's (DTSC) EnviroStor identified one hazardous materials release sites within 0.25 mile of the project area (DTSC 2021). The site is described below.

- **Industrial Planting CO., Inc. #71002848:** DTSC Cleanup site at 803 American Street in San Carlos. In 1997 metal plating contamination was found in soil by DTSC. As of November 9, 2016, San Mateo County Environmental Health Department assume the role as lead regulatory oversight agency for characterization and potential remediation of released waste at the property and entered into a voluntary agreement (Remedial Action Agreement) with the potentially responsible party.

California State Water Board GeoTracker records identified nine sites within a 0.25-mile radius of the project area that have impacted or have the potential to impact water quality (SWRCB 2021). Four of these sites include Leaking Underground Storage Tank (LUST) Sites and five are Cleanup Program Sites. These are discussed further below.

- **Axial Tome # T0608100052:** LUST cleanup site at 1559 Industrial Way in San Carlos. In 1990, gasoline was reported to have contaminated groundwater. Case closed as of 1991.
- **Former Industrial Plating # T10000009575:** Cleanup program site at 803 American Street in San Carlos. In 2015, cyanide, lead, nickel, other metal, TCE and zinc were reported to have contaminated groundwater. Cleanup status and case open as of 2016.
- **1409-1411 Industrial Road # T10000012536:** Cleanup program site at 1409-1411 Industrial Road in San Carlos. Polychlorinated biphenyls (PCBs) were reported to have contaminated surface water in 2018. Cleanup status and case open as of 2019.
- **Murrillo Metal Fab # T0608191813:** LUST cleanup site at 939 Center Street in San Carlos. In 1998, gasoline was reported to have contaminated groundwater. Case closed as of 2001.
- **Wilsey, Bennett Co #T0608100623:** LUST cleanup site at 961 Bing Street in San Carlos. In 1990, gasoline was reported to have contaminated groundwater. Case closed as of 2000.
- **Limited Partnership #T0608100304:** LUST cleanup site at 1551 Industrial Road in San Carlos. On May 17, 1990, contamination of groundwater was reported. The potential contamination of concern was gasoline. Case closed as of 1991.
- **Former Industrial Plating #T10000009575:** Cleanup program site at 803 American Street in San Carlos. On December 1, 2015, contamination of groundwater and soil was reported. The potential contaminants or concern include cyanide, lead, nickel, other metal, Trichlorethylene (TCE) and Zinc. Case is open as of November 2, 2016.
- **1663-1669 Industrial Road #T10000013670:** Cleanup program site at 1663-1669 Industrial Road in San Carlos. On July 29, 2019, contamination of an unspecified media was reported. The potential contamination of concern is TCE. Verification monitoring is occurring as of April 15, 2021.

- **1409-1411 Industrial Road # T10000012536:** Cleanup program site at 1409-1411 Industrial Road in San Carlos. On August 1, 2018, contamination of surface water was reported. The potential contaminant of concern is polychlorinated biphenyls (PCBS). Site assessments are being made as of July 1, 2019.

All of the LUST sites have been listed as “case closed” since the 1990s and early 2000s, which indicates that a closure letter or other formal closure decision document has been issued for the site. The five sites are part of the SWRCB Cleanup Program and are still open cases.

2.2.3.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect potential hazardous material sites in the project area.

Build Alternatives 1 and 2

Short-Term Construction Impacts

Project construction activities are expected to involve the transport, use, and disposal of hazardous materials (e.g., fuels, paints, asphalt and lubricants) that could pose a threat to human health or the environment if not properly managed. The transport, use, and disposal of hazardous materials during construction is regulated and enforced by federal and state agencies.

Standardized measures included in Section 1.5.2.2 would be implemented during project construction. These include adhering to California Division of Occupational Safety and Health (Cal/OSHA) and preparing a SWPPP. Workers who handle hazardous materials are required to adhere to OSHA and Cal/OSHA health and safety requirements. Hazardous materials must be transported in accordance with RCRA and USDOT regulations and disposed of in accordance with RCRA and the California Code of Regulations at a facility that is permitted to accept the waste.

In accordance with the SWRCB, a SWPPP must be prepared and implemented during construction for coverage under the Construction General Permit. The SWPPP requires implementation of BMPs for hazardous materials storage and soil stockpiles, inspections, maintenance, training of employees, and containment of releases to prevent runoff into existing storm water collection systems or waterways. In addition, BMPs would be incorporated such as fueling and maintenance operations of vehicles and equipment at least 50 feet away from watercourses.

Adherence to federal and state regulations during project construction reduces the risk of exposure to hazardous materials and accidental hazardous materials releases. Compliance with existing regulations is mandatory; therefore, construction of the proposed project is not expected to create a hazard to construction workers, the public, or the environment through the routine transport, use, disposal, or accidental release of hazardous materials. As a result, the project would have no adverse effects related to the routine transport, use, disposal, or accidental release of hazardous materials during construction and maintenance activities and no mitigation is required.

Construction of the project could result in the potential disturbance of hazardous materials in the soil and groundwater, according to the Caltrans Hazardous Waste Branch's inputs in a memo dated March 2020. Shallow soils along the southbound shoulder that would be excavated during construction likely contain aurally deposited lead at concentrations above DTSC-regulated levels. Furthermore, groundwater would likely be encountered during structure foundation work and require dewatering activities. In addition, DTSC EnviroStor identified one hazardous materials release site within 0.25 mile of the project, and GeoTracker records identified nine sites within 0.25 mile of the project area that have impacted or have the potential to impact groundwater and surface water quality. Given these sites' close proximity to the project area, there is potential that residual contamination at these sites could affect soils or groundwater in the project area.

Minimization measure HAZ-1, described in Section 2.2.3.4, below would be implemented during the design stage, before construction activities occur. If identified, ACM and contaminated soil and groundwater would be handled according to the appropriate project specifications.

No additional effects would result from phased construction of the Alternative 1 or Alternative 2. Therefore, impacts related to hazardous waste and materials would be minor.

Long-Term Operation Impacts

Following construction, no long-term impacts are expected to occur related to hazardous waste and materials. Maintenance work would be required periodically over the life of the bridge and may require the use of hazardous materials. However, adherence to federal and state regulations regarding the use of hazardous material would be compiled with and there would be no long-term impacts.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

As, discussed in Section 2.2.2, Measure WQ-1. *Water Quality/Erosion Control BMPs*: Implement temporary erosion control and water quality measures as required by the Construction General Permit. Additionally, a SWPPP would be prepared by the construction contractor and approved by Caltrans prior to construction. Requirements under the SWPPP would require the construction contractor to implement BMPs for water quality.

HAZ-1: Soil and groundwater testing and characterization would be required. In addition, a bridge survey would be needed to determine the presence or absence of asbestos-containing material (ACM) in the existing triple box culvert to be removed and replaced.

2.2.4 Air Quality

2.2.4.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the EPA and the California Air Resources Board (CARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM₁₀) and particles of 2.5 micrometers and smaller (PM_{2.5}), lead (Pb), and sulfur dioxide (SO₂). In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel “Conformity” requirement under the FCAA also applies.

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the USDOT and other Federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the NAAQS.

“Transportation Conformity” applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and in some areas (although not in California), sulfur dioxide (SO₂). California has nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO₂, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not

the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the “open-to-traffic” schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope³ that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.2.4.2 Affected Environment

The proposed project is located in the San Mateo County subregion, as defined by the Bay Area Air Quality Management District (BAAQMD). San Francisco Bay Area Air Basin (SFBAAB) is currently designated as a maintenance area⁴ for the 8-hour carbon monoxide (CO) standard and is a nonattainment area for the 8-hour ozone (O₃) standard and 24-hour fine particulate matter (PM_{2.5}) standard. The SFBAAB is designated as attainment/unclassifiable for the remaining National Ambient Air Quality Standards (NAAQS). For the California Ambient Air Quality Standards (CAAQS), the SFBAAB is designated as a nonattainment area for the 1-hour and 8-hour O₃ standards, the annual average and 24-hour PM₁₀ standards, and the annual average PM_{2.5} standard. The SFBAAB is designated as attainment/unclassified for the remaining CAAQS.

Local Ambient Air Quality

The Bay Area Air Quality Management District (BAAQMD) operates a network of air monitoring sites. The nearest and most representative air monitoring station to the project area is currently the Redwood City station, which is located at 897 Barron Avenue, approximately 0.25 mile south of the linear project footprint. The criteria pollutants monitored at this station include O₃, CO, NO₂, and PM_{2.5}. The nearest station where PM₁₀ levels are measured is the San Francisco station, located at 10 Arkansas Street, approximately 7 miles north of the northernmost point of the project area. This station is considered representative of the project area as it located within similar land uses and emission sources (residential, commercial, industrial, and some urban open space), and similar meteorological conditions. The County of San Mateo is in

³ "Design concept" means the type of facility that is proposed, such as a freeway or arterial highway. "Design scope" refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

⁴ On March 31, 1998, the EPA approved California's SIP revision and the redesignation became effective on June 1, 1998. CARB submitted a revised CO plan to the USEPA on November 8, 2004, with an update to the CO maintenance plan that showed how the 10 urban areas would continue to maintain the CO standard through 2018.

nonattainment for 8-Hour Ozone (2008), 8-Hour Ozone (2015), and PM_{2.5} (2006) in 2020 (U.S. EPA 2020).

2.2.4.3 Environmental Consequences

No Build Alternative

The No Build Alternative would make no physical or operational changes to the project area that would affect air quality.

Build Alternatives 1 and 2

Short-Term Construction Impacts

During construction of the project, there would be temporary air emissions from the use of construction equipment and vehicles powered by gas and diesel. As discussed in Section 2.2.3, Hazardous Waste/Materials, a bridge survey would be necessary to determine if ACM is present in the existing triple box culvert to be removed and replaced. A quantitative analysis was made using the Sacramento Metropolitan Air Quality Management District Road Construction Emissions model to estimate construction emissions of the project at each project phase. Project phases include the following: grubbing/land clearing; grading/excavation; drainage/utilities/sub-grade and paving. Table 2.2.4-1 shows the total estimated construction related criteria pollutant for Alternative 1 and Alternative 2.

Table 2.2.4-1: Total Construction-Related Criteria Pollutants

| Emission Sources | ROG | NO _x | Total PM ₁₀ | Total PM _{2.5} (exhaust + dust) |
|---|-------|-----------------|------------------------|---|
| Alternative 1 | | | | |
| Total Emissions (tons/total construction period) | 0.82 | 8.39 | 0.35 | 0.30 |
| Maximum Daily Emissions (lbs./day) ^(a) | 11.99 | 121.42 | 0.35 | 0.30 |
| Alternative 2 | | | | |
| Total Emissions (tons/total construction period) | 0.87 | 5.37 | 0.37 | 0.32 |
| Maximum Daily Emissions (lbs./day) (a) | 12.97 | 129.15 | 5.32 | 4.65 |

Notes:

- a) PM₁₀ and PM_{2.5} estimates assumes 50% control of fugitive dust from watering and associated dust control measures if a minimum of water trucks are specified.
- b) ROG = reactive organic gases; NO_x = oxides of nitrogen; PM₁₀ = particulate matter with aerodynamic diameter less than 10 microns; PM_{2.5} = particulate matter with aerodynamic diameter less than 2.5 microns; lbs/day = pounds per day.

The project would comply with construction standards adopted by the BAAQMD, as well as Caltrans standardized procedures for minimizing air pollutants during construction. Furthermore, the project would not result in a cumulatively considerable net increase of Ozone and PM_{2.5}. Therefore, the project would not cause or contribute to any state or federal air quality violations for criteria air pollutants. Furthermore, the project would not contribute substantially to any existing or projected air quality violations.

Long-Term Operation Impacts

The Build Alternatives would not change capacity or make physical or operational changes to the project area. Therefore, there would be no long-term impacts associated with the project following construction activities and the project would not conflict with or obstruct implementation of the applicable air quality plan.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.2.5 Noise and Vibration

2.2.5.1 Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project would have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The rest of this section would focus on Title 23 Part 772 of the Code of Federal Regulations (23 CFR 772), which specifies how noise analyses are conducted pursuant to NEPA; please see Chapter 3 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with Federal Highway Administration (FHWA) involvement (and the Department, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). The following table lists the noise abatement criteria for use in the NEPA/23 CFR 772 analysis.

2.2.5.2 Affected Environment

The dominant noise in the project area is from vehicles traveling along U.S. 101. Levels of highway and roadway traffic noise typically range from 70 to 80 A-weighted decibels (dBA) at a distance of 50 feet from the highway. These levels can affect people by interrupting concentration, increasing heart rates, or limiting the ability to carry on a conversation (FHWA 2017). The project area is dominated by commercial and industrial uses. There are no residential receptors near the project area. However, there is a hotel and a pedestrian and bike path adjacent to the project area.

2.2.5.3 Environmental Consequences

No Build Alternative

The No Build Alternative would make no physical or operational changes to the project area that would affect noise or vibration levels.

Table 2.2.5-1: Noise Abatement Criteria

| Activity Category | NAC, Hourly A- Weighted Noise Level, Leq(h) | Description of Activity Category |
|--------------------------|--|---|
| A | 57 (Exterior) | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B ¹ | 67 (Exterior) | Residential. |
| C ¹ | 67 (Exterior) | Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings. |
| Activity Category | NAC, Hourly A- Weighted Noise Level, Leq(h) | Description of activity category |
| D | 52 (Interior) | Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios. |
| E | 72 (Exterior) | Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F. |
| F | No NAC—reporting only | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing. |
| G | No NAC—reporting only | Undeveloped lands that are not permitted. |

Note:

¹ Includes undeveloped lands permitted for this activity category.

Figure 2.2.5-1: Noise Levels of Common Activities

| Common Outdoor Activities | Noise Level (dBA) | Common Indoor Activities |
|--|-------------------|--|
| Jet Fly-over at 300m (1000 ft) | 110 | Rock Band |
| Gas Lawn Mower at 1 m (3 ft) | 100 | |
| Diesel Truck at 15 m (50 ft), at 80 km (50 mph) | 90 | Food Blender at 1 m (3 ft) |
| Noisy Urban Area, Daytime | 80 | Garbage Disposal at 1 m (3 ft) |
| Gas Lawn Mower, 30 m (100 ft) | 70 | Vacuum Cleaner at 3 m (10 ft) |
| Commercial Area | | Normal Speech at 1 m (3 ft) |
| Heavy Traffic at 90 m (300 ft) | 60 | |
| Quiet Urban Daytime | 50 | Large Business Office Dishwasher Next Room |
| Quiet Urban Nighttime | 40 | Theater, Large Conference Room (Background) |
| Quiet Suburban Nighttime | | Library |
| Quiet Rural Nighttime | 30 | Bedroom at Night, Concert Hall (Background) |
| | 20 | Broadcast/Recording Studio |
| | 10 | |
| Lowest Threshold of Human Hearing | 0 | Lowest Threshold of Human Hearing |

Build Alternative 1 and Alternative 2

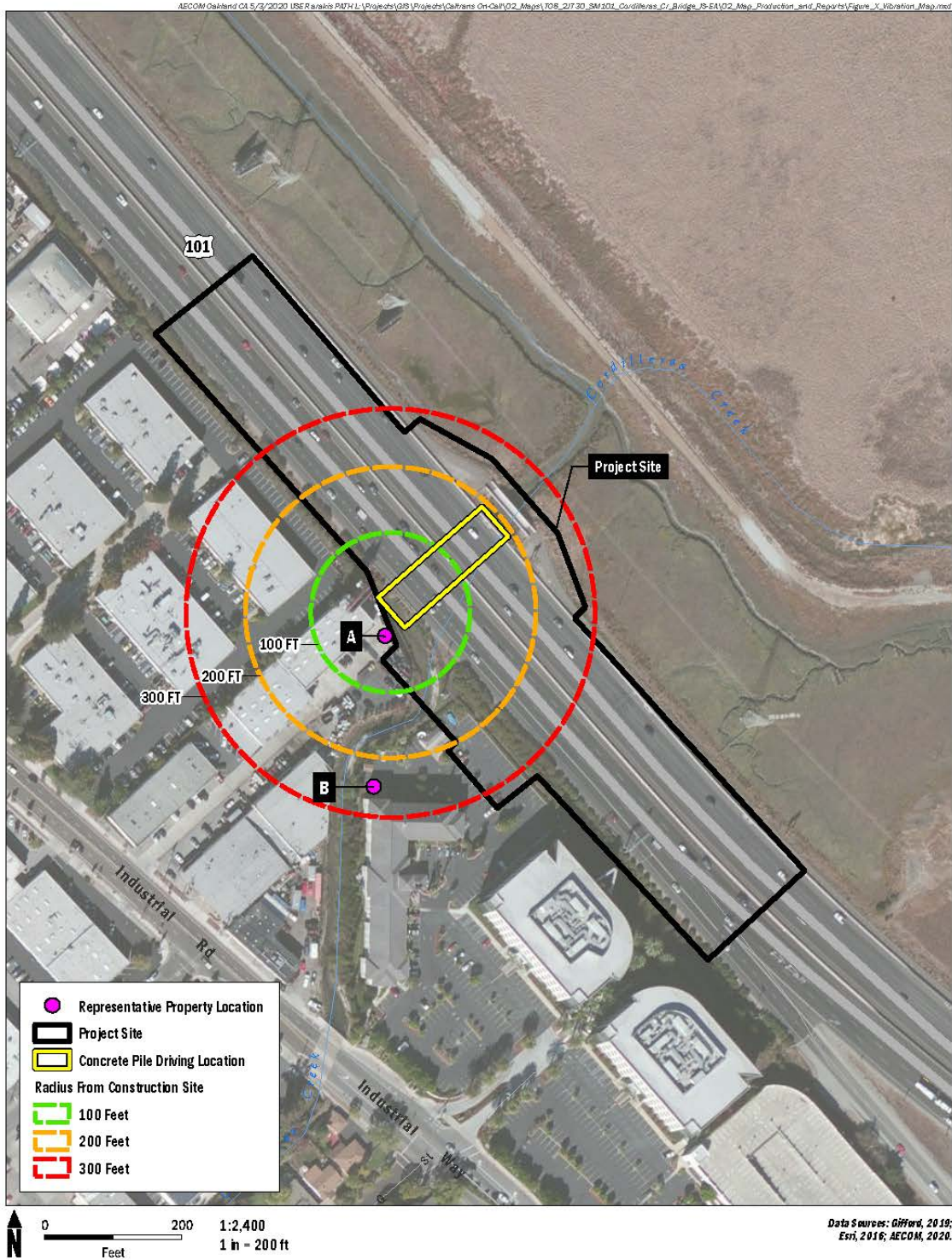
Short-Term Construction Impacts

Noise. During project construction activities such as pile driving, excavation, and grading would result in temporary increased ambient noise levels. Construction noise would primarily result from the operation of heavy construction equipment and arrival and departure of heavy-duty trucks. The highest maximum instantaneous noise levels would result from special impact tools such as pile drivers. Under Alternative 1 and 2, 140 piles and 266 piles would be required, respectively. Caltrans is considering utilizing standard driven concrete piles, Cast in Steel Shell Pile (CISS) or Cast-in-Drilled Hole (CIDH) piles with steel pipes or steel casing as methods for drilling. CIDH pile installation is recommended because it generates much lower levels of noise and vibration than concrete piles and CISS. The vibration assessment, below, is based on the worst-case scenario (utilizing pile drivers). Caltrans would comply with the Caltrans 2018 Standard Specifications 14-8.02, which requires maximum sound levels (Lmax) not to exceed 86 dBA at 50 feet from the job site from 9:00 p.m. to 6:00 a.m. Because no structural nightwork would take place, a Construction Noise Analysis is not required.

Vibration. During project construction, the highest source of vibration anticipated is from concrete pile driving equipment. CIDH piles generally produce less vibration than pile driving and CISS. A Construction-Related Vibration Assessment was completed by Caltrans in December 2019. In order to analyze the impacts of vibration during drilling activities, representative receptors A and B, were chosen to be analyzed based on their close proximity to the project (see Figure 2.2.5-2). Both of the receptors are modern industrial/commercial buildings and were selected to be analyzed for impacts related to vibration. The vibration amplitudes for continuous sources were predicted using equation No. 12 of Caltrans' Transportation and Construction Vibration Guidance Manual (TCVGM; Caltrans 2013). The predicted peak particle velocity (PPV) for locations A and B are 1.88 in/sec and 0.14 in/sec, respectively. The Vibration Damage Potential Threshold Criteria is 0.5 in/sec. Therefore, the PPV would exceed the Vibration Damage Potential Threshold Criteria at location A. In addition, employees at both locations A and B may be annoyed at the strongly perceptible to severe levels resulting from the concrete driving vibration.

If concrete driven piles are the final method of choice, a Non-Standard Special Provision (NSSP) – a special provision that is not covered in the list of DES Office Engineer approved Standard Special Provisions, would be developed during the project's design phase. This specification would require vibration monitoring before, during and after project completion. A construction-related vibration assessment has been completed and a Vibration Studies Report would be required. Furthermore, Minimization Measures NOI-1 through NOI-3 would be implemented during drilling to reduce impacts to a minor effect.

No drilling in water would occur, as temporary coffer dams would be installed to dewater portions of the creek were construction work is taking place. Since the groundwater is shallow at the site, the CIDH piles may need temporary or permanent steel casing that can be vibrated into the ground.



Caltrans
 San Mateo 101 Cordilleras Creek Bridge Replacement Project
 CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 2.2.6-2
 Map of Representative Properties for Vibration Impacts

Long-Term Operation Impacts

There would be no long-term impacts associated with the project following construction activities.

2.2.5.4 Avoidance, Minimization, and Abatement Measures

To minimize the impacts of vibration during construction of the project, the following measures would be implemented by the construction contractor:

NOI-1. *Public Notices:* Require public outreach to inform residents, businesses and others of upcoming major activities and their time frames.

NOI-2. *Noise Scheduling Measure:* When possible, schedule major activities separately with others to reduce significant vibration impacts.

NOI-3. *CIDH Piles to Reduce Vibration.* Caltrans requests the use of CIDH piles instead of concrete pile driving to reduce vibration. This would be accomplished by drilling a pile hole to a depth prescribed by the Engineer and then driving the concrete pile to the full depth.

NOI-4. *Noise Control Measure for pile driving.* If Caltrans chooses pile driving operations as the method for drilling, the contractor shall provide Noise Control and Monitoring Plans to reduce/minimize noise below 86 dBA, per Caltrans Standard Specification.

NOI-5. *Noise Control Measure for CISS.* If Caltrans chooses CISS as the method for drilling, the contractor shall also provide Noise Control and Monitoring Plans to reduce/minimize noise below 86 dBA, per Caltrans Standard Specification.

2.2.6 Energy

2.2.6.1 Regulatory Setting

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

The California Environmental Quality Act (CEQA) Guidelines section 15126.2(b) and Appendix F, Energy Conservation, require an analysis of a project's energy use to determine if the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources.

2.2.6.2 Affected Environment

In California, the transportation sector consumes the most energy (nearly 40 percent in 2017; U.S. Energy Information Administration 2019a). The high consumption of transportation fuels in California is attributed to the state's abundance in airports, military bases, public transportation, and automobiles. In addition, major metropolitan areas, such as San Francisco and Los Angeles, experience extremely long commute travel times and delay because of high traffic congestion and long distances of travel between homes and jobs.

Fossil fuels are the predominant source of energy consumed by the transportation sector. Approximately 56 percent of the fossil fuel consumed by the California transportation sector is gasoline (U.S. Energy Information Administration 2019b). Alternatives to fossil fuels have helped decrease the dependence on gasoline and other fossil fuels. The following alternatives to fossil fuels are currently used in California (U.S. Energy Information Administration 2019c):

- Compressed natural gas
- Electricity
- Ethanol, 85 percent
- Hydrogen
- Liquefied natural gas
- Liquefied petroleum gas

2.2.6.3 Environmental Consequences

Direct Energy Use

The project involves replacing the existing Cordilleras Creek Bridge with a new bridge. The project is not a capacity-increasing project, as no bypass, new or expanded highways, new interchanges, additional lanes, interchange reconfiguration or auxiliary lanes are planned. While energy use would be required for vehicles using the bridge, the project would not result in increased traffic volumes or VMT. The project would not add new roadway lighting or other features requiring electricity which is an ongoing and permanent source of direct energy consumption.

Direct energy use would occur during construction. Energy in the form of gas and diesel would be consumed by construction vehicles and equipment operating on site, trucks delivering equipment and supplies, and construction workers driving to and from the project site. Construction energy would be a necessary commitment or expenditure that is associated with any major infrastructure improvement project. Compared to other roadway projects, this project is fairly small in scope and would not create a noticeable or adverse impact on short-term energy demand during the construction period. Energy consumption during project construction would be temporary and minimized to the maximum extent practicable. As such, the project would not result in an inefficient, wasteful, and unnecessary consumption of energy. Furthermore, various methods would be employed that would conserve energy and nonrenewable resources during construction. Thus, project construction would not have substantial energy effects.

Indirect Energy Use

Indirect impacts represent factors such as the energy consumed to construct materials for construction and ongoing maintenance of the bridge. The project would utilize typical materials used to construct bridges, roads, and guardrails. All of these materials require energy to make. However, the project is relatively small in scope and would use these materials in an efficient way. While energy would be consumed during maintenance activities, these activities would not result in an inefficient, wasteful, and unnecessary consumption of energy. Furthermore, various methods would be employed that would conserve energy and nonrenewable resources during maintenance activities.

2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.3 Biological Environment

2.3.1 Natural Communities

The information provided in this section is summarized from the *Natural Environment Study* prepared for the proposed project by Caltrans in May 2020 and the biological assessments prepared for NMFS in November 2020 and USFWS in December 2020.

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors, critical habitats, essential habitats, fish passage, and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value. Wetlands and other waters are discussed below in Section 2.3.2, Wetlands and Other Waters of the United States. Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in Section 2.3.5, Threatened and Endangered Species.

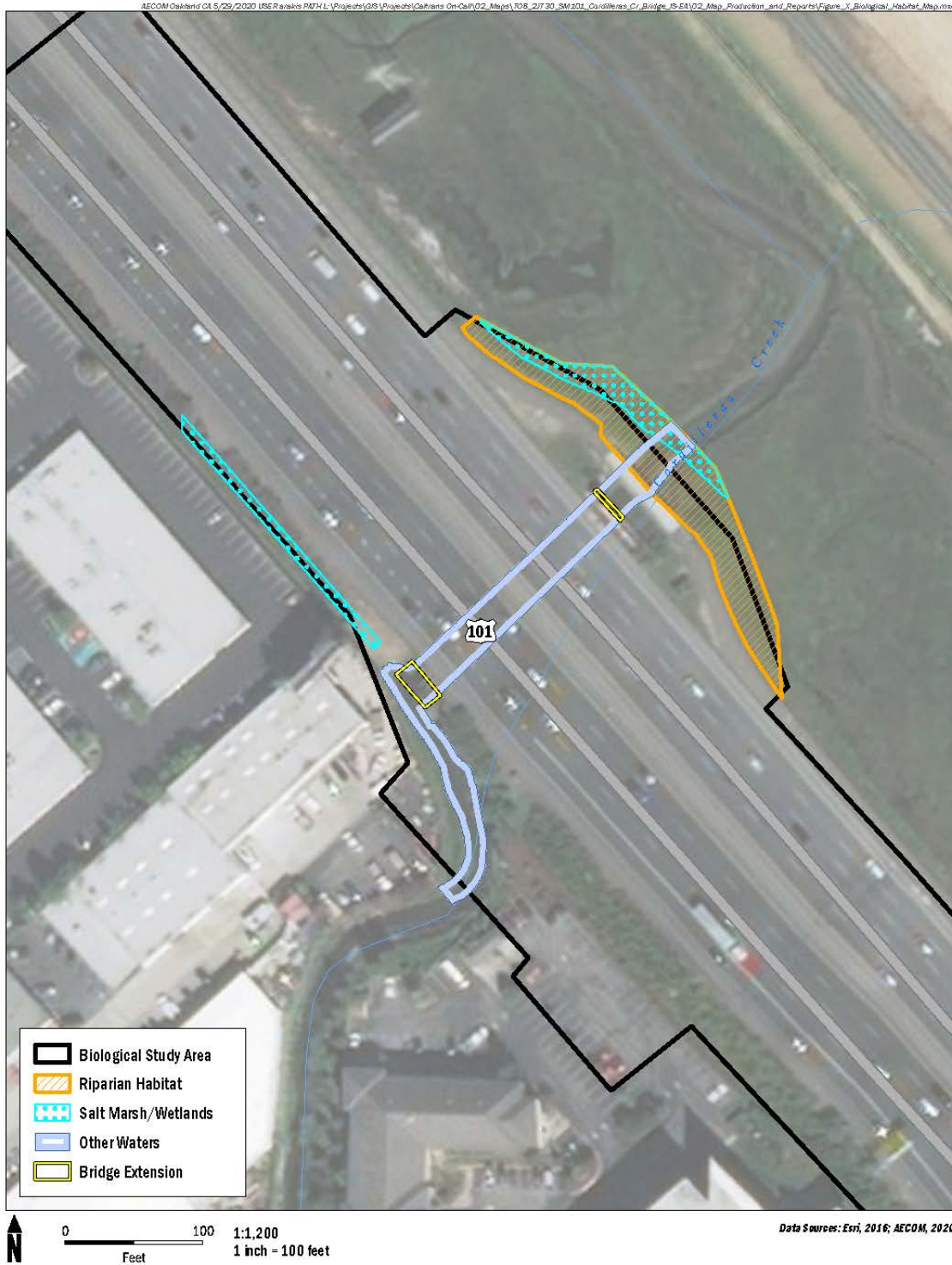
2.3.1.1 Affected Environment

The majority of the project would occur in developed and paved areas. However, the project is in the vicinity of an environmentally sensitive area (ESA) due to the presence of aquatic habitats and the potential presence of special-status species. Moving downstream from its headwaters, Cordilleras Creek flows northeast along the border of San Carlos and Redwood City through suburban and urban development, through a frequently incised channel that has been hardened at many locations to protect the properties that border the stream. Upstream of the BSA, at approximately Stafford Street, Cordilleras Creek enters an engineered channel (Sowers 2005). This channel carries streamflow through a portion of the watershed that includes the BSA and was entirely within the marsh plain that surrounded San Francisco Bay prior to development. Today the stream flows through this channel, under U.S. 101, to its terminus where Smith Slough meets Steinberger Slough.

Caltrans biologists have conducted a database and literature review, as well as field surveys of the biological study area (BSA) to identify and assess the presence of natural communities and habitats of concern and the potential for special-status species to be affected by project activities. For this project, the BSA encompasses all areas within 150 feet of the project footprint at each location, to account for potential direct and indirect effects of construction activities and human presence. This includes, but is not limited to, impacts due to construction-related noise, vibration, ground disturbance, hydrologic disturbance, vegetation removal, and compaction. The BSA for this project is approximately 17.62 acres. The BSA is shown in Figure 2.3.1-1. The following natural communities in the BSA include:

Riparian Land

There are riparian habitat areas adjacent to Cordilleras Creek. A variety of plants and trees along the creek potentially provide foraging habitat for different wildlife species.



Caltrans
 San Mateo 101 Cordilleras Creek Bridge Replacement Project
 CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 2.3.1-1
 Biological Habitat Map

Vegetation (Ruderal)

Vegetation in the BSA consists of ruderal habitats. Ruderal habitats are typified by species that are able to establish on disturbed sites, especially when the disturbance includes soil alteration, such as plowing, landfills, and graded sites, and are often suitable for weedy, nonnative, and invasive species. More information on specific plant species are provided in Section 2.2.3.

Saline Emergent Wetlands

Wetlands in the BSA are saline emergent wetlands or salt marshes. These wetlands occur along the margins of bays, lagoons, and estuaries sheltered from excessive wave action. Saline emergent wetlands are characterized as salt or brackish marshes, consisting mostly of perennial grasses and forbs, the latter often succulent and slightly woody, along with algal mats on moist soils and at the base of vascular plant stems. Saline emergent wetlands exists primarily on the eastern side of U.S. 101; a narrow strip of saline emergent wetlands is located along the west side of the bridge (Figure 2.3.1-1). More information about wetlands is provided in Section 2.3.2.

2.3.1.2 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect any natural communities.

Build Alternatives 1 and 2

Short-Term Construction Impacts

Based on the scope and location of the proposed project, construction activities would directly impact the existing land cover within the project footprint. A total of 0.523 acre of temporary impacts to unpaved land cover are anticipated as a result of the proposed project. Table 2.3.1-1 summarizes the acreages of temporary impacts on habitat/coverage types within the project footprint.

Table 2.3.1-1: Temporary Impacts to Natural Communities

| Land Cover Type | Temporary Impacts (acres) |
|-----------------|---------------------------|
| Wetland | 0.104 |
| Ruderal | 0.149 |
| Waters | 0.140 |
| Riparian | 0.130 |
| Total | 0.523 |

The proposed project would impact jurisdictional waters of the U.S., wetlands, and riparian habitat. Temporary impacts of 0.130 acre to riparian habitats and 0.104 acre of wetland habitat are anticipated due to construction access requirements.

California Fish and Game Code Section 1602 requires any person, state or local governmental agency, or public utility to notify CDFW before beginning any activity that would substantially modify a river, stream or lake. Caltrans would formally notify CDFW of the project, and CDFW would determine whether a Lake and Streambed Alteration Agreement is warranted.

Coordination with the USACE and San Francisco Regional Water Quality Control Board (RWQCB) would be required as impacts are anticipated to agency regulated resources. The project would require a USACE Section 404 permit and a Section 401 Water Quality Certification from the RWQCB. Permits would be obtained prior to construction.

In addition to complying with permit requirements, Caltrans would implement all applicable avoidance and minimization measures to reduce potential project-related impacts, including WQ-1, BIO-1 through BIO-5, described in Section 2.3.1.3. Therefore, the project would not contribute to detrimental cumulative effects to these natural communities of concern.

Long-Term Construction Impacts

Construction of the project would result in a total of 1.246 acres of permanent impacts to natural communities. A total of 1.246 acres of permanent to unpaved land cover are anticipated as a result of the widening of the bridge. Permanent impacts to 0.011 acre of riparian habitat are anticipated due to minor reconfiguration of Cordilleras Creek and installation of slope stabilization. A total of 0.112 acre of wetland habitat are anticipated to be permanently impacted due to widening of the southbound shoulder to accommodate stage construction. Table 2.3.1-2 summarizes the acreages of permanent impacts on habitat/coverage types within the project footprint.

Table 2.3.1-2: Permanent Impacts to Natural Communities

| Land Cover Type | Permanent Impacts (acres) |
|-----------------|---------------------------|
| Wetland | 0.112 |
| Ruderal | 0.949 |
| Waters | 0.174 |
| Riparian | 0.011 |
| Total | 1.246 |

Bridge replacement is expected to have a net positive long-term impact on the functional values of existing aquatic habitat, as the project design would improve tidal exchange and streamflow capacity. The project would not result in detrimental long-term changes to water chemistry or physical characteristics (e.g., substrate and flow) of the creek after construction is complete. Therefore, no indirect impacts on fish or other aquatic organisms are anticipated.

2.3.1.3 Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures would be implemented during construction activities:

WQ-1. Water Quality/Erosion Control BMPs: As described in Section 2.2.2, *Water Quality and Storm-Runoff*, WQ-1 would be incorporated to avoid substantial water quality impacts. The Construction General Permit would require the contractor to submit a SWPPP. The SWPPP must also comply with the goals and restrictions identified in the RWQCB's Basin Plan. Any additional measures included in the Water Quality Certification would be implemented.

WQ-2. Implement treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff. Treatment BMPs address post-construction water quality impacts and remove pollutants from storm water runoff before it is discharged to receiving waters.

BIO-1. Environmentally Sensitive Area Fencing: ESAs would be clearly delineated using temporary high-visibility fencing. Construction work areas would include the active construction site and all areas providing support for the project, including areas used for vehicle parking, equipment and material storage and staging, and access roads. The high-visibility fencing would remain in place throughout the duration of construction activities, would be inspected regularly, and fully maintained at all times.

BIO-2. Avoidance and Minimization Measure for Plants: As described in Section 2.3.3.4 in more detail, a qualified biologist shall conduct appropriately timed surveys for the listed plant species during these species' blooming periods before construction.

BIO-3. Minimizing Tree Removal: The project minimizes tree removal to the maximum extent practicable, and no removal of trees is anticipated.

BIO-4. Vegetation Removal: Vegetation removal would be limited to designated work areas needed for access and workspace. Where possible, vegetation would be trimmed instead of removed. Removal in temporary work areas would be cut above soil level to promote re-vegetative growth of established plants following construction to the maximum extent feasible. Vegetation would be mowed to a height greater than 4 inches.

2.3.2 Wetlands and Other Waters of the United States

2.3.2.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high-water mark (OHWM), in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

The USACE issues two types of 404 permits: general and individual. There are two types of General permits: regional and nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a regional or nationwide permit may be permitted under one of USACE's individual permits. There are two types of individual permits: standard permits and letters of permission. For individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] 230), and whether permit approval is in the public's interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no

practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Boards (RWQCBs) and the CDFW. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that would substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement would be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see the Water Quality section for more details.

2.3.2.2 Affected Environment

The information provided in this section is summarized from the *Natural Environment Study* prepared for the proposed project by Caltrans dated May 2020.

Wetland and water features are present within the BSA. Cordilleras Creek is within the larger San Mateo Creek-Frontal San Francisco Bay Estuaries watershed (HUC 10: 1805000409) and within the Cordilleras Creek-Frontal San Francisco Bay Estuaries Hydrological Unit (HUC 12: 180500040902) sub-watershed. For most of its length, Cordilleras Creek flows through a suburban landscape beginning from Brittain Heights on the western tip of San Carlos, along Edgewood Road and Eaton Avenue before finally heading under El Camino Real and Highway 101 on the edge of the City Redwood City. Here the creek empties into the tidally influenced Smith Slough.

Caltrans reviewed the National Wetland Inventory and performed a site assessment to identified wetlands within the BSA. Figure 2.3.1-1 shows where SEW within the BSA are located. SEW are characterized as salt or brackish marshes, consisting mostly of perennial graminoids and forbs, the latter often succulent and suffrutescent, along with algal mats on moist soils and at the base of vascular plant stems. SEW exists primarily on the eastern side of U.S. 101 and consists of the portions of Smith slough within the BSA. In addition, a narrow strip of wetland exists on the southbound shoulder.

2.3.2.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect wetlands, other waters of the U.S., culverts, or potentially non-jurisdictional storm water features.

Build Alternatives 1 and 2

Short-Term Construction Impacts

Temporary construction impacts to wetlands of approximately 0.104 acre are anticipated due to installation of the temporary creek dewatering system. These impacts are considered temporary as the area would only be utilized during seasonal installation and removal of the dewatering system. In addition, temporary impacts to waters of the U.S. of approximately 0.140 acre would occur due to temporary dewatering (see Table 2.3.1-1). Dewatering would occur between June 15 and October 15 of each construction year, and all dewatering equipment would be removed at the end of each construction season.

Coordination with the USACE and SFRWQCB would be required as impacts are anticipated to agency regulated resources. The project would require a USACE Section 404 permit and a Section 401 Water Quality Certification from the Water Quality Control Board. Permits would be obtained prior to construction. Implementation of Measures BIO-1. Environmentally Sensitive Area Fencing; WQ-1. Water Quality/Erosion Control BMPs; and BIO-2. Construction site BMPs would reduce impacts to wetlands and other waters of the U.S. to a minimal level.

Long-Term Construction Impacts

Permanent impacts to wetlands are also anticipated during the construction of the project. Permanent impacts to wetlands of approximately 0.112 acre are anticipated due to widening of the southbound highway shoulder to accommodate stage construction. A narrow strip of wetland (salt marsh) that exists on the southbound shoulder would be impacted by this widening (see Figure 2.3.1-1). Shoulder size would be reduced at the end of the project, but since the widened shoulder would exist for more than 1 year, it is considered a permanent impact to a wetland. Since there are permanent impacts associated with the project, mitigation described in Section 2.3.2.4 would be implemented, which would require compensation for the loss of wetlands.

Wetlands Only Practicable Alternative Finding

Caltrans has determined that a build alternative is required to meet the project's purpose and need. The project design has been refined to limit impacts to wetlands to the maximum extent possible. As discussed in Section 1.5.1.4, Identification of a Preferred Alternative, Alternative 2 has been chosen as the Preferred Alternative, partially because it would offer Caltrans the option for utilizing other construction schemes, such as the ABC concept, which can have additional environmental benefits. Minimization Measures have been included to minimize effects to wetlands during construction. These include: Environmentally Sensitive Area Fencing; WQ-1. Water Quality/Erosion Control BMPs; and BIO-2 would be implemented during construction. Construction site BMPs would also reduce impacts to wetlands. Furthermore, WET-1.

Compensatory Mitigation Measure for Wetlands would be implemented, as described in Section 2.3.2.4 below.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

The following short-term construction avoidance and minimization measures would be implemented:

BIO-1. *Environmentally Sensitive Area Fencing:* As described in Section 2.3.1, ESAs would be clearly delineated using temporary high-visibility fencing or other visible materials.

WQ-1. *Water Quality/Erosion Control BMPs:* As described in Section 2.2.2, *Water Quality and Storm-Runoff*, Measure WQ-1 would be incorporated to avoid substantial water quality impacts. The Construction General Permit would require the Contractor to submit a SWPPP. The SWPPP must also comply with the goals and restrictions identified in the RWQCB's Basin Plan. Any additional measures included in the Water Quality Certification would be implemented.

The following mitigation measure would be implemented.

WET-1. *Compensatory Mitigation Measure for Wetlands:* Under federal and state guidance and rules, adverse, unavoidable impacts to wetlands and other aquatic resources require compensatory mitigation to offset the loss of the functions and values of the feature. Wetland impacts would be mitigated at a minimum 1:1 ratio. A 1:1 ratio is standard for impacts to wetlands and other aquatic resources based on a project's risk of failure to compensate for impacts to wetlands (mitigation project), and the temporal loss, or reduction of functions, during the time it takes a mitigation project to achieve the targeted level of performance for all of its functions.

2.3.3 Plant Species

2.3.3.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and CDFW have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species Section 2.3.5 in this document for detailed information about these species.

This section of the document discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act (CEQA), found at California Public Resources Code, Sections 21000-21177.

2.3.3.2 Affected Environment

The information provided in this section is summarized from the *Natural Environment Study* prepared for the proposed project by Caltrans dated May 2020.

The vast majority of the project footprint is composed of paved areas or areas which would not support special-status species. Botanical surveys were previously conducted in the study area during bloom periods for target plants. Field surveys conducted and observed that the most of plants in the BSA are nonnative and invasive. Prior, during and after field surveys were completed, a literature search was conducted to obtain information on plant species in the BSA. The following sources were consulted: California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants Database (CNPS 2019); the California Natural Diversity Database (CNDDB) RareFind within a 5-mile radius (CDFW 2019); and the USFWS’ Critical Habitat Mapper.

A survey for rare plants was conducted in 2020. The survey was floristic in nature; biologists identified all plant species encountered during the surveys to the taxonomic level necessary to determine rarity. The goal of the survey was to locate, map, and census any special-status plant populations within the BSA. No rare or special-status plant species were observed within the BSA.

Plants observed on-site include those associated with ruderal habitats such as Italian thistle (*Carduus pycnocephalus*), fennel (*Foeniculum vulgare*), small melilot (*Melilotus indicus*), slender wild oat (*Avena barbata*), Bermuda buttercup (*Buttercup oxalis*), malva (*Malva sp.*),

olive (*Olea europaea*), blackwood (*Acacia melanoxylon*), alkali heath (*Frankenia salina*), Glasswort (*Salicornia pacifica*), pampas grass (*Cortaderia selloana*), rescue brome (*Bromus catharticus*), iceplant (*Carpobrotus edulis*), and wild radish (*Raphanus raphanistrum*).

In addition, plants within SEW may be present within the BSA. These include: cordgrass (*Spartina sp.*), pickleweed (*Salicornia virginica*), glasswort (*Salicornia europaea*), saltwort (*Batis maritima*), marsh jaumea (*Jaumea carnosa*), California seablite (*Suaeda californica*), seaside arrowgrass (*Triglochin maritima*), alkali heath (*Frankenia salina*), seashore saltgrass (*Distichlis spicata*), spearleaf saltweed (*Spearleaf agoseris*), shoregrass (*Distichlis littoralis*), the endangered birdsbeak (*Chloropyron palmatum*), sea-lavender (*Limonium latifolium*), brass-buttons (*Cotula coronopifolia*), saltmarsh dodder (*Cuscuta salina*), gumweed (*Grindelia squarrosa*), salt rush (*Juncus lesueurii*), tufted hairgrass (*Deschampsia cespitosa*), Pacific alkali bulrush (*Bolboschoenus maritimus*), Olney bulrush (*Schoenoplectus Americanus*), tule bulrush (*Schoenoplectus Acutus*), California bulrush (*Schoenoplectus Californicus*), common cattail (*Typha Latifolia*), tropical cattail (*Typha latifolia*), cinquefoil (*Potentilla reptans*), and coast carex (*Carex exilis*).

Based on those sources and a review of the geographic ranges, habitat requirements, and proximity of recorded occurrences for the various species, the following four special-status species were found to have a low potential to occur:

Hoover's Button-Celery

Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*) is an annual or perennial herb that is native to California and is endemic (limited) to California. The plant occurs in alkaline depressions, wetlands, vernal pools, roadside ditches and other wet places near the coast. It is listed on CNPS as 1B.1. The plant has low potential to occur in the BSA. Suitable habitat exists within the BSA, but no recorded occurrences exist within 5 miles.

Long-Styled Sand-Spurrey

Long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*) is a dicotomous perennial herb that is native to California. It is listed on CNPS as 1B.2. The plant occurs in marshes and swamps, meadows and seeps. The plant has low potential to occur in the BSA. Suitable habitat exists within the BSA, but no recorded occurrences exist within 5 miles.

Point Reyes Bird's-Beak

Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*) is a dicot and is an annual herb that is native to California and Oregon. The plant occurs in marshes and swamps, salt marshes and wetlands. It is usually in coastal salt marsh with species of the genera *Salicornia*, *Distichlis*, *Jaumea*, *Spartina*, etc. It is listed on CNPS as 1B.2. The plant has a low potential to occur in the BSA. Two occurrences have been recorded in the nearby area, however the recorded sightings are more than 100 years old and are listed as likely extirpated.

Saline Clover

Saline clover (*Trifolium hydrophilum*) is a dicot and is an annual herb that is native to California. It occurs in marshes and swamps, wetlands, valley and foothill grassland, and vernal pools. It is

listed on CNPS as 1B.2. The plant has low potential to occur in the BSA. One occurrence has been recorded within 5 miles, but the recorded siting is more than 100 years old.

2.3.3.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect special-status plant species in the project area.

Build Alternatives 1 and 2

During construction of the proposed project, the removal of plants located in ruderal habitats would occur. Vegetation removal would primarily occur along the southbound shoulder of U.S. 101 to prepare the area for temporary widening. A small portion of the vegetation removed would be saline emergent wetland associated with the ditch that runs parallel to the southbound side of U.S. 101 north of Cordilleras Creek. The isolated saline emergent wetland habitat in the ditch is not connected to the tidal marsh on the northbound side of U.S. 101. Most vegetation removal would be far enough from Cordilleras Creek that it would not impact the creek, and the vegetation that would be removed near the creek is mostly low growing vegetation that provides little cover or other habitat value for sensitive species.

The project is not expected to result in the permanent loss of special-status plant species or rare or special-status plant species, as they are absent from the project area. Plant surveys would be conducted again in 2021 to confirm the absence of special-status species. If a special-status plant (state-listed) happens to be present during construction and cannot be avoided, Caltrans would prepare an Incidental Take Permit. Furthermore, the implementation of avoidance and minimization measures described in Section 2.3.3.4, would reduce impacts to plant species to a minimal level. No removal of trees is anticipated, and the implementation of measures BIO-2, BIO-3, BIO-4 and BIO-6 would reduce project effects on plants to a minor level.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures would be implemented during construction activities:

BIO-2. *Avoidance and Minimization Measure for Plants:* Before the commencement of construction activities, a qualified biologist shall conduct appropriately timed surveys for the listed plant species during these species' blooming periods.

If a special-status plant species is discovered at any point, the biologist would work with the Resident Engineer to determine if it can be protected in-place, re-located within the BSA, or salvaged to be re-planted at the end of project construction. If the special-status plant species is federally or state listed, the appropriate natural resource agencies would be contacted immediately, and consultation would be initiated as necessary.

BIO-3. *Minimizing Tree Removal:* The Caltrans design team has worked to design the project to minimize tree removal to the maximum extent practicable, and no removal of trees is anticipated.

BIO-4. Vegetation Removal: Vegetation removal would be limited to the designated work areas needed for access and workspace. Where possible, vegetation would be trimmed instead of removed. Removal in temporary work areas would be cut above soil level to promote re-vegetative growth of established plants following construction to the maximum extent feasible. Vegetation would be mowed to a height greater than 4 inches.

BIO-6. Replant, Reseed, and Restore Disturbed Areas: Caltrans would restore temporarily disturbed areas to the preconstruction or improved contours and functions to the maximum extent practicable. Where disturbance includes the removal of trees, native species would be replanted at a 3:1 ratio for every native tree removed and 1:1 (native) for every nonnative tree removed, based on the local species composition.

2.3.4 Animal Species

2.3.4.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), and the CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species Section 2.3.5 below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

2.3.4.2 Affected Environment

The information provided in this section is summarized from the *Natural Environment Study* prepared for the proposed project by Caltrans dated May 2020; the biological assessments prepared for NMFS in November 2020 and USFWS in December 2020.

The majority of the BSA is unlikely to support terrestrial wildlife species as it consists of developed land and adjacent ruderal vegetation. U.S. 101 is a major barrier to wildlife movement in the area. It is unlikely that species would disperse or move through vegetated land on the

western side of the BSA, as the BSA is bounded on all sides by highway and ramps, local roads, and commercial development. Undeveloped land to the east of U.S. 101 may support wildlife species foraging, dispersing, or otherwise utilizing the area.

Caltrans biologists conducted multiple site visits in 2019 and 2020 to survey for wildlife and wildlife habitat. Caltrans also used best available scientific and commercial data, including a literature search and visual assessment, to evaluate the potential for occurrence of this species in the BSA. The identification of special-status animal species with potential to occur in the region was based on a search of the following databases:

- Official species lists from the Sacramento Office of the USFWS
- The California Natural Diversity Database (CNDDDB) RareFind within a 5-mile radius (CDFW 2019)
- USFWS' Critical Habitat Mapper (USFWS 2019a)
- The official species list obtained from NMFS and existing commercial and regulatory agency resources (e.g. CDFW Wildlife Habitat Relationships System, and the Federal Register (FR) and recovery plans for selected species).
- San Francisco Bay Delta USFWS official species list.

Based on those sources and a review of the geographic ranges, habitat requirements, and proximity of recorded occurrences for the various species, the following special-status species that have the potential to occur in the BSA:

- Northern harrier (harrier, *Circus hudsonian*)
- Alameda song sparrow (*Melospiza melodia pusillula*)
- White-tailed kite (*Elanus leucurus*)

Northern Harrier

The northern harrier is a state species of special concern (SSC). Harriers breed widely around the Central California Coast, including the San Francisco Bay Area. Harriers have been found throughout the coastal lowlands in Marin County (Shuford 1993), in Sonoma County, mostly along the Petaluma River and near Tubbs Island (Burrige 1995), and near the Napa Airport and Edgerley Island, in the Napa County portion of the region (Berner et al. 2003).

Northern harriers breed and forage in a variety of open (treeless) habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. In California, such habitats include freshwater marshes, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, annual and perennial grasslands (including those with vernal pools), weed fields, ungrazed or lightly grazed pastures, some croplands (especially alfalfa, grain, sugar beets, tomatoes, and melons), sagebrush flats, and desert sinks (MacWhirter and Bildstein 1996).

Low to moderate quality foraging habitat for the northern harrier exists within the BSA.

Alameda Song Sparrow

Alameda song sparrow is a special-status species and is one of nine subspecies of song sparrows found in California. The subspecies is endemic to salt marshes of southern San Francisco Bay. The Alameda song sparrow uses habitat that forms at the marsh-high marsh or marsh-upland interface (Shuford and Gardali 2008). This habitat includes the borders of tidally influenced sloughs. This species nests in shrubs or tall herbaceous growth above the point of highest inundation. The bulk of the diet of the Alameda song sparrow is vegetable matter such as seeds (Shuford and Gardali 2008). Threats to the Alameda song sparrow and other nesting birds include any factors that would lead to nesting failure, predation, disturbance, and nest substrate destruction.

Potential habitat for the Alameda song sparrow exists within the BSA. The most recent occurrences within 5 miles from the BSA were reported in 2004 at Bair Island, Smith Slough and Steinberger Slough.

White-Tailed Kite

White-tailed kite is a state Fully Protected Species in California and is a SSC. It is considered to be a fairly common resident in coastal and valley lowlands and inhabits herbaceous and open stages of most habitats within cismontane California (CDFW 2005). It is a medium-sized raptor that is known for year-long diurnal, and crepuscular activity. The white-tailed kite preys mostly on voles and other small diurnal mammals, and occasionally on birds, insects, reptiles, and amphibians. The white-tailed kite requires tall, dense tree canopy or tall shrubs for nesting. It makes a nest of loosely piled sticks and twigs and lined with grass, straw, or rootlets. Nests are placed near the top of dense oak, willow, or other tree stands, and are usually 20 to 100 feet above the ground (Dixon et al. 1957), near an open foraging area. The species has not been known to be migratory, but may become nomadic in response to prey abundance (Dunk and Cooper 1994). The kite forages from a central perch over areas as large as 1.9 square miles (Warner and Rudd 1975) and seldom hunts more than 0.5 mile from its nest when breeding (Hawbecker 1942). Increasing numbers and extended range have been noted in recent decades (CDFW 2005).

Low to moderate quality foraging habitat exists in the BSA for the white-tailed kite. There are reported occurrences of the white-tailed kite at Bair Island from 1971.

2.3.4.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect animal species in the project area.

Build Alternatives 1 and 2

Short-Term Construction Impacts

Approximately 0.90 acre of temporary impacts to potential foraging habitat for northern harrier, Alameda song sparrow and white-tailed kite are anticipated to occur due to construction activities. Currently anticipated impacts are associated with the installation and removal of

seasonal temporary coffer dam system and bridge construction activities. Construction activities also have the potential to affect these bird species due to construction-related noise, vibration, and increased human presence. If birds are present in the BSA during project construction, take of birds may occur in the form of harm, harassment, injury, and mortality of individuals. The sources of take may include crushing or injury from construction-related disturbance, modifications to behavior as a result of disturbances (e.g., noise), or capture and relocation. Day-time CIDH piling activities for bridge construction have the potential to cause disturbance, and have the potential to exceed existing levels of anthropogenic disturbance, but would be short-lived.

However, the potential habitat within the BSA is located near U.S. 101, which is a heavily traveled roadway with a high level of existing disturbance. The San Francisco Bay Trail adjacent to this potential habitat adds further disturbance, as does an active homeless encampment. As a result, the project area does not provide quality habitat for these species of concern. They are unlikely to utilize this area due to the high levels of human disturbance and are instead likely to use other nearby foraging areas subject to little or no human disturbance.

Indirect effects are related to increased erosion, sedimentation or changes to hydrology of their habitat. The disturbance of upland areas and removal of vegetation could lead to an increased potential for erosion and sedimentation of soils, affecting habitats outside the project footprint. In addition, construction activities could result in the introduction of chemical contaminants to a work site or staging area, such as oil or toxic chemicals leaking from construction equipment. Construction activities also could introduce new weedy invasive plant species to the BSA. Measures such as WQ-1, described in Section 2.2.2 and BIO-20, described in Section 2.3.6 would avoid adverse indirect effects to these species.

Other protected and migratory bird species have the potential to occur within the BSA. Birds could potentially nest within the shrubs and trees that occur within the BSA. The use of construction equipment to remove vegetation within the project footprint has the potential to impact nesting birds, including migratory birds subject to the Migratory Bird Treaty Act (MBTA) and native birds protected under California Fish and Game Code (CFGC) Sections 3503, 3503.5, and 3513, including causing nest abandonment and/or loss of eggs or young. Destruction or disturbance of an active nest or eggs would conflict with the CFGC and the MBTA. All nesting birds protected under this law would be avoided during project construction.

All nesting birds protected under these laws would be avoided during project construction. Any construction occurring during the nesting season for migratory birds (February 1 to September 1) that involves vegetation removal or trimming would require a preconstruction survey for nesting birds. During the nesting season, pre-construction surveys for nesting birds would be conducted by a qualified biologist no more than 72 hours prior to the start of construction activities. During the nesting season, pre-construction surveys for nesting birds would be conducted by a qualified biologist no more than 72 hours prior to the start of construction activities. Furthermore, Caltrans would implement the buffers as prescribed by CDFW to further reduce the likelihood of taking migratory birds and their nests. Caltrans would coordinate with CDFW during construction.

Avoidance would be accomplished by adhering to the general avoidance and minimization measures as outlined in Section 2.3.4.4 including Measures BIO-7 through BIO-11. With the use

of project avoidance and minimization measures, no impacts to protected bird species are anticipated.

Long-Term Operation Impacts

The project has been designed to limit long-term impacts to the threatened and endangered species. With the implementation of Measure WQ-2 (Implement treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff), no long-term impacts are expected.

2.3.4.4 Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures would be implemented during construction activities:

BIO-7. Construction Site BMPs: The following site restrictions would be implemented to avoid or minimize impacts on special-status species and their habitats:

- a. Routes and boundaries of roadwork would be clearly marked before the start of construction or grading.
- b. All food and food-related trash items would be enclosed in sealed trash containers and would be properly disposed off-site.
- c. Sediment and debris removed from the roadway would be disposed of off-site, at an approved location, where it cannot enter surface waters.
- d. No pets belonging to project personnel would be allowed within the BSA at any time during construction.
- e. No firearms would be allowed in the project footprint except for those carried by authorized security personnel, or local, state or federal law enforcement officials.
- f. A Spill Prevention and Control Plan would be prepared in accordance with SWPPP requirements. Hazardous materials (e.g., fuels, oils, solvents) would be stored in sealable containers in a designated location that is at least 100 feet from any hydrologic features.

BIO-8. Entrapment Avoidance: To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1 foot deep would be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps. 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 would 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 and/or buried.

BIO-9. Biological Monitor and Protocol for Observation: Qualified Biological Monitors would be identified to support the project. The biological monitor(s), in coordination with the Resident Engineer, would have the authority to stop work that may result in the unauthorized take of special-status species. Work would 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.

BIO-10. Preconstruction/Daily Surveys: Preconstruction surveys for special-status wildlife species listed in this NES, would be conducted by the agency-approved biological monitor(s) no more than 20 calendar days prior to any initial ground disturbance and immediately prior to ground-disturbing activities.

BIO-11: Migratory Bird Treaty Act: To protect migratory birds and their nests, all initial major vegetation clearing, but not grubbing, would be conducted between October 1 and January 31, outside the typical bird nesting season, when possible. A qualified biologist with appropriate construction and species experience would conduct nest and bird surveys and other wildlife surveys before and during tree cutting.

2.3.5 Threatened and Endangered Species

2.3.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA) (and the Department, as assigned), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take Statement or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFW is the agency responsible for implementing CESA. Section 2080 of the California Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.3.5.2 Affected Environment

The information provided in this section is summarized from the *Natural Environment Study* prepared for the proposed project by Caltrans in May 2020, the biological assessments prepared for NMFS in November 2020 and USFWS in December 2020, the NMFS Letter of Concurrence

received on March 31, 2021, and the USFWS BO received on February 11, 2021 (see Appendix H).

Caltrans and AECOM biologists have conducted a database and literature review, as well as field surveys.

Based on the information sources listed in Section 2.3.4.2, a review of the geographic ranges and habitat requirements and the proximity of recorded occurrences for the various species, the following federally and state-listed threatened and endangered species were found to have a potential to occur in the BSA:

- Ridgway's rail (*Rallus longirostris obsoletus*)
- California least tern (*Sterna antillarum browni*)
- western snowy plover (*Charadrius nivosus nivosus*)
- salt marsh harvest mouse (*Reithrodontomys megalotis*)
- California black rail (*Laterallus jamaicensis coturniculus*)
- Central California Coast (CCC) distinct population segment (DPS) Steelhead (*Oncorhynchus mykiss*)

AECOM biologists conducted additional studies for fish species in the BSA including CCC DPS steelhead and Southern DPS green sturgeon.

Background information sources included:

- The NMFS California Species List Tool;
- CDFW CNDDDB records within 5 miles of the BSA;
- The CDFW Passage Assessment Database (CDFW 2020);
- The USGS StreamStats online tool;
- NMFS critical habitat determinations for Central California Coast steelhead (65 FR 7764, 70 FR 52488) and southern green sturgeon (74 FR 52300);
- NMFS recovery plans for Central California Coast steelhead (NMFS 2016) and southern green sturgeon (NMFS 2018);

Furthermore, Caltrans and AECOM biologists conducted site visits on July 16, 2019; September 26, 2019; and October 1, 2020. The field efforts were limited to the site visits; no fish sampling surveys were conducted.

Effect determinations for all the species are listed below are included in Species Table in Appendix C.

Ridgway's Rail

Ridgway's rail is listed as an endangered species under the CESA and FESA. Ridgway's rails nest and forage in tidal marshes and would occur in upland transitional habitats during high tides

or flooding events when marshes are inundated. Ridgway's rails once occurred in coastal marshes from Humboldt Bay south to Morro Bay, with the largest population around San Francisco Bay. However, due to extensive habitat loss, this rail now occurs only in the marshes around San Francisco Bay, where historical population levels are greatly reduced (Albertson and Evens 2000). Ridgway's rails are relatively sedentary and form monogamous pairs that defend their territories year-round. Nesting habitat for Ridgway's rails must include sloughs to provide prey and cover from predators. Their diet consists of crustaceans, insects, fish, and other small prey.

Four CNDDDB occurrences of Ridgway's rail have been documented within 5 miles of the BSA. The two most recent occurrences, in 2006, consist of multiple observations of birds in the marshes surrounding Bair Island and nearby sloughs. The second pair of observations are from 1975 and are occurrences are listed as within the marshes bordering Belmont Slough and Smith Slough, but no information on number of individuals observed is provided.

The most recent occurrences within 5 miles were documented in 2006. CNDDDB occurrence 50 was documented 2.17 miles from the BSA and occurrence 40 was documented 0.95 mile from the BSA. The portion of Smith Slough within the BSA contains low to moderate quality foraging habitat for this species. The birds are unlikely to use the area due to high levels of disturbance and the wide availability of habitat nearby. The BSA does not contain suitable breeding habitat for the Ridgway rail because it lacks the cover necessary for roosting. The bird has a low potential to occur in the BSA.

California Least Tern

California least tern is listed as an endangered species under CESA and FESA. The least tern lives along the coast and bays in California and Mexico. They nest on open sandy shorelines typically that are free of vegetation. In the San Francisco Bay Area, there are a small handful of nesting colonies that are monitored annually. The nearest nesting colony sites to the project are at the Eden Landing Ecological Reserve and Hayward Regional Shoreline, both of which are located along the eastern shoreline of San Francisco Bay (opposite shore of the BSA). The largest colony in the region is located at the former Alameda Naval Air Station. Its diet primarily consists of small fish, but also shrimp and occasionally other invertebrates. Their mating begins in April or May.

California least terns forage primarily in open sheltered waters. Low quality foraging habitat exists within the BSA, and there is a lack of recent records supporting its presence. Therefore, they have a low potential to occur in the BSA.

Western Snowy Plover

Western snowy plover is listed as a threatened species under FESA. The Pacific Coast breeding population of the Western snowy plover (WSP) currently extends from Washington to Baja California, Mexico (USFWS 2007). The Western Snowy Plover is found on sandy beaches, salt pond levees, and shores of large alkali lakes. They typically forage for small invertebrates in wet or dry beach-sand, among tide-cast kelp, and within low foredune vegetation (FWS 2019). Western snowy plovers breed primarily above the high tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans

at lagoons and estuaries. The bird needs sandy, gravelly or friable soils for nesting. Less common nesting habitats include bluff-backed beaches, dredged material disposal sites, salt pond levees, dry salt ponds, and river bars (USFWS 2007). Nests typically occur in flat, open areas with sandy or saline substrates where vegetation and driftwood are usually sparse or absent. Nests consist of a shallow scrape or depression, sometimes lined with beach debris (e.g., small pebbles, shell fragments, plant debris, and mud chips (USFWS 2007). Nesting season extends from early March through late September. Snowy plovers winter mainly in coastal areas from southern Washington to Central America. In winter, snowy plovers are found on many of the beaches used for nesting as well as on beaches where they do not nest, in man-made salt ponds, and on estuarine sand and mud flats (USFWS 2007).

The most recent CNDDDB occurrence within 5 miles was documented in 2017. CNDDDB occurrence 137 was seen within 3.37 miles of the BSA. Low to marginal quality foraging habitat exists within the BSA and birds are unlikely to use the area due to high levels of disturbance and absence of preferred forage or nesting habitat.

Salt Marsh Harvest Mouse

The salt marsh harvest mouse (SMHM), which is listed as an endangered species under CESA and FESA, is a small native rodent that looks similar in appearance to the common western harvest mouse (*Reithrodontomys megalotis*). The species is found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Salicornia-dominated marshes are the primary habitat. The mouse relies on dense cover of pickleweed to avoid predation (USFWS 1984). The species, which is partly diurnal, uses adjacent upland habitat (i.e., grasslands) during daily or seasonal tidal peaks (USFWS 1984). The mouse does not burrow but builds loosely organized nests and requires higher areas for flood escape. Males of the species are reproductively active from April through September, although some males appear reproductively active year-round. Females of this species have a breeding season that extends between March and November.

Much of the historical SMHM habitat has been destroyed or converted. Approximately 32 percent of historical tidal marsh has been converted into diked wetland and is marginal or inappropriate habitat for the SMHM. Most of the remaining tidal marshes are fragmented strips situated along outboard dikes and along sloughs, often separated from one another by considerable distances (USFWS 1984).

The most recent occurrences within 5 miles of the BSA were documented in 1992. CNDDDB occurrence 74 was seen 0.75 mile from the BSA at Bair Island. Suitable habitat exists within the BSA, but mice are unlikely to use the area due to high levels of disturbance and the wide availability of habitat nearby.

California Black Rail

California black rail (CBR) is listed as a threatened species under CESA. This species is a small blackish rail, about the size of a sparrow, speckled with white. California black rail habitat generally includes salt marshes, freshwater marshes, and wet meadows. Most California populations are nonmigratory, and these habitat types serve for breeding, foraging, and overwintering. In tidal areas, the rails also require dense cover of upland vegetation to provide protection from predators when it must leave marsh habitats during high tides. Typical associated

vegetation includes pickleweed (*Salicornia virginica*) in salt marshes and bulrush (*Scirpus* spp.) in less saline habitats. California black rail forages in the same habitats that it uses for breeding. This species begins breeding in February and nesting occurs from March to June. Nests often are concealed in dense vegetation, often pickleweed, near upper limits of tidal flooding.

Potential CBR foraging habitat exists in the BSA, in form of saline emergent wetlands within Smith Slough. However, Black rails are less tolerant of disturbance and are unlikely to utilize this area due to the high disturbance levels that exist from pedestrians and bicyclists utilizing the bay trail and vehicles utilizing U.S. 101. Thus, the black rail has a low potential to occur within the BSA.

California Central Coast DPS Steelhead

The CCC DPS Steelhead is listed as threatened under the FESA (NMFS 2006). This DPS includes all steelhead that run from the Russian River in Sonoma County south to Aptos in Santa Cruz County, and also includes all steelhead spawning in streams that flow into the San Francisco Bay. CCC steelhead enter their natal stream in the winter and spawn almost immediately (Moyle 2002). Steelhead reside between one to two years in freshwater and one to two years in the ocean. Adults spawn in clean gravels and cobbles, typically at pool tail crests or riffles where surface waters are forced into the gravel, thereby keeping the gravel clean and the eggs well oxygenated. Access to suitable stream spawning and rearing habitat from the ocean is essential for steelhead, the listed form of the species, to complete its lifecycle.

Once emerged from the gravel, juvenile steelhead are flexible in their habitat requirements. They are able to live and can be found in a wide range of velocities, depths and habitat types (Bisson 1988). During winter high flows, juvenile steelhead seek refuge from high flows and predation in the interstitial places between gravels, cobbles, and boulders on the streambed (Bjornn 1971; Bustard and Narver 1975; Swales et al. 1986). One-year-old and older steelhead occupy deeper channels and would use more pools (Bisson et al. 1988).

After rearing in freshwater for one to three years, steelhead undergo smoltification and migrate to the ocean. During their migration to the ocean, steelhead in some regions remain in estuarine waters for several months while others transit estuarine waters quickly (Bond 2006). Once they reach the ocean, steelhead spend roughly two years traveling great distances across the North Pacific, swimming past the coastal waters of their natal streams toward the Gulf of Alaska, where they may stay for a year or more before migrating back (Light et al. 1989).

Although records of fish sampling in Cordilleras Creek are limited, fish passage barriers upstream of the BSA and lack of suitable spawning and rearing habitat likely prevent anadromous steelhead from using Cordilleras Creek. One sampling effort at three locations in Cordilleras Creek in 1981 did not detect steelhead (Leidy et al. 2005), and there have not been any reported occurrences of steelhead in Cordilleras Creek or in the sloughs into which Cordilleras Creek feeds (Smith Slough and Steinberger Slough). Although the lack of sampling effort makes it difficult to be certain about steelhead occurrences in Cordilleras Creek, the creek is unlikely to support steelhead due to its poor habitat quality.

Steelhead spawning and rearing are not expected to occur in Cordilleras Creek. At 3.2 square miles, the watershed area is small and much of Cordilleras Creek flows through urban and

suburban development. Several locations on Cordilleras Creek were visited during the October 2020 site visit, and the creek was highly modified and channelized at each location. Cordilleras Creek is confined by vertical sloping concrete walls at two locations in the lower half of the creek (at the Warwick Street and Alameda de las Pulgas crossings), and two additional locations not confined by concrete structures (at the Scenic Drive and Edgewood Road crossings) were also incised and channelized. Lower Cordilleras Creek lacks the habitat complexity and high flow refugia necessary to support steelhead rearing.

In addition to poor habitat quality in the lower watershed, numerous fish passage impediments limit steelhead access to the creek above the Edgewood Road crossing and completely block access to the upper portion of the watershed (Cleugh 2002, CDFW 2020). Based on direct habitat observations and review of photographs of areas that were not visited, it is very unlikely that suitable spawning habitat exists downstream of these barriers. Modifications to Cordilleras Creek—including concrete and sakrete banks, channel constriction that has led to incision, and numerous fish passage impediments and barriers—have drastically reduced habitat complexity and prevent passage to the upper portion of the watershed. The accessible portions of the creek contain poor-quality rearing habitat and are unlikely to contain spawning habitat.

The existing Cordilleras Creek Bridge at U.S. 101 is in the California Fish Passage Assessment Database (PAD), with PAD identification number 733784 (CDFW 2021). The passage status for this crossing in the PAD is “unknown,” based on an assessment conducted by the California Department of Water Resources using Caltrans’ Reconnaissance Protocol. Caltrans is in the process of completing additional analysis of the existing condition and is conducting a hydraulic analysis to compare the existing condition to the proposed condition.

There are no fish passage impediments downstream of the project area, so habitat in the BSA is accessible to steelhead spawned in other streams or tributaries to San Francisco Bay. However, acoustic telemetry studies in the northern portion of the San Francisco Estuary found that outmigrating steelhead smolts moved through the estuary rapidly, averaging 2 to 4 days, and primarily occupied deep waters in the estuary (Jahn 2011, Chapman et al. 2014, ESA 2015). Few smolts were detected in shallow estuarine waters and tributaries. These results suggest that steelhead smolts are using the deep channels in the San Francisco Estuary as a migratory corridor and are not remaining in the Estuary to forage or rear. Therefore, it is unlikely that smolts from other watersheds around the Estuary would enter the BSA during their outmigration. Based on the lack of suitable steelhead habitat in Cordilleras Creek, the numerous partial and total barriers along the creek, and the low likelihood of smolts from other watersheds entering the BSA during outmigration, the potential for steelhead to occur in the BSA is low.

Although Cordilleras Creek is not expected to support spawning and the potential for steelhead spawned in other streams to enter the project area is low, as described below, Cordilleras Creek within the BSA is designated critical habitat for CCC steelhead (NMFS 2005). The designation is due to the location of the BSA below the mean higher high water (MHHW) mark in the San Francisco Estuary, but is otherwise not associated with Cordilleras Creek. There is no critical habitat for steelhead designated in Cordilleras Creek above the MHHW elevation, which is roughly 1,000 feet upstream of the Cordilleras Creek Bridge.

Southern DPS Green Sturgeon

On April 7, 2006, NMFS listed the southern DPS of green sturgeon as federally threatened (71 FR 17757). Two DPSs of North American green sturgeon, the northern and southern DPSs, have different geographic distributions and listing statuses. Based on genetic analysis, Israel et al. (2009) concluded that almost all green sturgeon collected in the San Francisco Bay system were southern DPS. The southern green sturgeon DPS consists of populations that spawn south of the Eel River, including the Sacramento River system (71 FR 17757).

Adult southern DPS green sturgeon spawn in the Sacramento River Watershed during the spring and early summer months (Moyle et al. 1995). There are no records of juvenile green sturgeon smaller than 200 millimeter fork length in the Sacramento-San Joaquin Delta, suggesting that juveniles rear upriver in fresh water for several months before entering the Delta and the San Francisco Estuary (Heublein et al. 2017). Juveniles spend their first few years in the Delta and San Francisco Estuary before entering the marine environment as subadults. Subadult and adult green sturgeon move between coastal waters and estuaries seasonally, entering estuaries and bays during the early spring and summer months and returning to the ocean during summer and fall (Lindley et al. 2008, Lindley et al. 2011, Heublein et al. 2017). Because green sturgeon do not reach sexual maturity until about 15 years of age and only spawn every 2 to 5 years (Moyle 2002), much of their life is spent in coastal and estuarine waters.

Green sturgeon is the most marine-oriented species of sturgeon (Moyle 2002). Along the west coast of North America, they range in nearshore waters from Mexico to the Bering Sea (Adams et al. 2002), with a general tendency to head north after their out-migration from freshwater (Lindley et al. 2011). Mark recapture studies conducted in Oregon and Washington, along with the relatively low sampling incidence of green sturgeon in San Francisco Estuary surveys, suggests that the majority of the southern DPS adult and subadult population occupies other estuaries or marine waters during early spring and summer months (Heublein et al. 2017).

In the San Francisco Estuary, southern green sturgeon tend to occur most frequently in the northern portion of the Estuary. Acoustic transmitter tagging studies found that tagged green sturgeon were more often detected in the northern portion of the Estuary than in the central portion (Kelly et al. 2007, Chapman et al. 2019). No tracking studies have been conducted in the southern portion of Estuary. There are a few incidental records of green sturgeon in the southern portion of the Estuary, such as four records from anglers in 2006 and two records over 21 years of CDFW midwater trawl surveys (74 FR 52300). These records support the assumption that, although southern DPS green sturgeon may be present in the southern portion of San Francisco Estuary, they likely occur only in low numbers.

Like CCC steelhead, designated critical habitat for southern green sturgeon associated with the San Francisco Estuary is present in the BSA because the BSA lies below the MHHW elevation that demarcates the boundary of the estuarine critical habitat. Although the BSA is tidally influenced and accessible from the Estuary, habitat quality in the BSA is poor. The majority of the BSA is shallow at low tide, so access would be restricted to high-tide periods. The BSA lacks natural cover, has been modified by development, and contains the Cordilleras Creek Bridge, which blocks light, divides the creek into three culverts, and includes a concrete bottom that underlies the channel. Water quality in the BSA is likely poor due to urban stormwater runoff.

Given what is known about green sturgeon's use of small tributaries to the southern San Francisco Estuary, it is unlikely that green sturgeon use the BSA.

Critical and Essential Fish Habitat

Critical habitat and essential fish habitat (EFH) occur in the project area, both under NMFS jurisdiction. The extent of designated critical habitat for the Central California Coast DPS steelhead and Southern DPS green sturgeon in the BSA is estimated as corresponding to the area of inundation at the MHHW elevation. Critical habitat extends from roughly 1,000 feet upstream of the Cordilleras Creek Bridge downstream through the BSA to San Francisco Bay. EFH is designated for the Pacific Coastal Groundfish and Coastal Pelagic Species in the same areas as designated critical habitat.

Cordilleras Creek channel in the project area is tidally influenced, and critical habitat and EFH elements in the BSA are limited to estuarine functions. These estuarine functions are further limited by the location of the BSA at the margin of designated critical habitat/EFH habitat as well as the highly modified, disturbed nature of the habitat. The channel in the BSA was once part of extensive tidal marsh habitat around San Francisco Bay but through regional development has been reduced to a constructed flood control channel confined between commercial and industrial developments. The existing 180-foot-long bridge includes a concrete bottom that underlies the channel, and the bridge divides the channel into three narrow culverts and blocks light. Although there is suitable water quantity for fish in the BSA at high tide, at low tide the channel in the project area is shallow. The habitat lacks natural cover such as large wood, aquatic vegetation, boulders, and side channels, and the current bridge includes a concrete bottom which underlies the channel and divides it into three narrow culverts that block light.

Of the taxa that the critical and essential fish habitat designations are intended to protect, only species included in the Pacific Coastal Groundfish management unit have been documented near the BSA. There are records of leopard shark, English sole, and starry flounder in the Bair Island Marsh Complex (Hobbs and Moyle 2012), and individuals could enter the BSA during high tides. Other taxa, including steelhead, green sturgeon, and Coastal Pelagic Species, have a very low potential to occur in the BSA.

2.3.5.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect threatened or endangered species in the project area.

Build Alternatives 1 and 2

Short-Term Construction Impacts to Listed Bird Species and SMHM

Potential habitat for threatened and endangered bird species and SMHM may be disturbed during the construction of the project, and impacts to these species could potentially occur if they are present during these activities. Low to moderate quality foraging habitat exists in the western portion of the BSA, in the form of saline emergent wetlands within Smith Slough for Ridgway's rail, California least tern, the Western Snowy Plover, and California black rail. Approximately 0.104 acre of temporary impacts to potential these bird's foraging habitat are anticipated due to

construction activities. Approximately 5.95 acres of temporary impacts to potential SMHM habitat are anticipated due to construction activities. Temporary impacts are anticipated for temporary creek diversion system installation and for construction-related disturbance.

Currently anticipated impacts are associated with the installation and removal of seasonal temporary cofferdam system and bridge construction activities. Construction activities also have the potential to affect these threatened and endangered species due to construction related noise, vibration, and increased human presence. If threatened and endangered bird species or the SMHM are present in the BSA during project construction, take may occur in the form of harm, harassment, injury, and mortality of individuals. Examples of way in which take may occur include crushing or injury from construction-related disturbance, modifications to behavior as a result of disturbances (e.g., noise), or capture and relocation. Daytime CIDH piling activities for bridge construction have the potential to cause disturbance and have the potential to exceed existing levels of anthropogenic disturbance; however, these effects would be short lived.

The potential habitat within the BSA is located near U.S. 101, which is a heavily traveled roadway with a high level of existing disturbance. The San Francisco Bay Trail adjacent to potential habitat adds further disturbance, as does an active encampment area. The project area has many existing sources of light and glare due to vehicle use on the U.S. 101 and adjacent commercial buildings and parking lots to the west. The existing conditions along the approximate 0.83-mile stretch, include many sources of light. These light sources are in and adjacent to the project area, especially toward the west. Along the western side of the project area (southbound side of U.S. 101) there is one billboard with lights, four double-sided digital billboards, and two safety lights on the shoulder. Exterior lighted box signs for businesses and perimeter lighting from adjacent commercial buildings and parking lots are also a source of nearby illumination.

On the eastern side of the project area (bayward side), there are five double-sided billboards with lights and three safety lights. In the median, there are two butterfly lights. Threatened and endangered species that occur in the general vicinity are unlikely to utilize this area due to the high levels of human disturbance and are instead likely to use other nearby foraging areas subject to little or no human disturbance. To verify the absence of these species from the project site, preconstruction surveys would be conducted before construction activities to check for habitat and threatened and endangered species presence. As discussed in Section 2.3.4.3, all nesting birds protected under the Migratory Bird Treaty Act or Fish and California Fish and Game Code Sections 3503, 3503.5, and 3513 would be avoided during project construction. If these are encountered in the project area during construction, implementation of the general avoidance and minimization measures would serve to avoid and minimize potential project-related impacts to these threatened and endangered bird species. Avoidance and Minimization Measures BIO-1, BIO-8, BIO-10, BIO-13, BIO-14, and BIO-15 would be implemented during construction activities to avoid adverse effects to bird species.

During consultation with USFWS, avoidance and minimization measures BIO-17 and BIO-18 were added to further protect the SMHM. During construction, if a SMHM gains access to a construction zone, work would be halted immediately within 50 feet until the animal leaves the site or is captured and relocated by the USFWS-Approved Biological Monitor. Indirect effects to these threatened and endangered species could include increased erosion, sedimentation, or changes in hydrology to rail habitat in the BSA. Any of these detrimental effects could occur

either during construction or post-construction. The disturbance of upland areas and removal of vegetation could lead to an increased potential for erosion and sedimentation of soils, affecting threatened and endangered species habitats outside the project footprint. In addition, construction activities could result in the introduction of chemical contaminants to a work site or staging area, such as oil or toxic chemicals leaking from construction equipment. Construction activities also could introduce new weedy invasive plant species to the BSA or could spread invasive species present in the BSA to other sites that support rail. These indirect effects would be avoided through implementation of avoidance and minimization measures for protection of water quality, erosion control (including implementation of construction site BMPs and the SWPPP), and species-specific protection measures. Measures such as WQ-1, described in Section 2.2.2 and BIO-20, described in Section 2.3.6 would avoid adverse indirect effects to these species. Therefore, the project is not likely to adversely affect these species.

Long-Term Operation Impacts to Listed Bird Species and SMHM

The project has been designed to limit long-term impacts to the threatened and endangered species. With the implementation of Measure WQ-2 (Implement treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff), no long-term impacts are expected.

Permanent lighting proposed could have an impact on threatened and endangered species that are active during nighttime hours, such as the SMHM. As described in Section 1.5, twenty-two overhead “butterfly” lights are proposed in the new median barrier, approximately every 200 feet. The safety lights would incorporate directional shielding to minimize spillover beyond U.S. 101. Therefore, it is not expected that the lights would result in substantial adverse impacts to the SMHM. Thus, there would be no long-term adverse effects to these species.

CCC DPS Steelhead and Southern DPS Green Sturgeon

Short-Term Construction Impacts

As discussed in Section 2.3.1.1, the former tidal marsh habitat in the project area has been greatly altered and modified by commercial and industrial development. The current Cordilleras Creek Bridge divides the engineered flood control channel that conveys Cordilleras Creek to San Francisco Bay into three narrow culverts. The quality of habitat for CCC steelhead and green sturgeon is poor and they are not expected to be present during construction of the proposed project.

Despite the low potential for steelhead and sturgeon to be present in the BSA, avoidance and minimization measures during construction activities would limit adverse impacts to any fish species that may be present. These measures are described in Section 2.3.5.4 and include: WQ-1 (Water Quality/Erosion Control BMPs); BIO-1 (Environmentally Sensitive Area Fencing); BIO-7 (Construction Site BMPs); BIO-12 (Dry Season Work Window); BIO-13 (Worker Training Awareness); and BIO-15 (Light Restrictions). Additionally, temporary stream diversion used during the summer construction season would be designed in a manner that allows fish to cross to the opposite side of the dewatered area at least once daily, when tidal conditions inundate the stream diversion pipe and velocities are low. Therefore, the project is not likely to adversely affect these species.

Long-Term Operation Impacts

The project has been designed to limit long-term impacts to the fish species. With the implementation of Measures BIO-5 (Fish Passage) and WQ-2 (Implement treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff), no long-term impacts to fish species are expected.

Originally Caltrans believed that the BSA served as a migratory corridor for steelhead and included Measure BIO-5 (Fish Passage) in the proposed project. After further investigation and research and a lack of reports supporting that steelhead occur in the creek, it has been determined that existing fish passage barriers upstream of the BSA likely prevent anadromous salmonids from spawning and rearing in Cordilleras Creek. The proposed bridge would provide similar or better opportunities for fish passage than the existing condition because it would remove two box culvert walls, effectively increasing the width afforded the stream under the crossing by approximately 2 feet. Passage for some fish may be limited by shallow depths through the BSA at low tide when stream flow is at low or base levels, but daily tidal fluctuations create deeper water and conditions expected to be suitable for passage of all fish species and life stages on a daily basis. Given that the proposed project would slightly increase the cross-sectional area available for the conveyance of water and sediment through this crossing, it is not expected to adversely affect flow depths, water velocities, and or passage. However, in order to protect all fisheries resources, Caltrans has included a new measure BIO-19 (Fish Passage Assessment). Therefore, there would be no long-term adverse effects to these species.

Critical and Essential Fish Habitat

Short-Term Construction Impacts

The proposed project would potentially have adverse short-term impacts to CCC steelhead and green sturgeon critical habitat and EFH. The BSA includes 726 square feet of critical habitat steelhead and sturgeon fish habitat. Construction activities, including dewatering and in-channel construction activities, would occur during the dry season (June 15 to October 15) when streamflow is limited and water present in the channel would primarily be during high tides. Temporary impacts to designated critical habitat and EFH may include minor, localized increases in turbidity during construction which would be minimized once the coffer dam and stream diversion have been installed and allow instream work to occur in isolation from Cordilleras Creek. Additionally, construction could result in the temporary loss of access to limited and low-value critical habitat and EFH due to stream diversion and dewatering and would cause temporary shading of EFH resulting from the temporary bridge extension. However, because the potential for most of the taxa that the critical habitat and EFH designations are intended to protect to be present in the BSA during construction is low, these effects would be of little consequence. Avoidance and minimization measures would be implemented to reduce impacts to critical and essential fish habitat including measures WQ-1 (Water Quality/Erosion Control BMPs); BIO-3 (Minimizing Tree Removal); and BIO-4 (Vegetation Removal).

Long-Term Operation Impacts

The project would result in permanent impacts to critical habitat and EFH that are both adverse and beneficial, but the benefits are expected to outweigh the adverse impacts. Permanent impacts

to critical habitat and EFH may include placement of 210 square feet of vegetated riprap on the banks of the Cordilleras Creek engineered channel and permanent shading of 159 square feet of critical habitat and EFH due to the 5-foot extension of the bridge deck over the stream, compared to existing conditions. However, the area of these permanent effects would be much less than the area improved by removing the approximately 1,800 square feet of concrete that underlies the channel under the existing bridge. Additionally, the new bridge would be a single span and would eliminate two concrete, box culvert walls from under the existing bridge, effectively increasing the width provided for the stream under the crossing by approximately 2 feet.

2.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures would be implemented during construction activities and are included in the terms and conditions of USFWS' biological opinion:

WQ-1. *Water Quality/Erosion Control BMPs.* Implement temporary erosion control and water quality measures as required by the Construction General Permit.

WQ-2. Implement treatment BMPs to address post-construction water quality impacts and remove pollutants from stormwater runoff. Treatment BMPs address post-construction water quality impacts and remove pollutants from storm water runoff before it is discharged to receiving waters.

BIO-1. *Environmentally Sensitive Area Fencing:* ESAs would be clearly delineated using temporary high-visibility fencing. Construction work areas would include the active construction site and all areas providing support for the project, including areas used for vehicle parking, equipment and material storage and staging, and access roads. The high-visibility fencing would remain in place throughout the duration of construction activities, would be inspected regularly, and fully maintained at all times.

BIO-5. *Fish Passage.* Design of the proposed replacement structures would incorporate hydraulic modeling to ensure that structures provide adequate fish passage. Natural lighting would be considered to prevent inadequate illumination conditions in structures from deterring use by fish.

BIO-7. *Construction Site BMPs:* Site restrictions would be implemented to avoid or minimize impacts on special-status species and their habitats (described in Section 2.3.4.4)

BIO-9. *Biological Monitor and Protocol for Observation:* The names and qualifications of proposed Biological Monitor(s) would be submitted to the USFWS and CDFW for approval prior to the start of construction. The agency-approved biological monitor(s), in coordination with the Resident Engineer, would have the authority to stop work that may result in the unauthorized take of special-status species. Work would 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.

BIO-10. *Preconstruction/Daily Surveys:* Preconstruction surveys for special-status wildlife species listed in this NES, would 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.

BIO-12. *Dry Season Work Window:* Construction actions would be scheduled to minimize impacts to fish species and their habitat. To reduce impacts to fish species and habitat, construction activities in the Cordilleras Creek channel would be conducted during the dry season, between June 15 and October 15.

BIO-13. *Worker Environmental Awareness Training:* Construction personnel would attend a mandatory environmental education program delivered by the agency-approved biological monitor or Caltrans biologist prior to taking part in site construction, including vegetation clearing. The program would focus on the conservation measures that are relevant to an employee's personal responsibility and would include an explanation on how to avoid take of the CCC DPS steelhead, Ridgway's rail, salt marsh harvest mouse, and western snowy plover.

BIO-14. *Proper Use of Erosion Control Devices:* To avoid entanglement or injury of wildlife, including the salt marsh harvest mouse, erosion control materials that use plastic or synthetic monofilament netting would not be used.

BIO-15. *Light Restrictions.* Construction personnel would turn portable tower lights on no more than 30 minutes before the beginning of civil twilight, and off no more than 30 minutes after the end of civil sunrise. Portable tower lights would have directional shields attached to them, and personnel would only direct lights downward and toward active construction and staging areas. Lighting per portable tower light would not exceed 2,000 lumens.

BIO-16. All T&E/FP species would be allowed to leave under their own volition unless otherwise approved by CDFW and/or USFWS.

BIO-17. Vegetation where construction activities is closer than 50 feet of the edge of pickleweed vegetation would be removed at the location of the creek diversion system.

BIO-18. Prior to removal of vegetation a USFWS approved biologist would inspect suitable habitat for signs of harvest mice species or other sensitive species. Following inspection, personnel, under the supervision of the qualified biologist, would disturb vegetation to encourage movement of individuals into adjacent marsh areas (e.g., flush). Vegetation would be removed using hand tools (e.g., string trimmers) and trimmed down to no taller than 2 inches. Trimming would begin farthest away from marsh or pickleweed habitat and proceed toward the remaining habitat.

BIO-19. *Fish Passage Assessment.* To evaluate potential impacts to native fish species, Caltrans shall submit a fish passage assessment to CDFW and add it to the PAD database. If any structural barrier to passage exists, remediation of the problem shall be designed into the Project by the implementing agency. New projects shall be constructed so that they do not present a barrier to fish passage. When barriers to fish passage are being addressed, plans and projects shall be developed in consultation with CDFW.

2.3.6 Invasive Species

2.3.6.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” FHWA guidance issued August 10, 1999 directs the use of the State’s invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the NEPA analysis for a proposed project.

2.3.6.2 Affected Environment

The information provided in this section is summarized from the *Natural Environment Study* prepared for the proposed project by Caltrans on May 2020.

The BSA include nonnatives in ruderal habitats that are deemed high risk by the California Invasive Plant Council (2020). These include Italian thistle (*Carduus pycnocephalus*), red brome (*Bromus madritensis* ssp. *rubens*), Pampas grass (*Cortaderia selloana*), fennel (*Foeniculum vulgare*), and iceplant (*Carpobrotus edulis*).

2.3.6.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not introduce invasive species into the project area.

Build Alternatives 1 and 2

None of the identified species on the California list of noxious weeds is used by Caltrans for erosion control or landscaping. However, project construction activities have the potential to inadvertently spread these species that are already present in the environment. The contractor would be responsible for obtaining all permits, licenses, and environmental clearances for properly disposing materials. Areas subject to noxious weed removal or disturbance would be replanted with fast-growing native grasses or a native erosion control seed mixture. If seeding is not possible, the area would be covered to the extent practicable with heavy black plastic solarization material until completion of construction. All earthmoving equipment, as well as seeding equipment to be used during project construction would be thoroughly cleaned before arriving on the project site. Since the project would be compliance with the requirements under EO 13112, no adverse effects associated with invasive species would occur.

2.3.6.4 Avoidance, Minimization, and/or Mitigation Measures

The following short-term construction avoidance and minimization measure would be implemented:

BIO-20. Invasive Species Management: In compliance with the EO on Invasive Species, EO 13112, and guidance from the Federal Highway Administration, the landscaping and erosion control included in the project would not use species listed as invasive. In areas of particular sensitivity, extra precautions would be taken if invasive species are found in or next to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

2.4 Cumulative Impacts

2.4.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects in a project area. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR) Section 1508.7.

2.4.2 Cumulative Impact Analysis

This cumulative impact analysis determines whether the Build Alternatives in combination with other past, present, or reasonably foreseeable projects would result in a cumulative effect, and, if so, whether the Build Alternatives' contribution to the cumulative impact would be considerable. Past, present, and reasonably foreseeable future projects include land use developments, infrastructure, and other transportation improvements that are planned and funded and would be located near the proposed Build Alternative improvements. Table 2.4.2-1 lists the known projects in the vicinity of Cordilleras Creek Bridge.

The cumulative effects analysis followed the Caltrans Eight-Step Guidance for identifying and assessing cumulative impacts (Caltrans 2020b). For resource areas that would have no adverse effects from the proposed project, no incremental effects would be cumulatively considerable. The primary impacts associated with the Cordilleras Creek Bridge project are associated with temporary impacts to water quality and potential effects to biological resources associated with Cordilleras Creek. There would be no work within Cordilleras Creek from either the U.S. 101 pedestrian undercrossing or the MLP project. No cumulative effects were identified for any resource areas that overlapped with the proposed project.

Table 2.4.2-1: Projects Considered for Cumulative Impacts Analysis

| Project Proponent/Name | Project Description | Project Status | Jurisdiction |
|---|--|--------------------------------|-----------------------------------|
| U.S. 101 Pedestrian Undercrossing and Bair Island Road Storm Drain Pump Station Project | The project would include constructing a joint-use path dedicated to bicycles and pedestrians under the U.S. 101 freeway bridge next to Redwood Creek to connect the Bayfront and downtown areas of Redwood City and a new storm drain pump station adjacent to the proposed path. | Under construction | City of Redwood City |
| U.S. 101 Managed Lanes Project | The project would provide continuous managed lanes in the northbound and southbound directions of U.S. Highway 101 (U.S. 101) in Santa Clara and San Mateo counties from the terminus of the existing high-occupancy vehicle (HOV) lanes in southern San Mateo County to the Interstate 380 (I-380) interchange. | Construction beginning in 2021 | Santa Clara to San Mateo Counties |

This page intentionally left blank

Chapter 3 California Environmental Quality Act Evaluation

3.1 Determining Significance under CEQA

The proposed project is a joint project by Caltrans and the FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans. Caltrans is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or a lower level of documentation, would be required. NEPA requires that an EIS be prepared when the proposed federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any one environmental resource, then an Environmental Impact Report (EIR) must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

3.2 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects would 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 following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Standard project measures, described in Section 1.5.2.2, are applied to all or most Caltrans projects such as BMPs and measures included in the 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 Chapters 1 and 2 for a detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for

significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

AESTHETICS

| Except as provided in Public Resources Code Section 21099, would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|------------------------------------|--|------------------------------|-----------|
| a) Have a substantial adverse effect on a scenic vista? | No | No | No | Yes |
| 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 publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? | No | No | Yes | No |
| 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 |

- a) **No Impact.** The area surrounding the project site is relatively flat; there are no areas of higher elevations or scenic vistas within the vicinity of the project area. Therefore, there would be no adverse impact to scenic vistas from either project alternative.
- b) **No Impact.** The San Francisco Bay offers a scenic view to the project area. As described in Section 2.1.8.4, VIS-1 would be implemented, which would require the median barrier height to be minimized to preserve Bay views for motorists on the southbound side of the highway. Therefore, no impact would occur as a result of the proposed project.
- c) **Less than Significant.** The project area consists of U.S. 101, which is a 10-lane facility as it runs north to south through Redwood City and San Carlos. Adjacent areas include commercial uses to the west and open space and recreational uses to the east. Temporary construction impacts would be visible from the vantage point on the Bay Trail’s bicycle/pedestrian path. Construction materials and equipment in the staging areas would be placed where they are less visible and/or covered when possible. The most obvious change on the highway would be from the removal of large shrubs for the temporary widening and staging of construction equipment. The loss of these shrubs would eliminate visual screening of adjacent commercial buildings and reduce visual quality along this portion of the highway.

Permanent impacts to visual resources are not expected since changes to the bridge are minimal. The new median barrier height would be constructed to minimize the height to preserve Bay views for motorists traveling southbound. Replacement planting would be provided in areas where plant removal is necessary. The proposed project would not conflict with applicable zoning and other regulations governing scenic quality and would have less than significant impacts on scenic resources and visual character.

- d) No Impact.** The existing environment has many sources of light and glare from highway traffic and adjacent commercial and industrial business to the west. Sensitive viewers to light and glare may be from pedestrians and bicyclists on the San Francisco Bay Trail to the east of the project site. No structural work is proposed at night. However, if nighttime work is required, construction lighting shall be limited to the general work area through directional lighting, shielding, and other measures as needed. The operation of the project would not introduce new sources of light or glare. Therefore, there would be no impacts related to light or glare.

AGRICULTURE AND FORESTRY RESOURCES

| <p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:</p> | <p>Significant and Unavoidable Impact</p> | <p>Less Than Significant with Mitigation Incorporated</p> | <p>Less Than Significant Impact</p> | <p>No Impact</p> |
|---|--|--|--|-------------------------|
| <p>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 nonagricultural use?</p> | <p>No</p> | <p>No</p> | <p>No</p> | <p>Yes</p> |
| <p>b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?</p> | <p>No</p> | <p>No</p> | <p>No</p> | <p>Yes</p> |
| <p>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))?</p> | <p>No</p> | <p>No</p> | <p>No</p> | <p>Yes</p> |
| <p>d) Result in the loss of forest land or conversion of forest land to nonforest use?</p> | <p>No</p> | <p>No</p> | <p>No</p> | <p>Yes</p> |
| <p>e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to nonforest use?</p> | <p>No</p> | <p>No</p> | <p>No</p> | <p>Yes</p> |

a-e) **No Impact.** There are no farmland or forest lands in or adjacent to the project area. Therefore, no changes are anticipated to farmland or forest land as a result of the proposed project.

AIR QUALITY

| Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 nonattainment under an applicable federal or state ambient air quality standard? | No | No | Yes | No |
| c) Expose sensitive receptors to substantial pollutant concentrations? | No | No | Yes | No |
| 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 site is located in the SFBAAB and within the jurisdiction of BAAQMD and the California Air Resources Board (CARB). The proposed project would not interfere with any of the control measures described in BAAQMD's 2017 Clean Air Plan. The project is not a capacity-increasing project, and therefore is not included in the current Regional Transportation Plan (RTP), *Plan Bay Area 2040*. Nevertheless, the project would not interfere with the implementation of goals set forth in the RTP. During operation of the project, air emissions would not be changed from existing levels. Therefore, the project would not conflict with or obstruct implementation of the applicable air quality plan.
- b) **Less Than Significant Impact.** During construction of the project, there would be temporary air emissions from the use of construction equipment and vehicles powered by gas and diesel. Table 2.2.5-1 in Section 2.2.5 shows the total estimated construction-related criteria pollutant for Alternative 1 and Alternative 2. San Mateo County is in nonattainment for 8-hour ozone (2008), 8-hour ozone (2015), and PM_{2.5} (2006) in 2020 (EPA 2020). However, project construction is of limited duration, and a substantial amount of pollutants would not be generated that would result in a cumulatively considerable net increase of criteria pollutants. The project would be in compliance with federal and state ozone standards. It would not increase criteria pollutants or mobile source air toxics (MSAT) over existing conditions or exceed the BAAQMD's recommended thresholds for construction emissions. The project would not result in a cumulatively considerable net increase of ozone and PM_{2.5}. Therefore, the project would not cause or contribute to any state or federal air quality violations for criteria air pollutants. Furthermore, the project would not contribute substantially to existing or projected air quality violations.
- c) **Less Than Significant Impact.** Sensitive receptors are children, elderly, asthmatics and others who are at a heightened risk of negative health outcomes due to exposure to air pollution. The project is not located near schools, hospitals, nursing homes or residential

communities where sensitive receptors typically occur. The Build Alternatives would not exceed increase criteria pollutants or MSATs over existing conditions, or exceed the BAAQMD's recommended thresholds for construction emissions. The proposed project would also generate a less than significant amount of pollutants during construction. Therefore, the Build Alternatives would not expose sensitive receptors that could occur near the project area to substantial pollutant concentrations.

- d) **No Impact.** The project would not introduce odors that are not already associated with existing traffic.

BIOLOGICAL RESOURCES

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 | No | Yes | No |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | No | No | Yes | No |
| c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | No | Yes | No | No |
| 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 | Yes | No |
| 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 |

- a) **Less Than Significant Impact.** The project is in the vicinity of an environmentally sensitive area (ESA) due to the potential presence of special-status species, including threatened and endangered species. As described in Sections 2.3.4 and 2.3.5, the Build Alternatives have the potential to result in direct and indirect impacts on special-status animal species, including CESA- and FESA-listed species and their habitats. Federal listed species with a potential to occur are further evaluated in Appendix C.

Those threatened and endangered species and special-status species determined to have a potential to occur in the BSA include:

- Alameda song sparrow
- California black rail
- CCC DPS steelhead
- Green sturgeon
- Northern harrier
- Ridgway's rail
- Salt marsh harvest mouse
- Western snowy plover
- White-tailed kite

Construction activities such as diverting the creek, removing vegetation, installing and removing the seasonal temporary coffer dam system and bridge could impact these species. Construction activities and use of equipment also have the potential to affect these species due to construction-related noise, vibration, and increased human presence. If these species are present during construction, wildlife species could be injured or killed by construction equipment and ground-disturbing activities. Construction-related disturbance—such as noise and vibration—could also indirectly and adversely affect species. Daytime CIDH piling activities for bridge construction have the potential to cause disturbance and have the potential to exceed existing levels of anthropogenic disturbance, but would be short lived. Due to the ambient levels of human disturbance coming from U.S. 101 and the San Francisco Bay Trail, it is unlikely that these species would be present within the BSA during construction.

CCC steelhead and green sturgeon have a low likelihood of being present in the BSA and impacts to these fish species are not expected. A temporary creek diversion system would be used to allow for in-creek work. As a result of the creek diversion, fish present in Cordilleras Creek may become temporarily isolated from the upstream areas of Cordilleras Creek and the estuary. However, the project has been developed to avoid long-term, adverse impacts to fish species. Construction activities, including dewatering and in-channel construction activities, would occur during the dry season (June 15 to October 15) when streamflow is limited and water present in the channel would primarily be during high tides. Therefore, the potential for the project to adversely affect CCC steelhead and green sturgeon is very low.

Avoidance and minimization measures described in Sections 2.3.4.4 and 2.3.5.4 would be implemented during construction activities. Other measures described in these sections would be implemented to reduce long term effects of the project operation. Therefore, impacts to special-status species would be less than significant.

- b) **Less Than Significant Impact.** As described in Section 2.3.1, Temporary impacts of 0.130 acre to riparian habitats are anticipated due to dewatering and bridge replacement activities. Permanent impacts to 0.011 acre of riparian habitat are anticipated due to minor reconfiguration of Cordilleras Creek and installation of slope stabilization. However, the same amount of riparian habitat would remain after construction. The project would require a USACE Section 404 permit and a Section 401 Water Quality Certification from the

RWQCB. Permits would be obtained prior to construction. In addition to complying with permit requirements, Caltrans would implement all applicable avoidance and minimization measures to minimize potential project impacts, such as WQ-1. *Water Quality/Erosion Control BMPs*, BIO-1. *Environmentally Sensitive Area Fencing* and BIO-2. *Construction Site BMPs*, described in Section 2.3.1.3. Therefore, impacts would be less than significant.

- c) **Less Than Significant Impact with Mitigation Incorporated.** As described in Sections 2.3.1 and 2.3.2, the Build Alternatives would result in temporary and permanent impacts to saline emergent wetland habitat. A total of 0.104 acre of wetland habitat is anticipated to be temporarily impacted due to installation of the temporary creek dewatering system on the bay side of the project. A total of 0.112 acre of wetland habitat is anticipated to be permanently impacted due to widening of the southbound highway shoulder to accommodate stage construction. The shoulder size would be reduced at the end of construction. However, since the widened shoulder would exist for more than one year, it is considered a permanent impact to the wetland. Even with the shoulder being reduced after construction, the wetland would need to be actively restored by Caltrans. Plans to restore the wetland are still being determined.

Several wildlife species are known to use saline emergent wetland habitats. However, special-status species are not anticipated to occur in the project footprint and wetland habitat present. The habitat in the project footprint is considered disturbed and marginal. Permanent impacts may result in the loss of value and function of this wetland habitat. Under federal and state guidance and rules, adverse, unavoidable impacts to wetlands and other aquatic resources require compensatory mitigation to offset the loss of the functions and values of the feature. Impacts would be less than significant with the implementation of WET-1: Compensatory Mitigation Measure for Wetlands would be implemented. Due to permanent impacts, the project would require compensatory mitigation for wetlands, at no less than a 1:1 ratio. Exact mitigation ratios would be developed during the project's design phase. Wetland mitigation is needed to offset the temporal loss, or reduction of functions, during the time it takes a mitigation project to achieve the targeted level of performance for all of its functions.

Additionally, Caltrans would implement all applicable avoidance and minimization measures to minimize potential project impacts to wetlands to a less than significant level. These measures include BIO-1 Environmentally Sensitive Area Fencing; WQ-1 *Water Quality/Erosion Control BMPs*; and BIO-2 *Construction Site BMPs*.

- d) **Less Than Significant Impact.** The project would not interfere with the movement of wildlife species. Minimization and avoidance would be implemented to minimize and/or prevent inadvertent entrapment and other impacts to wild during construction, as described in Sections 2.3.4.4 and 2.3.5.4. As described in Section 2.3.5, migratory fish, including steelhead and sturgeon, are unlikely to use Cordilleras Creek for spawning and rearing, due to low habitat quality and existing fish passage barriers upstream of the BSA. However, the BSA does contain critical habitat for these fish species associated with the estuarine habitat in San Francisco Bay. While it is unlikely that these species would be present in the BSA, there is a low potential for them to travel up the stream and use the 726 square feet of critical habitat and to occasionally move in and out of the tidally-influenced portion of the flood control channel that conveys Cordilleras Creek through the project area. The project would

require work within Cordilleras Creek during the summer months. Creek diversion and dewatering activities could temporarily impede movement of steelhead and sturgeon into the critical habitat fish in this channel. The temporary stream diversion used during the summer construction season would be designed in a manner that allows fish to cross to the opposite side of the dewatered area at least once daily, when tidal conditions inundate the stream diversion pipe and velocities are low. Project operation is not expected to affect movement of migratory fish. Given that the proposed project would slightly increase the cross-sectional area available for the conveyance of water and sediment through this crossing it is not expected to adversely affect flow depths, water velocities, and or fish passage. However, in order to protect all fisheries resources, Caltrans has included a new measure BIO-19 (Fish Passage Assessment), as described in Section 2.3.5.4. Therefore, impacts during project construction and operation related to migratory fish movement would be less than significant.

- e) **No Impact.** No removal of trees is anticipated.
- f) **No Impact.** No habitat conservation plan or natural community conservation plan are currently in effect for the project area.

CULTURAL RESOURCES

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|---|---|-------------------------------------|------------------|
| a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 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 formal cemeteries? | No | No | No | Yes |

- a, b) No Impact.** No historic properties or historical resources are present in the project’s APE. In addition, the project has little or no potential to impact intact prehistoric resources and/or archaeological deposits or features, potentially eligible for listing on the NRHP or CRHR.
- c) No Impact.** The project area is entirely underlain by artificial fill and Holocene-age deposits. Artificial fill has no potential to contain significant paleontological resources and Holocene sedimentary deposits are generally considered too young geologically speaking to contain significant fossils. However, the project includes avoidance and minimization measures to ensure that if human remains are found, they would immediately be evaluated while construction is halted. No mitigation is required.

ENERGY

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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.** Energy in the form of gas and diesel would be consumed during construction and ongoing maintenance activities by construction vehicles and equipment operating on site, trucks delivering equipment and supplies, and construction workers driving to and from the project site.

Energy consumption during project construction would be temporary and minimized to the maximum extent practicable. As such, the project would not result in an inefficient, wasteful, and unnecessary consumption of energy. Following construction activities, there would be no change in the amount of energy consumed.

- b) **No Impact.** The project involves replacing Cordilleras Creek Bridge. It would not conflict with a state or local plan for renewable energy or energy efficiency.

GEOLOGY AND SOILS

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 wastewater disposal systems where sewers are not available for the disposal of wastewater? | 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, ii, iii, iv) No Impact.** The project is located in a seismically active area but is not within the Alquist-Priolo Earthquake Fault Zone. The proposed project would not exacerbate the potential for seismic shaking; the intensity of the earthquake ground motion at the site would depend on the characteristics of the generating fault, distance to the earthquake epicenter, magnitude, and duration of the earthquake, and specific site geologic conditions. Caltrans' design and construction guidelines incorporate engineering standards that address seismic risks, including ground-failure related to liquefaction, landslides and lateral spreading.

Project elements would be designed and constructed to meet seismic design requirements for ground shaking and ground motions, as determined for the project vicinity and site conditions. Caltrans also requires additional geotechnical subsurface and design investigations to be performed during the final project design and engineering phase. These standards and requirements would avoid the potential for adverse impacts related to seismic activity.

- b) Less Than Significant Impact.** The project site lies entirely on artificial fill that consists of loose to very well consolidated gravel, sand, silt, clay, rock fragments, organic matter and anthropogenic debris in various combinations. The soil-erodibility factor (K) across the project limits is 0.32. This means the soils are susceptible to particle detachment and produce runoff at moderate rates. Thus, there is a potential for erosion during construction activities that involving clearing of vegetation, drilling, grading, and excavation. BMPs would be implemented to reduce erosional impacts during construction activities such as stabilization by paving, rock slope protection, and erosion control. These measures would reduce impacts to a less-than-significant level.
- d) No Impact.** The project would be completely located within Caltrans' ROW. Soils in the surrounding area predominately consist of Urban land-Orthents, reclaimed complex and Novato clays. Novato clay occurs in saltwater marshes along the edges of San Francisco Bay, located east side of the bridge, and have high expansive, swell-shrink qualities. Caltrans' design and construction guidelines incorporate engineering standards that address expansive soils.
- e) No Impact.** The proposed project would not involve incorporating septic tanks or other wastewater disposal systems. Therefore, there would be no impact and no and mitigation would be required.
- f) No Impact.** While ground-disturbing activities would occur as a result of this project, the project is not expected to result in the disturbance or overlap with paleontological resources. This assessment was made based on the soil types present; these soils such as Bay mud and artificial fill, which are not thought to harbor fossils or other resources. Thus, the proposed project would not impact paleontological resources. No mitigation is required.

GREENHOUSE GAS EMISSIONS

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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) Less than Significant Impact. Similar to the air quality analysis, Caltrans’ guidance on calculating greenhouse gas (GHG) emissions for projects in the 2018 State Highway Operations and Protection (SHOPP) was consulted for the purpose of this analysis. A quantitative analysis was made using the Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model, Version 9 to estimate construction emissions of the project.

Construction GHG emissions were previously calculated for Alternative 1 and 2 for the Draft IS/EA (please refer to Draft IS/EA for those calculations). New calculations were made only for Alternative 2 (Preferred Alternative), and estimates changed to 586.10 MT of CO₂e.

Operation of the project alternatives would not change GHG emissions, as the project would not increase the capacity of the highway. Therefore, the project would not contribute to any long-term change in GHG emissions. With implementation of construction GHG-reduction measures, the impact would be less than significant.

b) Less than Significant Impact. Caltrans would comply with all local, state, and federal regulations, ordinances and statues that apply to GHG emissions, such as climate action plans. Operation of the proposed project would not increase highway capacity and therefore would not cause a substantial change in operational GHG emissions. Thus, the project would not conflict with plans, policies or regulations aimed at reducing GHG emissions.

HAZARDS AND HAZARDOUS MATERIALS

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 | Yes | No |
| 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 | Yes | No |
| 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 | No | Yes |
| g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? | No | No | No | Yes |

- a) **Less Than Significant Impact.** The proposed project would involve the transport, use, and disposal of hazardous materials used for construction of the project (e.g., fuels, paints, asphalt, and lubricants). Adherence to federal and state regulations during project construction and maintenance reduces the risk of exposure to hazardous materials and accidental hazardous materials releases. Compliance with existing regulations is mandatory. Therefore, construction of the project is not expected to create a hazard to construction workers, the public, or the environment through the routine transport, use, disposal, or accidental release of hazardous materials.

- b) **Less Than Significant Impact.** Construction of the proposed project could result in the potential disturbance of hazardous materials in soil, groundwater, and building materials in the project area. Shallow soils along the southbound shoulder that would be excavated during construction likely contain aerially deposited lead at concentrations above DTSC-regulated levels. Furthermore, groundwater would likely be encountered during structure foundation work and require dewatering activities. Minimization measure HAZ-1, described in Section 2.2.3.4 would be implemented during the design stage, before construction activities occur. If identified, ACM and contaminated soil and groundwater would be handled according to the appropriate project specifications. Compliance with existing regulations is expected to limit the risk of a reasonably foreseeable upset or accident and minimize the impact to the public and environment should an accident occur.
- c) **No Impact.** There are no schools within 0.25 mile of the project area.
- d) **Less Than Significant Impact.** The project is not on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962. However, DTSC EnviroStor identified one hazardous materials release site within 0.25 mile of the project, and GeoTracker records identified nine sites within 0.25 mile of the project area that have impacted or have the potential to impact groundwater and surface water quality. Four of these sites include Leaking Underground Storage Tank (LUST) Sites and five are Cleanup Program Sites. All of the LUST sites have been listed as “Case Closed” since the 1990s and early 2000s, which indicates that a closure letter or other formal closure decision document has been issued for the site. The five sites part of the SWRCB Cleanup Program and are still open cases. Given these sites are in close proximity to the project area, there is potential that residual contamination at these sites could affect soils or groundwater in the project area. Thus, soil and groundwater testing and characterization would be required.
- e) **No Impact.** The Cordilleras Creek bridge is 1 mile from the San Carlos Airport. Construction and operation of the project would be compatible with airport use and would not result in a safety hazard or excessive noise for people working near the project area.
- f) **No Impact.** The Build Alternative would not impair implementation of an emergency response or emergency evacuation plan. The purpose of the project is to replace Cordilleras Creek Bridge. During construction, implementation of the TMP would minimize construction-related delays and include coordination with CHP and local law enforcement agencies.
- g) **No Impact.** Both project alternatives would not change the alignment of U.S. 101 or any adjacent land uses. Section 3.3.3 describes fire hazard conditions in the project area and the reasons why the project alternatives are not anticipated to exacerbate wildfire risks. Project construction and operation would not expose people or structures to significant risks involving wildland fires.

HYDROLOGY AND WATER QUALITY

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 that the project may impede sustainable groundwater management of the basin? | No | No | Yes | No |
| 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 | Yes | No |
| (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; | No | No | Yes | No |
| (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 | Yes | No |
| (iv) impede or redirect flood flows? | No | No | Yes | No |
| d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? | No | No | Yes | No |
| e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? | No | No | Yes | No |

- a) **Less Than Significant Impact.** Temporary impacts to water quality would result from 1 acre of soil disturbance related to construction activities. Alternative 1 would result in approximately 1 acre of disturbed soil and Alternative 2 would result in 1.27 acres of disturbed soil. Although the temporary impacts from soil disturbance and the operation of construction equipment have the potential to negatively impact water quality, construction site BMPs for erosion and sediment control and material management, as specified in the required SWPPP, would be used during construction to avoid or reduce impacts. These

measures are consistent with the practices required under the Construction General Permit. In addition, the proposed project would require a 401 Water Quality Certification from the RWQCB. With implementation of the short-term and long-term BMPs listed in Section 2.2.2.4, effects to surface and groundwater quality would be less than significant.

- b) **Less Than Significant Impact.** The project does not involve pumping and/or using groundwater. However, the added impervious surface from the project has the potential to reduce the availability of unpaved areas where runoff can infiltrate into native soils and recharge aquifers. Alternative 1 would result in the addition of 0.002 acre of impervious surface by removing 0.16 acre of impervious surface and adding 0.162 acre of new impervious surface. Alternative 2 would result in the addition of 0.026 acre of impervious surface by removing 0.426 acre impervious surface and adding 0.452 acre of new impervious surface. Because the additional impervious area is minimal in comparison with the total area of the local aquifers and groundwater basins, the impact would be less than significant.
- c) **Less Than Significant Impact.** The project would include drainage features that prevent substantial new sediments or pollutants from impacting water quality. During construction, work in Cordilleras Creek would be required. Temporary dewatering and minor reconfiguration of Cordilleras Creek would occur. However, the existing drainage patterns are not anticipated to be adversely or substantially affected, as the goal is to maintain existing drainage patterns. Furthermore, impervious surface added to the project area would not result in substantially increased runoff as the amount added is small when compared to the surrounding urban landscape as a whole.

As discussed in Section 2.2.2.4, WQ-1 would implement temporary erosion control and water quality measures as required by the Construction General Permit. A temporary water pollution control plan has been produced for the project, which includes temporary construction site BMPs that would be implemented for sediment control and material management. Furthermore, approximately 1 acre of disturbed soil areas would be stabilized by paving, rock slope protection, or erosion control. WQ-1 would prevent or reduce the construction impacts to a minor level.

WQ-2 would be implemented to address post-construction water quality impacts and remove pollutants from storm water runoff before it is discharged to receiving waters. WQ-2 would reduce the potential for negative long-term impacts from polluted storm water runoff to receiving waterbodies. Furthermore, the measure would retain, detain, or infiltrate runoff and match post-project flows and durations to pre-project patterns. In addition, the project would be designed to meet trash capture requirements where feasible.

- d) **Less Than Significant Impact.** While the project area is not within a Special Flood Hazard Area, an area that may be inundated by the 100-year flood where base flood elevations are determined, areas surrounding U.S. 101 are within a Special Flood Hazard Area Zone AE (see Figure 2.2.1-1). The project would minimize impacts to floodway (Cordilleras Creek). Furthermore, it was determined that the proposed work would have no changes in the floodplain. The Build Alternatives would not raise any water surface elevations or impede flows that pass 2020 flood events. In addition, the alternatives would not affect the potential for a pollutant release from a flood, tsunami, or seiche event in the project area. A permanent bioswale is proposed within the project limits to treat runoff from the new and reworked

impervious area. To some extent, this measure would help with slowing runoff before it leaves the ROW, and would address short-term increases in flood risks.

- e) **Less Than Significant Impact.** The project is required to adhere to the CWA, the Porter-Cologne Water Quality Control Act, Caltrans' MS4 Permit, and the other laws and regulations described in Section 2.2.2.1. As a result, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

LAND USE AND PLANNING

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 | No | Yes |

- a) **No Impact.** The proposed project would maintain the same alignment as the existing freeway and would not physically divide an established community.
- b) **No Impact.** The project would be generally consistent with all applicable land use plans, policies, and regulations. The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted to avoid or mitigate an environmental effect.

MINERAL RESOURCES

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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.** U.S. 101 in the project area is in a Mineral Resource Zone (MRZs) that has been designated as MRZ-1, areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence (Department of Conservation 1982). The project would not require acquisition of lands classified as mineral resource zones; therefore, no impact would occur.

NOISE

| Would the project result in: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 | Yes | No |
| b) Generation of excessive groundborne vibration or groundborne noise levels? | No | No | Yes | No |
| 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) **Less Than Significant Impact.** During construction of the project, activities such as pile driving, excavation, and grading would result in a temporary increase in ambient noise. Construction noise would primarily result from the operation of heavy construction equipment and arrival and departure of heavy-duty trucks. The highest maximum instantaneous noise levels would result from special impact tools such as pile drivers. CIDH pile installation would generate much lower noise levels than pile driving and CISS and is the recommended choice. Caltrans has not made a decision on whether pile drivers or CIDH would be utilized. As described in Section 2.3.5.4, Minimization Measures NOI-1 through NOI-5 would be implemented during drilling to reduce impacts to a minor effect.

Construction noise would be short-term and intermittent. The Caltrans 2018 Standard Specifications 14-8.02 requires Maximum Sound Level (Lmax) not to exceed 86 dBA at 50 feet from the job site from 9:00 p.m. to 6:00 a.m.

- b) **Less Than Significant Impact.** As described in Section 2.2.5, during project construction, the highest source of vibration anticipated is from concrete pile driving and CISS. Caltrans is also considering utilizing CIDH piles with steel pipes or steel casings. CIDH pile installation is recommended because it generates much lower levels of noise and vibration. Under Alternative 1 and 2, a total of 266 piles would be required. No drilling in water would occur, as temporary coffer dams would be installed to dewater portions of the creek where construction work takes place. Furthermore, Mitigation Measures NOI-1 through NOI-5 would be implemented during drilling to reduce impacts to a minor effect. The project would not generate excessive vibration after construction or result in ground-borne noise levels.
- c) **No Impact.** The project is about 1 mile from the San Carlos Airport but would not expose people using the freeway, or residing or working in the project area to excessive airport-related noise levels.

POPULATION AND HOUSING

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 proposed project involves replacing the Cordilleras Creek Bridge on U.S. 101. It would not involve the building of new homes or businesses that could induce population growth. The project would not expand or extend transportation facilities that could indirectly induce population growth.
- b) **No Impact.** The project would not require residential or business relocations, and therefore, would not displace substantial numbers of people or housing, and would not necessitate the construction of replacement housing elsewhere.

PUBLIC SERVICES

| 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: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|---|---|-------------------------------------|------------------|
| Fire protection? | No | No | Yes | No |
| Police protection? | No | No | Yes | No |
| Schools? | No | No | No | Yes |
| Parks? | No | No | No | Yes |
| Other public facilities? | No | No | No | Yes |

- a) **Less Than Significant Impact/No Impact.** Project construction may result in increased traffic delays on U.S. 101 near the project area that could affect response times of emergency response vehicles. However, a TMP would be developed for the project to minimize construction-related delays. The TMP would include using portable changeable message signs and ground mounted signs, CHP's Construction Zone Enhanced Enforcement Program, and Freeway Service Patrol where possible. It is anticipated that CHP would be required every day during construction for Construction Zone Enhanced Enforcement, due to the high traffic volumes and difficulty of staging. Furthermore, due to stage construction and the widening of the southbound side of U.S. 101, all lanes would remain open on each side of the highway during construction activities. Law enforcement, fire, and/or emergency services would be maintained during project construction and operation of the lanes. With the incorporation of the TMP, the project is not expected to result in significantly decreased response times. Therefore, the project would have less than significant impacts on law enforcement and fire protection services. No parks, schools or other public facilities are in the project area. Therefore, there would be no impacts to these facilities.

RECREATION

| | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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.** The project alternatives would not induce growth in the surrounding area that would result in increased use of parks and recreational facilities such that physical deterioration of the facility would occur or be accelerated.
- b) **No Impact.** The project would not include recreational facilities or require the construction or expansion of recreational facilities.

TRANSPORTATION

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 | No | Yes |
| b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? | No | No | No | Yes |
| 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 | Yes | No |
| d) Result in inadequate emergency access? | No | No | Yes | No |

- a) **No Impact.** The Build Alternatives would be consistent with applicable programs, plans, ordinances, and policies regarding the circulation system, which are described in Section 2.1.2.2. During construction a TMP would be implemented to minimize impacts to the traveling public. There is a shared bicycle/pedestrian path part of the San Francisco Bay Trail, running parallel to the east side of northbound U.S. 101. The path is part of the San Francisco Bay Trail. The trail would remain open throughout construction.
- b) **No Impact.** Senate Bill (SB) 743 (2013) requires the Governor’s Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating transportation impacts under CEQA. Under SB 743, CEQA Guidelines Section 15064.3(b) was revised to identify Vehicle Miles Traveled (VMT) as the most appropriate measure of assessing transportation impacts. The project would have no impacts on VMT, and therefore would not conflict or be inconsistent with Section 15064.3. During construction activities all traffic lanes would be maintained for vehicle use. There would be a slight increase in VMT because of construction trucks coming to and from the project site. However, this VMT increase would only occur during construction.
- c) **Less Than Significant Impact.** The Build Alternatives would replace Cordilleras Creek Bridge which would make it safer for vehicles to travel over. Stage construction would occur in order to keep six general purpose traffic lanes open during the weekdays. Lane closures are planned for the weekends as discussed in Section 2.1.8. As construction of the bridge moves to the east, traffic would need to shift around construction work. This may increase hazards slightly as cars would be driving in more narrow lanes and have to go around construction. However, implementation of a TMP and presence of CHP would reduce the impacts of these risks.

- d) Less-Than-Significant Impact. Project construction may result in increased traffic delays on U.S. 101 near the project area that could affect response times of emergency response vehicles. However, a TMP would be developed for the project to minimize construction-related delays. The TMP would include using portable changeable message signs and ground-mounted signs, CHP's Construction Zone Enhanced Enforcement Program, and Freeway Service Patrol where possible. It is anticipated that CHP would be required every day during construction for Construction Zone Enhanced Enforcement, due to high traffic volumes on U.S. 101 and difficulty of staging. Furthermore, due to stage construction and the widening of the southbound side of U.S. 101, all lanes would remain open on each side of the highway during construction activities during the weekdays. Lane closures are planned for the weekends as discussed in Section 2.1.8. The closure of one lane in each direction would result in temporary traffic delays during the weekend between 0 and 29.5 minutes. However, a TMP would be developed for the project to minimize construction-related delays. Therefore, impacts would be less than significant.
- e) Law enforcement, fire, and/or emergency services would be maintained during project construction and operation of the lanes. With the incorporation of the TMP, the project is not expected to result in significantly decreased response times. The project is not expected to result in inadequate emergency access.

TRIBAL CULTURAL RESOURCES

| <p>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:</p> | <p>Significant and Unavoidable Impact</p> | <p>Less Than Significant with Mitigation Incorporated</p> | <p>Less Than Significant Impact</p> | <p>No Impact</p> |
|---|--|--|--|-------------------------|
| <p>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</p> | <p>No</p> | <p>No</p> | <p>No</p> | <p>Yes</p> |
| <p>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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.</p> | <p>No</p> | <p>No</p> | <p>No</p> | <p>Yes</p> |

a, b) **No Impact.** As a result of consultation with the Native American Heritage Commission and local Native American tribes, no tribal cultural resources were identified within or near the APE. Therefore, there would be no impact.

UTILITIES AND SERVICE SYSTEMS

| Would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 | Yes | No |
| 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) **Less Than Significant Impact.** Waterlines including a Redwood City reclaimed waterline, overhead PG&E power lines and telecommunication (fiber optic) are located within the project area. The Redwood City reclaimed waterline and fiber optic lines would need to be relocated. Overhead power lines and other utilities would not be affected.
- b) **No Impact.** The proposed project would not require new or expanded water entitlements.
- c) **No Impact.** The proposed project would not affect public utilities for wastewater treatment.
- d) **No Impact.** The proposed project would not generate or require solid waste disposal in excess of state or local standards, or in excess of the capacity of local infrastructure. Construction waste would be disposed at a certified facility based on the waste type and would not affect landfill capacity.
- e) **No Impact.** The proposed project would comply with statutes and regulations related to solid waste management and reduction.

WILDFIRE

| If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | Less Than Significant Impact | No Impact |
|--|------------------------------------|--|------------------------------|-----------|
| a) Substantially impair an adopted emergency response plan or emergency evacuation plan? | No | No | No | Yes |
| 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 | Yes | No |

a) **No Impact.** The project area 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. Transportation is a component of emergency functions in the EOP and its purpose is to provide organization, mobilization and coordination of transportation services and infrastructure during emergency events. U.S. 101 is identified in the 2015 Interregional Transportation Strategic Plan as one of the Strategic Interregional Corridors that support emergency response and disaster recovery activities and access to vital medical services.

The proposed project would not impair implementation of an emergency response or emergency evacuation plan. No potential evacuation routes would be impeded or disrupted during project construction and operation. During project construction, all traffic lanes on U.S. 101 would remain in operation. A TMP would be implemented to minimize construction-related delays. Therefore, a substantial reduction in emergency response times is not expected. Following construction of the project, there would be no changes in traffic patterns.

b) **No Impact.** The project area is not in a moderate or high fire severity zone (Cal Fire 2008). Furthermore, the project area does not contain steep slopes or high vegetation. Most work would occur in Caltrans’ ROW. However, two areas outside of Caltrans ROW would be used for construction staging. During construction, measures for minimizing fire risks would be incorporated.

- c) **No Impact.** The Build Alternatives would construct a new bridge over Cordilleras Creek and extend the shoulder on the southbound side of the highway. During construction, overhead power lines and other utilities would not be affected. The project does not involve constructing any electrical equipment or other utilities that could exacerbate fire risks. Therefore, the project is not anticipated to increase the risk of wildland fires. There would be no impact.

- d) **Less Than Significant Impact.** Implementation of standard Caltrans practices for erosion control and measures WQ-1 and WQ-2 (Section 2.2.2.4) 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 instability, or drainage changes. These measures are incorporated into the project design as a matter of Caltrans' standard practice.

MANDATORY FINDINGS OF SIGNIFICANCE

| MANDATORY FINDINGS OF SIGNIFICANCE | Significant and Unavoidable Impact | Less Than Significant with Mitigation Incorporated | 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 | Yes | No |
| 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 | Yes | No |
| c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly? | No | No | Yes | No |

a-c) **Less Than Significant Impact.** As noted in the previous CEQA checklist items, the proposed project would have a less than significant impact, or an impact that is mitigated to a level of non-significance, including threatened and endangered species and their habitats and cultural resources. Most project-related impacts would be temporary in nature and the project is an in-kind replacement of an existing bridge. The project would not contribute to cumulatively considerable impacts, such as through changes in land use. The project would not act in concert with other planned projects to contribute to cumulative impacts on natural resources.

The proposed project would result in temporary construction impacts such as noise, dust, and visual changes. However, the proposed project would have a less-than-significant impact to all resource areas evaluated in this CEQA checklist, and would, therefore, not have an environmental effect that would cause substantial adverse effects on human beings, either directly or indirectly.

3.3 Wildfire

3.3.1 Regulatory Setting

Senate Bill 1241 required the Office of Planning and Research, the Natural Resources Agency, and the California Department of Forestry and Fire Protection to develop amendments to the “CEQA Checklist” for the inclusion of questions related to fire hazard impacts for projects located on lands classified as very high fire hazard severity zones. The 2018 updates to the CEQA Guidelines expanded this to include projects “near” these very high fire hazard severity zones.

3.3.2 Affected Environment

The project area 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. Transportation is a component of emergency functions in the EOP and its purpose is to provide organization, mobilization and coordination of transportation services and infrastructure during emergency events. The project area is not in a moderate or high fire severity zone (Cal Fire 2008). Furthermore, the project area does not contain steep slopes or high vegetation. The majority of the work would occur in Caltrans ROW. However, two areas outside of Caltrans ROW would be used for construction staging.

3.3.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not impair emergency response or evacuation or change fire hazard risk in the project area.

Build Alternatives 1 and 2

The proposed project would not impair implementation of an emergency response or emergency evacuation plan. No potential evacuation routes would be impeded or disrupted during project construction and operation. During project construction, all traffic lanes on U.S. 101 would remain in operation. A TMP would be implemented to minimize construction-related delays. Therefore, a substantial reduction in emergency response times is not expected. Following construction of the project, there would be no changes in traffic patterns. The majority of the work would occur in Caltrans ROW. During construction, measures for minimizing fire risks would be incorporated.

3.3.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance, minimization, or mitigation is required.

3.4 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 greenhouse gas (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 carbon dioxide (CO₂), methane, nitrous oxide (N₂O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, and various hydrofluorocarbons (HFCs). CO₂ is the most abundant GHG; while it is a naturally occurring component of the Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO₂.

Two terms are typically used when discussing how to address the impacts of climate change: “greenhouse gas mitigation” and “adaptation.” Greenhouse gas 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 would include a discussion of both.

3.4.1 Regulatory Setting

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

3.4.1.1 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.

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.

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 (CAFE) 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 CAFE 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 U.S. EPA, in conjunction with the National Highway Traffic Safety Administration (NHTSA), 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.

3.4.1.2 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 CARB 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 CARB 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. CARB 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 CARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization for each region must then develop a "Sustainable Communities Strategy"

that integrates transportation, land-use, and housing policies to plan how it would 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 CARB, 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 (MMTCO₂e).⁶ 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 greenhouse gas 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 Greenhouse Gas 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 vehicle miles travelled, 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 CARB to prepare a report that assesses progress made by each metropolitan planning organization in meeting their established regional greenhouse gas emission reduction targets.

⁶ GHGs differ in how much heat each trap in the atmosphere (global warming potential, or GWP). CO₂ is the most important GHG, so amounts of other gases are expressed relative to CO₂, using a metric called "carbon dioxide equivalent" (CO₂e). The global warming potential of CO₂ is assigned a value of 1, and the GWP of other gases is assessed as multiples of CO₂.

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 CARB 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.

3.4.2 Environmental Setting

The proposed project is in the City of Redwood City, which is an urban area within San Mateo County. The project area is mainly commercial and industrial with open-space and recreation to the east. U.S. 101 is a vital link between Silicon Valley to the south and San Francisco to the north. It is identified as a Strategic Interregional Corridor that provides communities access to local and interregional markets, recreational facilities, vital medical and social services and supports emergency response and disaster recovery activities. As such, traffic congestion during peak hours is very common within San Mateo County. Current traffic volumes for the project limits along U.S. 101 is 240,000 AADT (Caltrans 2020).

Plan Bay Area 2040, the regional planning document of the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), guides transportation development in San Mateo County. To inform *Plan Bay Area 2050*, MTC and ABAG collaborated in 2018 on Horizon, a new initiative to explore issues and challenges the region may face by 2050. The Bay Area Air Quality Management District’s 2017 clean air plan addresses GHGs in the project region.

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and the ARB does so for the state, as required by H&SC Section 39607.4.

3.4.2.1 National GHG Inventory

The U.S. EPA has prepared *the Inventory of the US 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. The inventory provides a comprehensive accounting of all human-produced sources of GHGs in the United States, reporting emissions of CO₂, CH₄, N₂O, HFCs, perfluorocarbons, SF₆, and nitrogen trifluoride. It also accounts for emissions of CO₂ that are removed from the atmosphere by “sinks” such as forests, vegetation, and soils that uptake and store CO₂ (carbon sequestration). In 2018, GHG emissions from the transportation sector accounted for 28 percent of US GHG emissions.

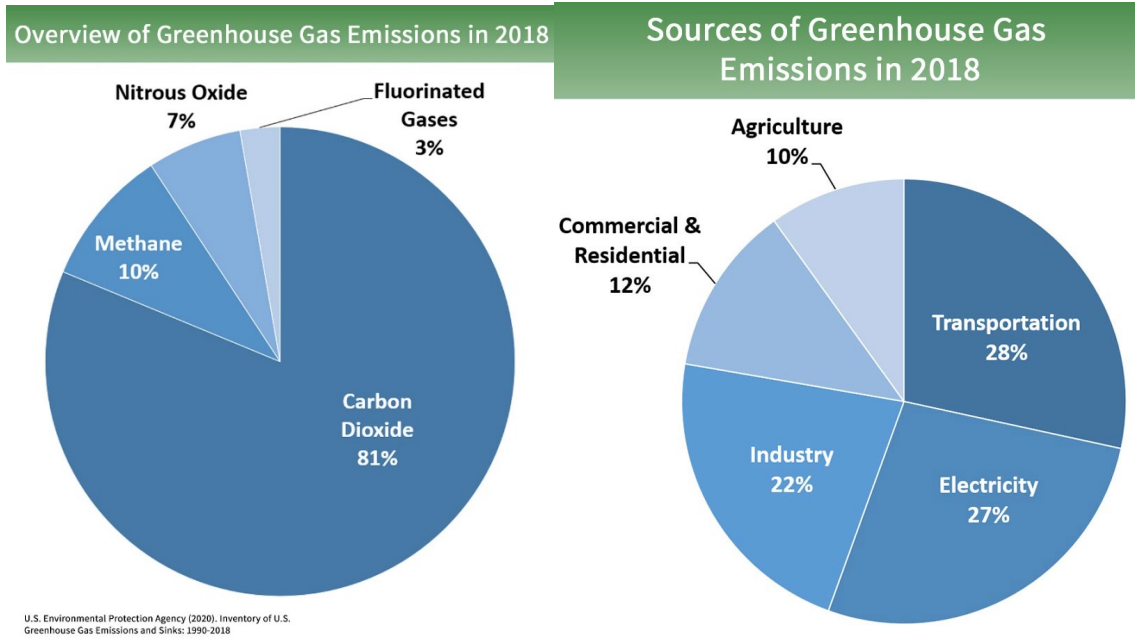


Figure 3.4.2-1: U.S. 2018 Greenhouse Gas Emissions

3.4.2.2 State GHG Inventory

ARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. 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 MMTCO₂e 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 (CARB 2019a).

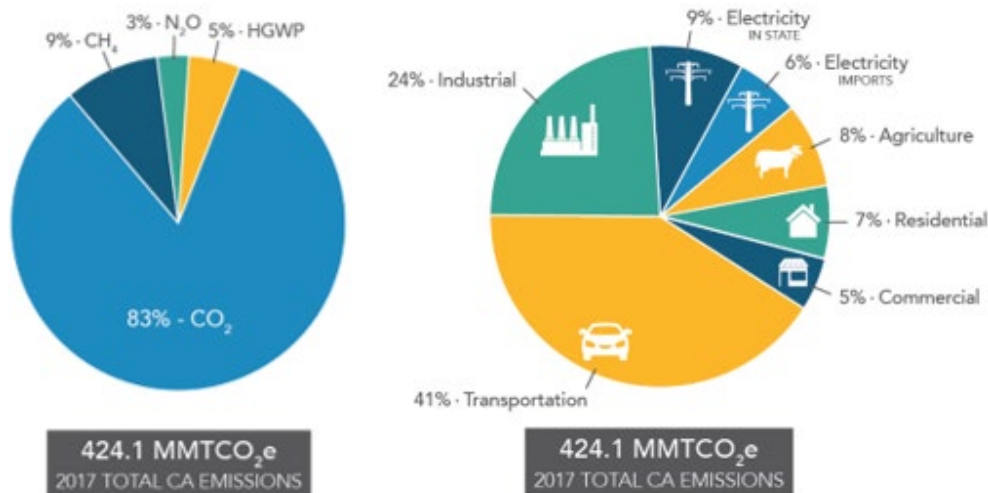


Figure 3.4.2-2: California 2017 Greenhouse Gas Emissions

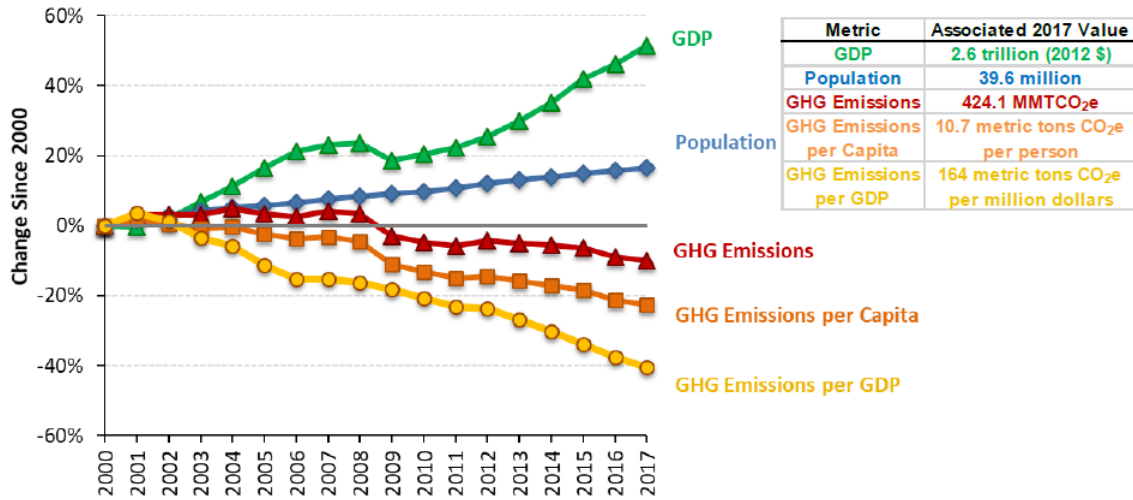


Figure 3.4.2-3: Change in California GDP, Population, and GHG Emissions since 2000 (Source: CARB 2019b)

AB 32 required ARB to develop a scoping plan that describes the approach California would 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 would use to reduce GHG emissions.

3.4.2.3 Regional Plans

ARB sets regional targets for California’s 18 MPOs to use in their Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) to plan future projects that would cumulatively achieve GHG reduction goals. Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. MTC 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 (CARB 2019c). However, the proposed 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 CO₂ emissions reduction to tackle future climate change and fixing an aging transportation system (MTC and ABAG 2017:26).

The Bay Area Air Quality Management District’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 (CAP) in 2013 with a GHG reduction target of 17 percent below 2005 emissions levels by 2020. The CAP 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 (County of San Mateo 2013:9).

Redwood City's CAP targets reducing municipal sources of GHG and encouraging community measures and strategies that minimize vehicle trips and VMT (Redwood City 2013:15).

The City of San Carlos' CAP combines transportation and land use GHG-reduction measures because they are so highly integrated. Measures include supporting mode shifts to walking and biking, increased bike parking, alternatively fueled vehicles, car sharing, shuttle services, and tree planting. Goals and strategies are intended to be integrated with the City's general plan (City of San Carlos 2009: iii-iv).

3.4.3 Project Analysis

GHG emissions from transportation projects can be divided into those produced during operation of the SHS and those produced during construction. The primary GHGs produced by the transportation sector are CO₂, CH₄, N₂O, and HFCs. CO₂ emissions are a product of the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of CH₄ and N₂O are emitted during fuel combustion. In addition, a small amount of HFC emissions are included in the transportation sector.

The CEQA Guidelines generally address greenhouse gas 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 greenhouse gases must necessarily be found to contribute to a significant cumulative impact on the environment.

3.4.3.1 Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

Caltrans' Guidance for including greenhouse gas (GHG) emission calculations for 2018 State Highway Operations and Protection (SHOPP) was consulted for the purpose of this analysis. A

quantitative analysis was made using the Sacramento Metropolitan Air Quality Management District Road Construction Emissions model for GHG emissions during the construction of the project and ongoing maintenance.

Alternative 1 is estimated to generate a total of 1,936 MT/construction project of CO₂e. Alternative 2 is estimated to generate 2,068 MT/construction project of CO₂e. Alternative 1 construction is estimated to take 185 working days over approximately 2 years, and Alternative 2 construction is likely to require 235 working days over 2 years.

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 they are aware of and would comply with all ARB emission reduction regulations. All contracts also include 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. Furthermore, a TMP would minimize construction-related delays and emissions from idling traffic.

3.4.3.2 Operational Emissions

The proposed project would not change GHG emissions following project completion. The project is non-capacity-increasing and would not change the number of travel lanes or the capacity of U.S. 101. Therefore, it would not affect vehicle miles traveled so as to increase operational GHG emissions.

3.4.3.3 CEQA Conclusion

While the proposed project would result in GHG emissions during construction, it is anticipated that the project would not result in any increase in operational GHG emissions. The proposed project does not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. With implementation of construction GHG-reduction measures, the impact would be less than significant.

Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

3.4.4 Greenhouse Gas Reduction Strategies

3.4.4.1 Statewide Efforts

Major sectors of the California economy, including transportation, would 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.

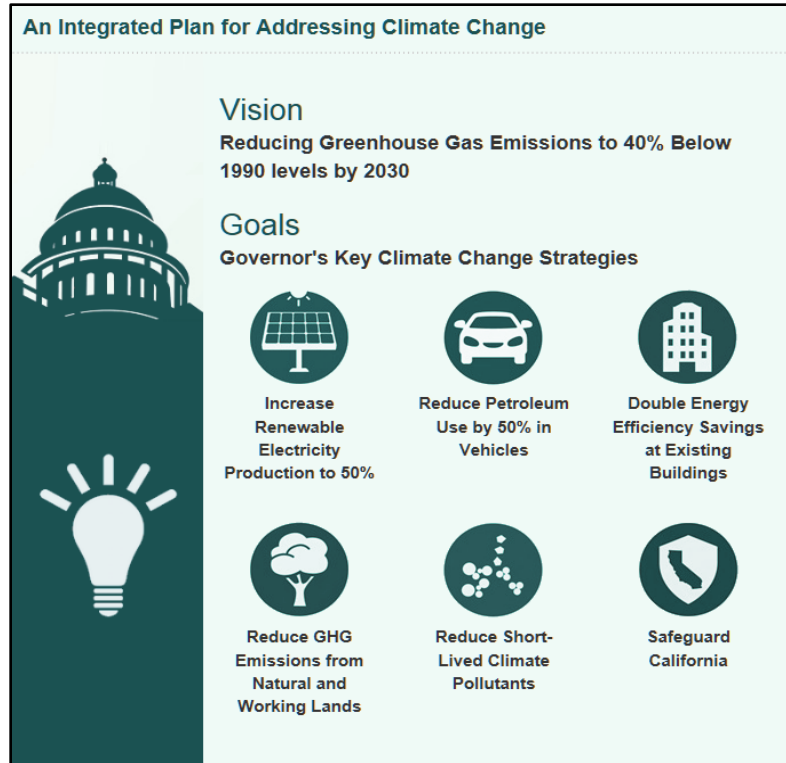


Figure 3.4.4-1: California Climate Strategy

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 would come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled (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 carbon dioxide from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

3.4.4.2 Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the CARB 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.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. In 2016, Caltrans completed the California Transportation Plan 2040, which establishes a new model for developing ground transportation systems, consistent with CO2 reduction goals. It serves as an umbrella document for all the other statewide transportation planning documents. Over the next 25 years, California would be working to improve transit and reduce long-run repair and maintenance costs of roadways and developing a comprehensive assessment of climate-related transportation demand management and new technologies rather than continuing to expand capacity on existing roadways.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

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 would 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

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).

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 would 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.

Project-Level GHG Reduction Strategies

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

1. Caltrans Standard Specifications such as Section 14-9.02, Air Pollution Control, require contractors to comply with all federal, state, and local air pollution control rules, regulations, and ordinances. Requirements such as idling restrictions and keeping engines properly tuned reduce emissions, including GHG emissions.
2. As noted in Section 1.4.1.5, a TMP would be prepared during the design phase of the project to minimize traffic disruptions from project construction. Minimizing traffic delays during construction would help reduce GHG emissions from idling vehicles.
3. Removed vegetation would be replanted with native species, to preserve carbon sequestration by plants, and reduce energy used for irrigation.
4. BIO-6, Replant, Reseed, and Restore Disturbed Areas: Where disturbance includes the removal of trees, native species shall be replanted.

3.4.5 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, put another way, 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 would 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.

3.4.5.1 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 (USGCRP) delivers a report to Congress and the president every 4 years, in accordance with the Global Change Research Act of 1990 (15 U.S.C. Chapter 56A Section 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 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 DOT in order 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).

3.4.5.2 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 (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.² 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 (SLR) assessment reports and associated guidance and policies. These reports formed the foundation of an interim *State of California Sea-Level Rise Interim Guidance Document* (SLR Guidance) 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.

3.4.5.3 Caltrans Adaptation Efforts

Caltrans Vulnerability Assessments

Caltrans is conducting 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 would 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.

Project Adaptation Analysis

Sea Level Rise

The project area in the San Mateo County is within an area that is subject to SLR. The project borders the San Francisco Bay at Cordilleras Creek at Blair Island and Redwood Creek in Redwood City. The potential for SLR impacts at the project site was reviewed based on current guidance in the State of California Sea-Level Rise Guidance (2018 update), prepared by a working group of the California Ocean Protection Council's Science Advisory Team (OPC-SAT 2018). This guidance synthesizes the best available science on SLR projections and rates for California, based on an increased understanding of the interactions of SLR projections and polar ice sheet loss. The guidance applies a probabilistic projection to estimate the range of height of SLR over various timescales that correspond to low to high emission scenarios. Table 3.4.5-1 below shows these scenarios by year, and probability.

The "likely range" for the year 2050 listed in the table below indicates a lower risk of SLR of 0.6 to 1.1 feet. By end of century (2100) the low risk rise ranges from 1.0 to 2.4 feet. Assuming continued high emissions of GHGs, the 2018 State of California Sea-Level Rise Guidance estimates the probability of a 1-foot rise by 2050 at 31 percent, and by 2100 at 96 percent. The same high emissions scenario probability of a 2-foot rise by 2050 is estimated at less than 1 percent and by 2100 at 70 percent.

The vertical elevation of the existing bridge culvert is 8.7 feet. Alternative 1 is proposing an elevation of 8.4 feet for the new culvert and Alternative 2 is proposing an elevation of 8.4 feet for the soffit.

SLR mapping was reviewed, that is consistent with San Mateo County's sea-level rise vulnerability assessment ("Sea Change;" San Mateo County 2017). The following scenarios indicate the vulnerability of the shoreline in the Redwood City area:

- Mean Higher High Water (MHHW) + 12 inches of SLR (Figure 3.4.5-1). This scenario indicates inundation approaching the Caltrans ROW along U.S. 101 in the Redwood City area. With the highway above 8 feet of elevation and the existing bridge culvert at elevations of approximately 8 feet, the inundation may be a low risk to the U.S. 101 facility.
- MHHW + 24 inches of SLR (Figure 3.4.5-2). The inundation areas are similar to the 12-inch increase, but more widespread south of Redwood City.
- MHHW + 52 inches of sea level rise (Figure 3.4.5-3). This is the equivalent of a 100-year storm event/flood with 12 inches of sea-level rise. This type of event would be a relatively high level of sea-level increase and could represent periodic flooded conditions (temporary inundation during heavy storm events). This scenario could affect an extended portion of the freeway within the project limits during these periodic large storm events.

Table 3.4.5-1: Sea Level Rise Scenarios By Year

| | | Probabilistic Projections (in feet) (based on Kopp et al. 2014) | | | | H++ scenario (Sweet et al. 2017) *Single scenario |
|----------------|-------|---|--|---|---|---|
| | | MEDIAN | LIKELY RANGE | 1-IN-20 CHANCE | 1-IN-200 CHANCE | |
| | | 50% probability sea-level rise meets or exceeds... | 66% probability sea-level rise is between... | 5% probability sea-level rise meets or exceeds... | 0.5% probability sea-level rise meets or exceeds... | |
| | | | | Low Risk Aversion | Medium - High Risk Aversion | Extreme Risk Aversion |
| High emissions | 2030 | 0.4 | 0.3 - 0.5 | 0.6 | 0.8 | 1.0 |
| | 2040 | 0.6 | 0.5 - 0.8 | 1.0 | 1.3 | 1.8 |
| | 2050 | 0.9 | 0.6 - 1.1 | 1.4 | 1.9 | 2.7 |
| Low emissions | 2060 | 1.0 | 0.6 - 1.3 | 1.6 | 2.4 | |
| High emissions | 2060 | 1.1 | 0.8 - 1.5 | 1.8 | 2.6 | 3.9 |
| Low emissions | 2070 | 1.1 | 0.8 - 1.5 | 1.9 | 3.1 | |
| High emissions | 2070 | 1.4 | 1.0 - 1.9 | 2.4 | 3.5 | 5.2 |
| Low emissions | 2080 | 1.3 | 0.9 - 1.8 | 2.3 | 3.9 | |
| High emissions | 2080 | 1.7 | 1.2 - 2.4 | 3.0 | 4.5 | 6.6 |
| Low emissions | 2090 | 1.4 | 1.0 - 2.1 | 2.8 | 4.7 | |
| High emissions | 2090 | 2.1 | 1.4 - 2.9 | 3.6 | 5.6 | 8.3 |
| Low emissions | 2100 | 1.6 | 1.0 - 2.4 | 3.2 | 5.7 | |
| High emissions | 2100 | 2.5 | 1.6 - 3.4 | 4.4 | 6.9 | 10.2 |
| Low emissions | 2110* | 1.7 | 1.2 - 2.5 | 3.4 | 6.3 | |
| High emissions | 2110* | 2.6 | 1.9 - 3.5 | 4.5 | 7.3 | 11.9 |
| Low emissions | 2120 | 1.9 | 1.2 - 2.8 | 3.9 | 7.4 | |
| High emissions | 2120 | 3 | 2.2 - 4.1 | 5.2 | 8.6 | 14.2 |
| Low emissions | 2130 | 2.1 | 1.3 - 3.1 | 4.4 | 8.5 | |
| High emissions | 2130 | 3.3 | 2.4 - 4.6 | 6.0 | 10.0 | 16.6 |
| Low emissions | 2140 | 2.2 | 1.3 - 3.4 | 4.9 | 9.7 | |
| High emissions | 2140 | 3.7 | 2.6 - 5.2 | 6.8 | 11.4 | 19.1 |
| Low emissions | 2150 | 2.4 | 1.3 - 3.8 | 5.5 | 11.0 | |
| High emissions | 2150 | 4.1 | 2.8 - 5.8 | 5.7 | 13.0 | 21.9 |



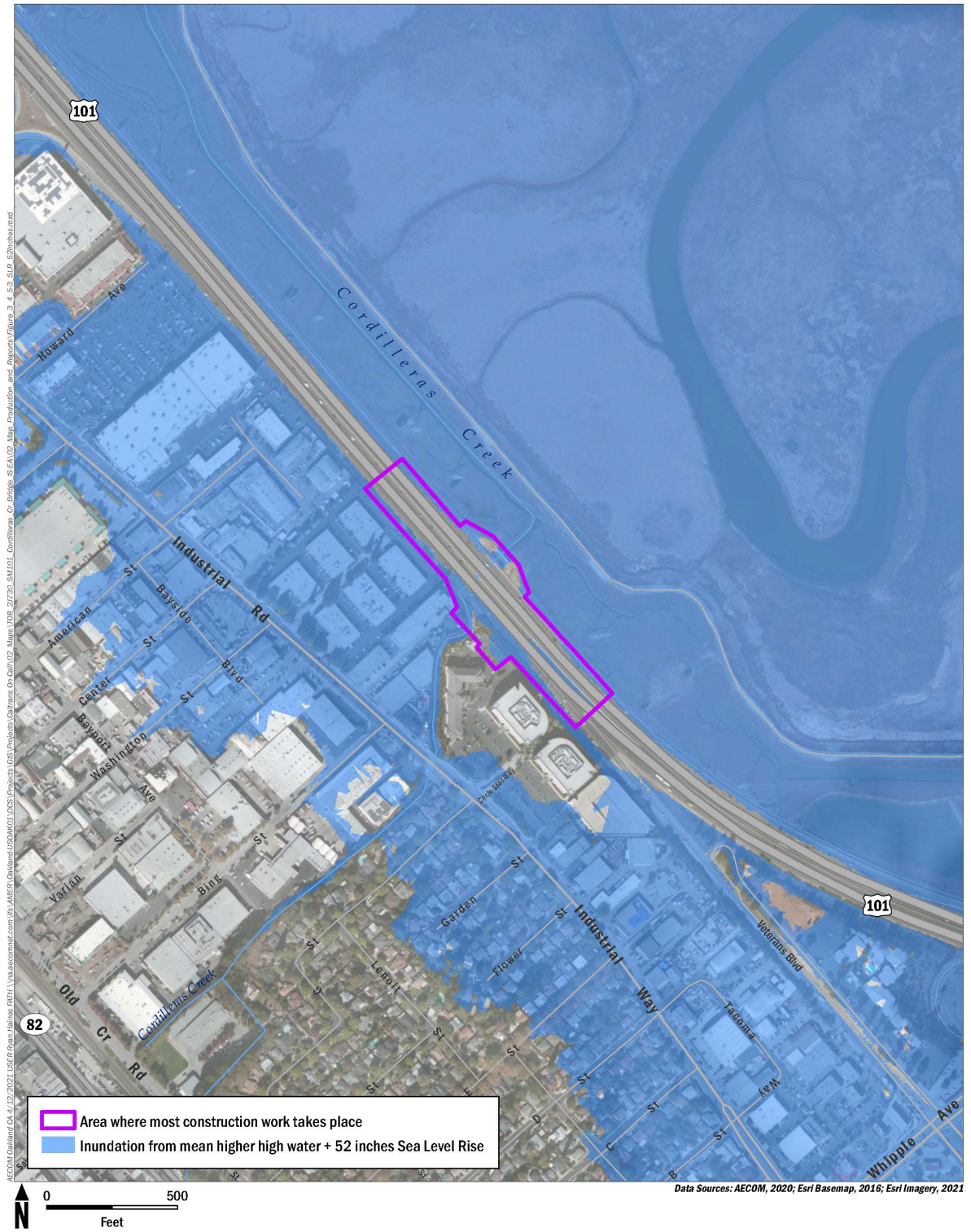
AECOM
 Caltrans
 San Mateo 101 Cordilleras Creek Bridge Replacement Project
 CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 3.4.5-1
 Sea Level Rise (mean higher high water + 12 inches)



AECOM
 Caltrans
 San Mateo 101 Cordilleras Creek Bridge Replacement Project
 CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 3.4.5-2
 Sea Level Rise (mean higher high water + 24 inches)



AECOM
Caltrans
 San Mateo 101 Cordilleras Creek Bridge Replacement Project
 CITY OF SAN CARLOS, SAN MATEO COUNTY, CA

FIGURE 3.4.5-3
 Sea Level Rise (mean higher high water + 52 inches)

SLR would increase the elevation of the receiving waters at the project location, over time. The above evaluation indicates that during storm events in the future under flood type conditions, increased water elevations could interfere with adequate drainage. The project would replace the existing triple box culvert with a higher capacity triple box culvert (Alternative 1) or a single span bridge (Alternative 2). Therefore, either alternative would allow for a greater amount of drainage to pass beneath U.S. 101 which would help adapt the freeway to future SLR increases. This is considered a beneficial change.

Floodplains

Although U.S. 101 is not within a FEMA Special Flood Hazard Area Zone, the area that surrounds the highway is within Zones AE and Zone X. The surrounding area is at a lower elevation than U.S. 101. Cordilleras Creek is a regulatory floodway. A regulatory floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height (FEMA 2020). As of 2010, average annual precipitation in the project area was 26.6 inches per year.

The Caltrans District 4 Climate Change Vulnerability Assessment (Caltrans 2018) estimated changes in 100-year storm precipitation depth, a variable commonly considered in the design of transportation infrastructure. Mapping shows that storm precipitation depth in the project area could increase by up to 4.9 percent by 2025, and by as much as 9.9 percent by 2055 and beyond. As mentioned above, SLR has the potential to increase the frequency of flooding, damage from flooding and the size of the floodplain. This may cause undesirable hydraulic effects by the year 2100. These effects include backflow into the creek, increased turbulence, and scour.

Both of the Build Alternatives would be designed to be resilient to increased flood hazards. There would be full flow through the opening of the structure without additional flood risk. Through hydraulic modeling of the Cordilleras Creek floodplain at the U.S. 101 crossing, it was determined that the proposed work would have no changes to the floodplain. The proposed project would not raise any water surface elevations or impede flows that pass the design-year flood events.

Wildfire

The project area is not in a moderate or high fire hazard severity zone (Cal Fire 2008). Furthermore, the project area does not contain steep slopes or high vegetation that contribute to fire risk. Caltrans 2018 revised Standard Specification 7-1.02M(2) mandates fire prevention procedures during construction, including a fire prevention plan. Accordingly, the project is not anticipated to exacerbate the risk or impacts of wildfires intensified by climate change.

Chapter 4 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 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. Agency and tribal consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including interagency coordination meetings, public meetings, and public noticing. This chapter summarizes the results of Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Public Participation

Caltrans filed the Draft IS/EA with the State Clearinghouse on July 31, 2020, which began the public review and comment period. The Draft IS/EA was circulated to the public for 30 of days between July 31, 2020, and August 31, 2020. The public had the opportunity to review and comment during this period. The purpose of the meeting was to notify community members and stakeholders about the project to increase project awareness, encourage participation, seek feedback, and address concern.

Notice of the draft IS/EA circulation and public meeting was provided in the following ways:

- A newspaper advertisement was placed in the San Mateo Daily Journal on August 3, 2020.
- Post cards were mailed out to 847 addresses within a 0.25-mile radius of the project on August 4, 2020.
- A project flyer was posted on the Caltrans website at <https://dot.ca.gov/caltrans-near-me/district-4/d4-popular-links/d4-environmental-docs>.
- Caltrans sent letters regarding the project to non-elected and elected officials on July 31, 2020.

In lieu of having one or more in-person meetings, a virtual open house was held for the protection of public health, in accordance with State of California Executive Order N-25-20 (March 12, 2020) and subsequent state and local orders limiting in-person gatherings due to the COVID-19 pandemic. Caltrans held a virtual public meeting on August 13, 2020 from 6:00 to 7:30 pm. The meeting presentation was pre-recorded, and attendees were able to ask questions live. Caltrans PDT members were available during the meeting to answer questions from the public. The noticing materials and the presentation encouraged participants to submit comments in writing, either by mail or email.

4.2 Consultation and Coordination with Public Agencies

4.2.1 Federal Agencies

U.S. Army Corps of Engineers

The proposed project would affect waters of the U.S. as defined in Section 404 of the CWA, as described in Section 2.3.2.3. A preliminary jurisdictional wetland delineation would be submitted to the USACE. A permit application would be submitted to the USACE during the detailed design phase.

U.S. Fish and Wildlife Service and National Marine Fisheries Service

The project required consultation with USFWS under section 7 of FESA. On May 8, 2020, an official species list was requested from USFWS and used to identify target species for reconnaissance-level surveys for terrestrial plants and animals. A virtual interagency meeting was held on May 26, 2020, and USFWS was in attendance. Another virtual meeting between Caltrans and USFWS was held on October 22, 2020, to further discuss the project and potential impacts. On November 6, 2020 an updated official species list was requested from USFWS. A biological assessment for the project was submitted to the USFWS to initiate consultation under Section 7 on December 4, 2020. A biological opinion was received from USFWS on February 11, 2021. The biological opinion is included in Appendix H.

Consultations with NMFS began in April 2020. Caltrans obtained an official NMFS species list that was used to identify listed fish species with a potential to occur in the project area and be affected by the project. NMFS attended the interagency teleconference meeting held on May 26, 2020. Caltrans originally requested formal consultation and a biological assessment was sent to NMFS on November 9, 2020. On December 4, 2020, Caltrans requested informal consultation with NMFS, based on negative survey results and habitat conditions in the area. Caltrans biologists have determined that steelhead and green sturgeon are not likely to be present in the project area during construction. NMFS issued a letter of concurrence on March 31, 2021.

Tribal Entities

The NAHC provided a list of Native American parties and individuals with potential interest in the project and their contact information. On February 19, 2019, letters providing project information and requesting input were sent to each individual and organization on the list.

4.2.2 State Agencies

California Department of Fish and Wildlife

The project has the potential to affect state-listed species. This project is likely to require a 1602 Streambed Alteration Agreement and possibly an Incidental Take Permit from CDFW if the project could result in the take of plant or animal species listed under CESA.

A Section 1600 Lake or Streambed Alteration Agreement with CDFW is necessary when a project would alter the flow, bed, channel, or bank of a stream or lake. A 1600 permit application would be submitted to the CDFW during the project's design phase.

4.2.3 Regional Agencies

San Francisco Bay Regional Water Quality Control Board

Project construction could affect waters of the United States. Pursuant to Section 401 of the CWA, a Notice of Intent would be submitted to the RWQCB. The project would implement any general WDRs issued by the RWQCB.

San Francisco Bay Conservation and Development Commission (BCDC)

The project is within BCDC jurisdiction. Consultation and a permit from BCDC would be required. Caltrans initiated consultation with BCDC on this project in May 2020.

4.3 Circulation, Review, and Comment on the Draft Environmental Document

Caltrans prepared a draft IS/EA and circulated it for public review on July 31, 2020. The public review period was from July 31, 2020, to August 31, 2020. A virtual public meeting was held on August 13, 2020, to share information about the project and collect comments on the IS/EA from interested parties. Formal comments received during the review period and responses to these comments are included in Appendix G. A Mitigated Negative Declaration and a Finding of No Significant Impact is signed and included with the Final IS/EA.

This page intentionally left blank

Chapter 5 List of Preparers

The preparation of the environmental document and project design involved a joint team of Caltrans personnel and consultants.

Caltrans

Mohammad Suleiman, Regional Project Manager

Hossien Khodabakhsh, Sr. Transportation Engineer

Minh Ha, Sr. Bridge Engineer

Qi Zhao, Bridge Project Engineer

Katie Yim, Sr. Traffic Safety Engineer

Kourosh Langari, Division of Design South – Peninsula

Kanax Kanagalingam, Transportation Engineer (Geotechnical Services)

Ron Karpowicz, Engineering Geologist

Hamideh Riazi, Transportation Engineer (Water Quality)

Lindsay Vivian, Office Chief, Office of Environmental Analysis

Zachary Gifford, Branch Chief, Office of Environmental Analysis, San Mateo and San Francisco Counties

John Seal, Associate Environmental Planner, Office of Environmental Analysis

Samuel Aquilar, Associate Environmental Planner (NS) (Biology)

Gregory Pera, Branch Chief (Biology)

Kathryn Rose, Branch Chief, Archaeology

Helen Blackmore, Branch Chief, Architectural History

Britt Schlosshardt, Office of Cultural Resources

Douglas Bright, Office of Cultural Resources

Keith Fang, Transportation Engineer, Hazardous Waste Branch, Office of Environmental Engineering

Ronald McGaugh, PE, Structures Hydraulics and Hydrology Branch, Office of Design and Technical Services

Adrienne St. John, Landscape Associate, Office of Landscape Architecture – Design A

Brian Villamor, Transportation Engineer, Division of Environmental Planning & Engineering,
Air and Noise Branch

Kevin Krewson, Branch Chief, Office of Environmental Engineering

Khai Leong, Hydrology

Jesse Han, Transportation Engineer (Air and Noise Branch)

Kelsey Nozuka, Transportation Engineering

AECOM

Stephanie Osby, Environmental Project Manager

Jeff Zimmerman, Senior Environmental Manager

Dillon Lennebacker, Environmental Planner

Jon Stead, Senior Project Ecologist

Katie McLean, Biologist

Chapter 6 Distribution List

The following agencies, organizations, and individuals received printed or electronic copies of this document. Agency names marked with an asterisk (*) received copies through the State Clearinghouse.

Federal Agencies

Environmental Protection Agency,
Region 9
Public Affairs Office
Attn: Michael Alpern
75 Hawthorne Street
San Francisco, CA 94105

John Busterud, Regional Administrator
U. S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Susan Kelly, Chief
Engineering, Planning & Construction
Division
U.S. Army Corps of Engineers
San Francisco District
450 Golden Gate Ave, 4th Floor
San Francisco, CA 94102

Paul Souza, Regional Director
United States Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Jody Holzworth, Deputy Regional Director
United States Fish and Wildlife Service
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Robert J. Fenton, Jr., Regional
Administrator
Federal Emergency Management
Agency Region IX
1111 Broadway, Ste. 1200
Oakland, 94607

Barry Thom, Regional Administrator
National Marine Fisheries Service West
Coast Regional Office
1201 Northeast Lloyd
Portland, OR 97232

Scott Rumsey, Regional Administrator
National Marine Fisheries Service West
Coast Regional Office
1201 Northeast Lloyd
Portland, OR 97232

State Agencies

Larry Goldzband, Executive Director
San Francisco Bay Conservation &
Development Commission
Bay Area Metro Center
375 Beale St., Suite 510
San Francisco, CA 94105

Steven Goldbeck, Chief Deputy Director
San Francisco Bay Conservation &
Development Commission
Bay Area Metro Center
375 Beale St., Suite 510
San Francisco, CA 94105

Kate Gordon, Executive Director
Office of Planning and Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

Scott Morgan, Chief Deputy Director
Office of Planning and Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

Mitch Weiss, Executive Director
California Transportation Commission
1120 N Street, Room 2221, MS-52
Sacramento, CA 95814

Tanisha Taylor, Chief Deputy Director
California Transportation Commission
1120 N Street, Room 2221, MS-52
Sacramento, CA 95814

Michael Benjamin, Division Chief
Air Quality Planning and Science Division
California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

David Edwards, Assistant Division Chief
Air Quality Planning and Science Division
California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, CA 95812

David Shabazian, Director
California Department of Conservation
801 K Street, MS 24-01
Sacramento, CA 95814

Clayton Haas, Assistant Director
California Department of Conservation
801 K Street, MS 24-01
Sacramento, CA 95814

Charlton H. Bonham, Director
California Department of Fish & Wildlife
Region 3
1416 9th Street, 12th Floor, Sacramento, CA
95814

Valerie Termini, Chief Deputy Director
California Department of Fish & Wildlife
Region 3
1416 9th Street, 12th Floor, Sacramento, CA
95814

Lisa Mangat, Director
California Department of Parks and
Recreation
Natural Resources Division
P.O. Box 942896
Sacramento, CA 94296

Karla Kemeth, Director
California Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

Cindy Messer, Chief Deputy Director
California Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

Julianne Polanco, State Historic
Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

San Francisco Regional Water Quality
Control Board, Region 2
1515 Clay St
Suite 1400
Oakland, CA 94612

Dan Carl, District Director North Central
Coast and Central Cast
California Coastal Commission
45 Fremont Street #2000
San Francisco, CA 94105

Regional Agencies

Executive Officer, Jack Broadbent
Bay Area Air Quality Management District
375 Beale Street
Suite 600
San Francisco, CA 94105

Alix Bockelman, Deputy Executive Director
Metropolitan Transportation Commission
375 Beale Street, Suite 700
San Francisco, CA 94105

Therese McMillan, Executive Director
Association of Bay Area Government
Bay Area Metro Center
375 Beale Street, Suite 800
San Francisco, CA 94105

Local Agencies

City of Redwood City

Terence Kyaw, Public Works Director
City of Redwood City Public Works
1400 Broadway St.
Redwood City, CA 94063

Justin Chapel, Water Utilities
Superintendent
City of Redwood City Public Works
1400 Broadway St.
Redwood City, CA 94063

Adrian Lee, Right of Way Superintendent
City of Redwood City Public Works
1400 Broadway St.
Redwood City, CA 94063

Diana O'Dell, Principal Planner
City of Redwood City Planning Services
Community Development and
Transportation Director
1017 Middlefield Road
Redwood City, CA 94063

Mark Muenzer
Community Development and
Transportation Director
City of Redwood City Planning Services
1017 Middlefield Road
Redwood City, CA 94063

Anna McGill, Acting Principal Planner
City of Redwood City Planning Services
Community Development and
Transportation Director
1017 Middlefield Road
Redwood City, CA 94063

Melissa Stevendon Diaz, City Manager of
Redwood City
City Hall
1017 Middlefield Road
Redwood City, CA 94063

City of San Carlos

Al Savay, Community Development
Director
City of San Carlos
Economic Development Division
600 Elm St.
San Carlos, CA 94070

Andrea Mardesich, Principal Planner
City of San Carlos
Planning Division
600 Elm Street
San Carlos, CA 94070

Kelly Beggs, Senior Planner Consultant
City of San Carlos
Planning Division
600 Elm Street
San Carlos, CA 94070

Steven Machida, Public Works Director
City of San Carlos
Engineering Division
600 Elm St.
San Carlos, CA 94070

Tara Peterson, Assistant City Manager
City of San Carlos
City Manager's Office
600 Elm St.
San Carlos, CA 94070

San Mateo County

Emily Beach, Chair
San Mateo County Transportation Authority
1250 San Carlos Ave.
P.O. Box 3006
San Carlos, CA 94070-1306

Steve Monowitz, Community Development
Director
San Mateo County
Planning and Building Department
455 County Center
Redwood City, CA 94063

Lisa Aozasa, Deputy Community
Development Director
San Mateo County
Planning and Building Department
455 County Center
Redwood City, CA 94063

Joe LaClair, Planning Services Manager
San Mateo County
Planning and Building Department
455 County Center
Redwood City, CA 94063

Jim Porter, Public Works Director
San Mateo County
Department of Public Works
555 County Center
5th Floor
Redwood City, CA 94063

Khoa Vo, Deputy Public Works Director
San Mateo County
Department of Public Works
555 County Center
5th Floor
Redwood City, CA 94063

Diana Shu, Road Operations Director
San Mateo County
Department of Public Works
555 County Center
5th Floor
Redwood City, CA 94063

Federal Elected Officials

Honorable Dianne Feinstein
United States Senate
One Post Street
Suite 2450
San Francisco, CA 94104

Honorable Alex Padilla
United States Senate
333 Bush Street, Suite 3225
San Francisco, CA 94104

State Elected Officials

Josh Becker,
California State Senate District 13
1528 South El Camino Real, Suite 303
San Mateo, CA 94402

Kevin Mullin
California State Assembly District 22
1528 South El Camino Real
Suite 302
San Mateo, CA 94402

Local Elected Officials

Diane Howard, Mayor
City Council
c/o City Clerk
1017 Middlefield Road
Redwood City, CA 94063

Giselle Hale, Vice Mayor
City Council
c/o City Clerk
1017 Middlefield Road
Redwood City, CA 94063

| Mayor Laura Parmer-Lohan
City of San Carlos City Hall
600 Elm St.
San Carlos, CA 94070

| Vice Mayor Sara McDowell
City of San Carlos City Hall
600 Elm St.
San Carlos, CA 94070

Warren Slocum, San Mateo County Board
of Supervisors and Representative of the 4th
Supervisorial District
Hall of Justice
400 County Center
Redwood City, CA 94063-1662

This page intentionally left blank

Chapter 7 References

- ABAG and MTC 2017. Plan Bay Area 2040. March 2017 Draft Plan. Available: http://2040.planbayarea.org/sites/default/files/2017-07/PBA_2040_033017%20web%20print.pdf. Association of Bay Area Governments and Metropolitan Transportation Commission. July 2017 Final, URL: <http://www.2040.planbayarea.org/reports>.
- ABAG and MTC. 2013. Plan Bay Area: Strategy for a Sustainable Region. Approved July 18, 2013.
- Albertson, J. D. and J. G. Evens. 2000. California Clapper Rail (*Rallus longirostris obsoletus*). In Baylands Ecosystem Species and Community Profiles: Life Histories and Environmental Requirements of Key Plants, Fish and Wildlife, P. R. Olofson (ed.), 332-340.
- Bamman, A. R. 1975. Ecology of predation and social interactions of wintering white-tailed kites. M.S. Thesis. Humboldt State University, Arcata, Calif. 81 pp.
- Bay Area Air Quality Management District. 2017. *Spare the Air, Cool the Climate. Clean Air Plan 2017*. Adopted April 19, 2017. Available: <https://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans>. Accessed: June 4, 2020.
- Berner, M., B. Grumer, R. Leong, and M. Rippey. 2003. Breeding Birds of Napa County, California: An Illustrated Atlas of Nesting Birds. Napa-Solano Audubon Soc., Vallejo, California.
- Bisson, P. A., K. Sullivan, and J. L. Nielsen. 1988. Channel hydraulics, habitat use, and body form of juvenile coho salmon, steelhead, and cutthroat trout in streams. Transactions of American Fisheries Society. 117:262-273.
- Bjornn, T. C. 1971. Trout and salmon movements in two Idaho streams as related to temperature, food, streamflow, cover, and population density. Transactions of the American Fisheries Society 100:423-438.
- Bjornn, T. C., and D. W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 47-82 in W. R. Meehan, editor. Influence of forest and rangeland Management on Salmonid Fishes and their habitat. Special publication 19. American Fisheries Society in Bethesda, Maryland.
- Bond, M. H. 2006. Importance of estuarine rearing to central California steelhead (*Oncorhynchus mykiss*) growth and marine survival. M.A. thesis, University of California Santa Cruz.
- Burridge, B., ed. 1995. Sonoma County Breeding Bird Atlas. Madrone Audubon Soc., Santa Rosa, California.

- Bustard, D. R., and D. W. Narver. 1975. Aspects of the winter ecology of juvenile coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Salmo gairdneri*). *Journal of Fisheries Research Board of Canada* 32: 667-680.
- California Air Resources Board. 2019a. California Greenhouse Gas Emissions Inventory–2019 Edition. Available: <https://ww3.arb.ca.gov/cc/inventory/data/data.htm>. Accessed June 17, 2020.
- _____. 2019b. California Greenhouse Gas Emissions for 2000 to 2017. Trends of Emissions and Other Indicators. Available: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf. Accessed June 17, 2020.
- California Department Fish and Game (CDFG). 1992. Bird species of special concern. Unpublished list, July 1992, Calif. Dept. Fish and Game, 1416 Ninth St., Sacramento, California 95814.
- _____. 2019c. *SB 375 Regional Plan Climate Targets*. <https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets>. Accessed: August 21, 2019.
- Cal Fire. 2008. Very High Fire Hazard Severity Zones in LRA Redwood City. Available: https://osfm.fire.ca.gov/media/5986/redwood_city.pdf. Accessed June 18, 2020.
- California Department of Fish and Wildlife (CDFW). 2005. California Wildlife Habitat Relationships System: Life History Account Database. California Interagency Wildlife Task Group, Database Version 8.1 24(2005)
- _____. 2018. *California Natural Diversity Database (CNDDDB) Rarefind 5: Habitat Conservation Division*. Sacramento, California. Available: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>.
- _____. 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. Sacramento, California.
- _____. 2019. Monthly California Natural Diversity Database (CNDDDB) data download. Available: https://www.dfg.ca.gov/biogeodata/cnddb/rf_ftpinfo.asp. Accessed December 17, 2019.
- California Department of Transportation (Caltrans). 2013. *Transportation and Construction Vibration Guidance Manual*. September 2013.
- _____. 2016. California Transportation Plan 2040. Available: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/f0004899_ctp2040_a11y.pdf. Accessed December 17, 2019.
- _____. 2020a. *Project Report Request Programming in the 2018 SHOPP*. 04 – SM – 101 – PM 7.13 EA 04-2J730K – EFIS 0415000004K – PPNO 1483C Program Code 201.110 – Bridge Rehabilitation and Replacement April 2020.

- _____. 2020b. Guidance for Preparers of Cumulative Impact Analysis. Available: <https://dot.ca.gov/programs/environmental-analysis/standard-environmental-reference-ser/cumulative-impact-analysis>. Accessed: April 4, 2020.
- _____. 2020c. *Caltrans Highway Design Manual*. Available: <https://dot.ca.gov/programs/design/manual-highway-design-manual-hdm>.
- California Native Plant Society (CNPS). 2018. *The California Native Plant Society's Inventory of Rare and Endangered Plants of California* (Online edition, version 7.7). Available: <http://www.rareplants.cnps.org>.
- _____. 2019. Inventory of Rare and Endangered Plants. Inventory of Rare and Endangered Plants. Online edition, v8-02. Available: <http://www.rareplants.cnps.org>. Accessed December 17, 2019.
- _____. 2021. Passage Assessment Database (PAD) – Query. Available online at <https://nrm.dfg.ca.gov/PAD/view/query.aspx>. Accessed on March 18, 2021.
- City of Redwood City. 2013. Climate Action Plan. Adopted April 22, 2013.
- City of San Carlos. 2009. Climate Action Plan Executive Summary. Adopted October 12, 2009. Available: <https://www.cityofsancarlos.org/government/departments/city-manager-s-office-communications/responsible-environment/climate-action-plan/2009-climate-action-plan>.
- Cleugh, E. 2002. Steelhead Migration Barrier Survey of San Francisco Bay Area Watershed Creeks (Contra Costa, Alameda, Santa Clara, and San Mateo Counties) (Report). California Department of Fish and Game.
- County of San Mateo. 2013. Energy Efficiency Climate Action Plan. June. Prepared by PMC, Oakland, California.
- Department of Conservation. 1982. Mineral Land Classification Map Santa Clara and San Mateo Counties. Special Report 146 Plat 2.40.
- Department of Toxic Substance Control. 2021. EnviroStor. Available: <https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=803+American+Street%2+san+carlos>. Accessed: April 16, 2021.
- Dixon, J. B., R. E. Dixon, and J. E. Dixon. 1957. Natural history of the white-tailed kite in San Diego County, California. *Condor* 59:156-165.
- Dunk, J. R., and R. J. Cooper. 1994. Territory size regulation in black-shouldered kites. *Auk* 111:588-595.
- Employment Development Department. 2020. Major Employers in San Mateo County. Available: <http://www.labormarketinfo.edd.ca.gov/majorer/countymajorer.asp?CountyCode=000081>. Accessed: March 16, 2020.

- Everest, F. H., and D. W. Chapman. 1972. Habitat selection and spatial interaction by juvenile chinook and steelhead trout. *Journal of the Fisheries Research Board of Canada*, 29; 91-100.
- Federal Highway Administration. 2019. Sustainability. Available: <https://www.fhwa.dot.gov/environment/sustainability/resilience/>. Last updated February 7, 2019. Accessed June 18, 2020.
- Federal Highway Administration. 2017. Public Roads, Living with Noise. Available: <https://www.fhwa.dot.gov/publications/publicroads/03jul/06.cfm>. Accessed: April 22, 2020.
- Fisler, G. F. 1965. Adaptations and speciation in harvest mice of the marshes of San Francisco Bay. *University of California Publication in Zoology*, Vol. 77, pp. 1-108, Berkeley, California.
- Grinnell, J. 1915. A distributional list of the birds of California. *Pac. Coast Avifauna* 11.
- Hawbecker, A. C. 1942. A life history study of the white-tailed kite. *Condor* 44:267-276.
- Heublein, J., R. Bellmer, R. Chase, P. Doukakis, M. Gingras, D. Hampton, J. Israel, Z. Jackson, R. Johnson, O. Langness, S. Luis, E. Mora, M. Moser, L. Rohrbach, A. Seesholtz, T. Sommer, and J. Stuart. 2017. Life History and Current Monitoring Inventory of San Francisco Estuary Sturgeon. 10.7289/V5/TM-SWFSC-589.
- Hobbs, J. and P. Moyle 2012. Monitoring the Response of Fish Communities to Salt Pond Restoration: Final Report. Prepared for South Bay Salt Pond Restoration Program and Resource Legacy Fund.
- Israel, J. A., J. Bando, E. C. Anderson and B. May. 2009. Polyploid microsatellite data reveal stock complexity among estuarine North American green sturgeon (*Acipenser medirostris*). *Canadian Journal of Fisheries and Aquatic Sciences* 66: 1491–1504.
- Jahn, A. 2011. Young Salmonid Out-Migration through San Francisco Bay with Special Focus on their Presence at the San Francisco Waterfront. Prepared for the Port of San Francisco.
- Jones and Stokes, et. al. 1979. Protection and Restoration of San Francisco Bay Fish and Wildlife Habitat. California Department of Fish and Game/U.S. Fish and Wildlife Service, Vols. I and II.
- Kelly, J. T., A. Klimley, and C. Crocker. 2007. Movements of green sturgeon, *Acipenser medirostris*, in the San Francisco Bay estuary, California. *Environ Biol Fish* 79:281–295.
- Leidy, R. A., G. S. Becker, and B. N. Harvey. 2005. Historical distribution and current status of steelhead/rainbow trout (*Oncorhynchus mykiss*) in streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoration, Oakland, California.

- Light, J. T., C. K. Harris, and R. L. Burgner. 1989. Ocean distribution and migration of steelhead (*Oncorhynchus mykiss*, formerly *Salmon gairdneri* FRI-UW-8912), Fisheries Research Institute, Univ. of Washington, Seattle.
- Lindley, S. T., M. L. Moser, D. L. Erickson, M. Belchik, D. W. Welch, E. L. Rechisky, J. T. Kelly, J. Heublein, and P. A. Klimley. 2008. Marine migration of North American green sturgeon. *Transactions of the American Fisheries Society* 137(1):182-194.
- MacWhirter, R. B., and K. L. Bildstein. 1996. Northern Harrier (*Circus cyaneus*), in *The Birds of North America* (A. Poole and F. Gill, eds.), no. 210. Acad. Nat. Sci., Philadelphia.
- McBroom, J. 2015. California Ridgway's Rail Surveys for the San Francisco Estuary Invasive Spartina Project. Oakland: Olofson Environmental, Inc.
- McEwan, D., and T. A. Jackson. 1996. Steelhead restoration and management plan for California. California Department of Fish and Game. February.
- Moyle, P. B. 2008. Salmon, steelhead, and trout in California: status of an emblematic fauna. *California Trout*, San Francisco, 316.
- Moyle P. B. 2002. *Inland Fishes of California*. University of California Press, Berkeley.
- Moyle, P. B., R. M. Yoshiyama, J. E. Williams, and E. D. Wikramanayake. 1995. Fish Species of Special Concern in California. Second edition. Final report to California Department of Fish and Game, contract 2128IF.
- National Marine Fisheries Service (NMFS). 2005. 50 CFR Part 226.
- _____. 2006. FR. 50 CFR Parts 223 and 225.
- Pickwell, G. 1930. The white-tailed kite. *Condor* 32:221-239.
- Shapovalov, L., and A. C. Taft. 1954. The life histories of the steelhead rainbow trout (*Salmo gairdneri gairdneri*) and silver salmon (*Oncorhynchus kisutch*) with special reference to Waddell Creek, California, and recommendations regarding their management. *Fish Bulletin* 98. California Department of Fish and Game.
- Shuford, W. D., and T. Gardali, Eds. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. *Studies of Western Birds* 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
- _____. 1993. The Marin county breeding bird atlas: a distributional and natural history of coastal California birds. California Avifauna Series 1. Bolinas: Bushtit Books.

- Smith, J. J., and H. W. Li. 1983. Energetic factors influencing foraging tactics of juvenile steelhead trout *Salmo gairdneri*. D. L. G. Noakes, et al (4 eds.) Predators and Prey in Fishes. Dr. W. Junk Publishers, the Hague. Pp. 173-180.
- Soil Survey Staff. 2020. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available: <http://websoilsurvey.nrcs.usda.gov/>. Accessed January 18, 2020.
- Sowers, J. M. 2005. Cordilleras Creek Watershed Map. A portion of “Creek and Watershed Map of Palo Alto and Vicinity.” Published by the Oakland Museum of California. Funded By CALFED, San Francisco Watershed Council, Silicon Valley Pollution Prevention Center, cities of Mountain View and Palo Alto, William Lettis & Assoc., Oakland Museum of California, and Santa Clara Valley Water District. Available online at: <http://explore.museumca.org/creeks/1490-OMCordilleras.html>. Accessed October 24, 2020.
- State of California. 2018. California’s Fourth Climate Change Assessment. Available: <http://www.climateassessment.ca.gov/>. Accessed June 16, 2020.
- State Water Resources Control Board. 2021. GeoTracker for San Carlos, California. Available: <https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=cordilleras+Creek+San+Mateo>. Accessed: April 20, 2021.
- Swales, S., R. B. Lauzier, and C. D. Levings. 1986 Winter habitat preferences of juvenile salmonids in two interior rivers in British Columbia. *Canadian Journal of Zoology-Revue Canadienne de zoologie* 64: 1506-1514.
- Thompson, B. C. 1975. A new prey-pursuit behavior by white-tailed kites. *Auk* 92:595.
- United States Census Bureau. 2019. U.S. Census Bureau data for Redwood City and San Mateo County.
- _____. 2017. U.S. Census Bureau data for Redwood City; San Mateo County; Tract 6103.02, BG 1; Tract 6091, BG 2.
- _____. 2010. U.S. Census Bureau data for Redwood City.
- _____. 2000. U.S. Census Bureau data for Redwood City.
- United States Climate Data. [United States Climate Data]. 2020. Climate Data for Redwood City. Available: <https://www.usclimatedata.com/climate/redwood-city/california/united-states/usca0926>. Accessed February 25, 2020.
- United States Department of Transportation. 2011. Policy Statement on Climate Change Adaptation. Available: https://www.fhwa.dot.gov/environment/sustainability/resilience/policy_and_guidance/usdot.cfm. June. Accessed: April 20, 2020.

- United States Energy Information Administration. 2019a. California Energy Consumption by End-Use Sector, 2017. Available: <https://www.eia.gov/state/?sid=CA>. Accessed: June 3, 2020.
- _____. 2019b. Table CT7. Transportation Sector Energy Consumption Estimates, 1960-2017, California. Available: <https://www.eia.gov/state/seds/seds-data-complete.php?sid=CA>. Accessed: June 3, 2020.
- _____. 2019c. Renewable and Alternative Fuels: Alternative Fuel Vehicle Data. Available: <https://www.eia.gov/renewable/afv/index.php>. Accessed: June 2, 2020.
- U.S. Environmental Protection Agency (U.S. EPA). 2018. Inventory of U.S. Greenhouse Gas Emissions and Sinks. <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>. Accessed: August 21, 2019.
- U.S. Fish and Wildlife Service (USFWS). 1984. Draft (Final) Recovery Plan for the Salt Marsh Harvest Mouse/California Clapper Rail, U.S. Fish and Wildlife Service, Region 1, Portland, Oregon.
- _____. 2018. *The Information, Planning, and Consultation System (IPAC System)*. Available: <https://ecos.fws.gov/ipac/>.
- _____. 2019a. Critical Habitat for Threatened and Endangered Species Online Mapper. Available: <https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>. Accessed December 11, 2019.
- _____. 2019b. National Wetland Inventory. Available: <https://www.fws.gov/wetlands/data/Mapper.html>. Accessed December 11, 2019.
- _____. 2020. Environmental Conservation Online System: Information, Planning and Conservation System (IPAC). Available: <https://ecos.fws.gov/ipac/>. Accessed January 17, 2020.
- _____. 2021. Green Sturgeon. Available: <https://wildlife.ca.gov/Conservation/Fishes/Sturgeon/Green-Sturgeon>. Accessed February 4, 2021.
- United States Global Change Research Program (USGCRP). 2018. Fourth National Climate Assessment. Available: <https://nca2018.globalchange.gov/>. Accessed: June 24, 2020.
- Warner, J. S., and R. L. Rudd. 1975. Hunting by the white-tailed kite (*Elanus leucurus*). *Condor* 77:226-250.

This page intentionally left blank

Appendix A. Title VI Policy Statement

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY

Gavin Newsom, Governor

DEPARTMENT OF TRANSPORTATION

OFFICE OF THE DIRECTOR
P.O. BOX 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-6130
FAX (916) 653-5776
TTY 711
www.dot.ca.gov



Making Conservation
a California Way of Life.

August 2020

NON-DISCRIMINATION 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.a>

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.

Original signed by
Toks Omishakin
Director

“Provide a safe, sustainable, integrated and efficient transportation system to enhance California’s economy and livability”

This page intentionally left blank

Appendix B. Avoidance, Minimization, and/or Mitigation Measures

To be sure that all of the environmental measures identified in this document are executed at the appropriate times, the following mitigation program (as articulated in the proposed Environmental Commitments Record [ECR] that follows) would be implemented. During project design, the following avoidance, minimization, and/or mitigation measures would be incorporated into the project’s final plans, specifications, and cost estimates, as appropriate. All permits would be obtained prior to implementation of the project. During construction, environmental and construction/ engineering staff would ensure that the commitments contained in this ECR are fulfilled. Following construction and appropriate phases of project delivery, long-term mitigation maintenance and monitoring would take place, as applicable. Some measures may apply to more than one resource area. Duplicative or redundant measures have not been included in this ECR.

Table B-1: Environmental Commitments

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|---|-------------------------|-------------------|--------------------|
| Coastal Zone | | | |
| WQ-1. Water Quality/Erosion Control BMPs: Implement temporary erosion control and water quality measures as required by the Construction General Permit. | 2.2.2.4 | Caltrans | Construction |
| Visual/Aesthetics | | | |
| VIS-1. Median barrier height shall be minimized to preserve Bay views for motorists on the southbound side of the highway. | 2.1.8.4 | Caltrans | At Completion |
| VIS-2. Bridge design shall include measures to reduce visual prominence of the City of Redwood City’s 24-inch reclaimed waterline. | 2.1.8.4 | Caltrans | At Completion |
| VIS-3. Tree and vegetation removal shall be minimized to the extent feasible. | 2.1.8.4 | Caltrans | Construction |
| VIS-4. Trees and vegetation outside of clearing and grubbing limits shall be protected from the contractor’s operations, equipment, and materials storage. | 2.1.8.4 | Caltrans | Construction |
| VIS-5. All disturbed ground surfaces shall be restored and treated with erosion control. | 2.1.8.4 | Caltrans | After Construction |
| VIS-6. Replacement planting shall be provided in areas where shrub removal is necessary. | 2.1.8.4 | Caltrans | After Construction |
| VIS-7. During construction operations, unsightly material and equipment in staging areas shall be placed where they are less visible and/or covered where possible. | 2.1.8.4 | Caltrans | After Construction |
| VIS-8. 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. | 2.1.8.4 | Caltrans | After Construction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|--|-------------------------|-------------------|---|
| Cultural Resources | | | |
| CUL-1. Avoidance of Cultural Resources: If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area shall be diverted until a qualified archaeologist can assess the nature and significance of the find. | 2.1.9.4 | Caltrans | Construction |
| CUL-2. Avoidance of Human Remains: If human remains are discovered, California 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. The Caltrans Branch Chief of Archaeology shall be notified, and then the County Coroner contacted. If the remains are thought by the County Coroner to be Native American, the County Coroner would notify the NAHC, who, pursuant to PRC Section 5097.98, would then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains would contact the Branch Chief of Cultural Resources, Archaeology, so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable. | 2.1.9.4 | Caltrans | Construction |
| Water Quality and Stormwater Runoff | | | |
| WQ-1. Water Quality/Erosion Control BMPs: Implement temporary erosion control and water quality measures as required by the Construction General Permit. To prevent or reduce impacts, temporary construction site BMPs would be implemented for sediment control and material management. In addition, requirements under the SWPPP would require the construction contractor to implement BMPs for water quality. | 2.2.2.4 | Caltrans | Construction |
| Noise | | | |
| NOI-1. Public Notices: Require public outreach to inform residents, business and others with upcoming major activities and time frame. | 2.2.5.4 | Caltrans | At least two weeks in advance of major construction activities. |
| NOI-2. Noise Scheduling Measure: When possible, schedule major activities separately with others to reduce significant vibration impacts. | 2.2.5.4 | Caltrans | Before major construction activities |
| NOI-3. CIDH Piles to Reduce Vibration: Caltrans has made the decision to use CIDH piles instead of concrete pile driving to reduce vibration. They would drill pile hole to a depth prescribed by the engineer and then drive the concrete pile to the full depth. | 2.2.5.4 | Caltrans | Construction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|---|-------------------------|--------------------------------------|---------------------|
| <p>NOI-4. Noise Control Measure for pile driving: If Caltrans chooses pile driving operations as the method for drilling, the contractor shall provide Noise Control and Monitoring Plans to reduce/minimize noise below 86 dBA, per Caltrans Standard Specification.</p> | 2.2.5.4 | Construction Contractor for Caltrans | Construction |
| <p>NOI-5. Noise Control Measure for CISS: If Caltrans chooses CISS as the method for drilling, the contractor shall also provide Noise Control and Monitoring Plans to reduce/minimize noise below 86 dBA, per Caltrans Standard Specification.</p> | 2.2.5.4 | Construction Contractor for Caltrans | Construction |
| Hazardous Waste and Materials | | | |
| <p>WQ-1. Water Quality/Erosion Control BMPs: Implement temporary erosion control and water quality measures as required by the Construction General Permit. To prevent or reduce impacts, temporary construction site BMPs would be implemented for sediment control and material management. In addition, requirements under the SWPPP would require the construction contractor to implement BMPs for water quality.</p> | 2.2.3.4 | Caltrans | Construction |
| <p>HAZ-1: Soil and groundwater testing and characterization would be required. In addition, a bridge survey would be needed to determine the presence or absence of asbestos-containing material (ACM) in the existing triple box culvert to be removed and replaced. The bridge survey and soil and groundwater testing would be conducted during the design phase of the project. If identified, ACM and contaminated soil and groundwater would be handled according to the appropriate project specifications.</p> | 2.2.3.4 | Caltrans | Before construction |
| Natural Communities | | | |
| <p>BIO-1. Environmentally Sensitive Area Fencing: ESAs would be clearly delineated using temporary high-visibility fencing. Construction work areas would include the active construction site and all areas providing support for the project, including areas used for vehicle parking, equipment and material storage and staging, and access roads. The high-visibility fencing would remain in place throughout the duration of construction activities, would be inspected regularly, and fully maintained at all times.</p> | 2.3.1.3 | Caltrans | Before construction |
| <p>BIO-2. Construction Site BMPs: The following site restrictions shall be implemented to avoid or minimize impacts on special-status species and their habitats.</p> | 2.3.1.3 | Caltrans | Construction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|---|-------------------------|-------------------|---------------------|
| Natural Communities | | | |
| BIO-3. Avoidance and Minimization Measure for Plants: As described in Section 2.3.3.4 in more detail, a qualified biologist shall conduct appropriately timed surveys for the listed plant species during these species' blooming periods before construction activities. | 2.3.1.3 | Caltrans | Before Construction |
| BIO-3. Minimizing Tree Removal: The Caltrans design team has worked to design the project to minimize tree removal to the maximum extent practicable, and no removal of trees is anticipated. | 2.3.1.3 | Caltrans | Construction |
| BIO-4. Vegetation Removal: Vegetation removal would be limited to the designated work areas needed for access and workspace. Where possible, vegetation would be trimmed instead of removed. Removal in temporary work areas would be cut above soil level to promote re-vegetative growth of established plants following construction to the maximum extent feasible. Vegetation would be mowed to a height greater than 4 inches. | 2.3.1.3 | Caltrans | Construction |
| BIO-5. Fish Passage: Fish Passage, "Design of the proposed replacement structures would incorporate hydraulic modeling to ensure that structures provide adequate fish passage. | 2.3.1.3 | Caltrans | Construction |
| Wetlands and Other Waters of the United States | | | |
| BIO-1. Environmentally Sensitive Area Fencing: As described in Section 2.3.1, ESAs would be clearly delineated using high-visibility fencing or similar materials. | 2.3.1.3 | Caltrans | Before Construction |
| WQ-1. Water Quality/Erosion Control BMPs: As described in Section 2.2.2, <i>Water Quality and Storm-Runoff</i> , WQ-1 would be incorporated to avoid substantial water quality impacts. The Construction General Permit would require the Contractor to submit a SWPPP. The SWPPP must also comply with the goals and restrictions identified in the RWQCB's Basin Plan. Any additional measures included in the Water Quality Certification would be implemented. | 2.2.2.4 | Caltrans | Construction |
| Wetlands and Other Waters of the United States | | | |
| WET-1. Compensatory Mitigation Measure for Wetlands Unavoidable impacts to wetlands and other aquatic resources would be mitigated to offset the loss of the functions and values of the feature. Impacts to wetlands would be mitigated at a minimum 1:1 ratio. this ratio would be refined during the design phase and in coordination with the regulatory agencies. | 2.3.2.4 | Caltrans | After Construction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|--|-------------------------|-------------------|--------------------|
| Plant Species | | | |
| <p>BIO-2. Avoidance and Minimization Measure for Plants: Before the commencement of construction activities, a qualified biologist shall conduct appropriately timed surveys for special-status species during the appropriate blooming periods.</p> <p>If a special-status plant species is discovered at any point, the biologist would work with the Resident Engineer to determine if it can be protected in-place, re-located within the BSA, or salvaged to be re-planted at the end of project construction. If the special-status plant species is federally or state listed, the appropriate natural resource agencies would be contacted immediately, and consultation would be initiated as necessary.</p> | 2.3.3.4 | Caltrans | Construction |
| <p>BIO-3. Minimizing Tree Removal: The Caltrans design team has worked to design the project to minimize tree removal to the maximum extent practicable, and no tree removal is anticipated.</p> | 2.3.3.4 | Caltrans | Construction |
| Plant Species | | | |
| <p>BIO-4. Vegetation Removal: Vegetation removal would be limited to the designated work areas needed for access and workspace. Where possible, vegetation would be trimmed instead of removed. Removal in temporary work areas would be cut above soil level to promote re-vegetative growth of established plants following construction to the maximum extent feasible. Vegetation would be mowed to a height greater than 4 inches.</p> | 2.3.3.4 | Caltrans | Construction |
| <p>BIO-6. Replant, Reseed, and Restore Disturbed Areas: Caltrans would restore temporarily disturbed areas to the preconstruction or improved contours and functions to the maximum extent practicable.</p> | 2.3.3.4 | Caltrans | After Construction |
| Animal Species | | | |
| <p>BIO-7. Construction Site BMPs: BMPs would be implemented to avoid or minimize impacts on special-status species and their habitats.</p> | 2.3.4.4 | Caltrans | Construction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|---|-------------------------|-------------------|-----------------|
| BIO-8. Entrapment Avoidance: To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1 foot deep would be covered at the close of each working day by plywood or similar materials or provided with one or more escape ramps. 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 would 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 and/or buried. | 2.3.4.4 | Caltrans | Construction |
| Animal Species | | | |
| BIO-9. Biological Monitor and Protocol for Observation: The names and qualifications of proposed biological monitor(s) would be submitted to USFWS and CDFW for approval prior to the start of construction. The agency-approved biological monitor(s), in coordination with the Resident Engineer, would have the authority to stop work that may result in the unauthorized take of special-status species. Work would 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. | 2.3.4.4 | Caltrans | Construction |
| BIO-10. Preconstruction/Daily Surveys: Preconstruction surveys for special-status wildlife species listed in this NES, would 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. | 2.3.4.4 | Caltrans | Preconstruction |
| BIO-11. Migratory Bird Treaty Act: To protect migratory birds and their nests, all initial major vegetation clearing, but not grubbing, would be conducted between October 1 and January 31, outside the typical bird nesting season, when possible. A qualified biologist with appropriate construction and species experience would conduct nest and bird surveys and other wildlife surveys before and during tree cutting activities. | 2.3.4.4 | Caltrans | Preconstruction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|---|-------------------------|-------------------|-----------------|
| Threatened and Endangered | | | |
| BIO-1. Environmentally Sensitive Area Fencing: ESAs would be clearly delineated using high-visibility fencing or suitable material. Construction work areas would include the active construction site and all areas providing support for the project, including areas used for vehicle parking, equipment and material storage and staging, and access roads. The high-visibility fencing would remain in place throughout the duration of construction activities, would be inspected regularly, and fully maintained at all times. | 2.3.5.4 | Caltrans | Construction |
| Threatened and Endangered | | | |
| BIO-7. Construction Site BMPs: The following site restrictions would be implemented to avoid or minimize impacts on special-status species and their habitats (described in Section 2.3.4.4). | 2.3.5.4 | Caltrans | Construction |
| BIO-9. Biological Monitor and Protocol for Observation: The names and qualifications of proposed biological monitor(s) would be submitted to the USFWS and CDFW for approval prior to the start of construction. The agency-approved biological monitor(s), in coordination with the resident engineer, would have the authority to stop work that may result in the unauthorized take of special-status species. Work would 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. | 2.3.5.4 | Caltrans | Preconstruction |
| BIO-10. Preconstruction/Daily Surveys: Preconstruction surveys for special-status wildlife species listed in this NES, would 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. | 2.3.5.4 | Caltrans | Preconstruction |
| BIO-12. Dry Season Work Window: Construction actions would be scheduled to minimize impacts to fish species and their habitat. To reduce impacts to fish species and habitat, construction activities within the Cordilleras Creek channel would be conducted during the dry season, between June 15 and October 15. | 2.3.5.4 | Caltrans | Construction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|---|-------------------------|-------------------|-----------------|
| Threatened and Endangered | | | |
| BIO-13. Worker Environmental Awareness Training: Construction personnel shall attend a mandatory environmental education program delivered by the agency-approved biological monitor or Caltrans biologist prior to taking part in site construction, including vegetation clearing. The program would focus on the conservation measures that are relevant to an employee's personal responsibility and would include an explanation on how to avoid take of CCC steelhead, Ridgway's rail, salt marsh harvest mouse, and western snowy plover. | 2.3.5.4 | Caltrans | Preconstruction |
| BIO-14. Proper Use of Erosion Control Devices: To avoid entanglement or injury of wildlife, including the salt marsh harvest mouse, erosion control materials that use plastic or synthetic monofilament netting would not be used. | 2.3.5.4 | Caltrans | Construction |
| BIO-15. Light Restrictions. Construction personnel would turn portable tower lights on no more than 30 minutes before the beginning of civil twilight, and off no more than 30 minutes after the end of civil sunrise. Portable tower lights would have directional shields attached to them, and personnel would only direct lights downward and toward active construction and staging areas. Lighting per portable tower light would not exceed 2,000 lumens. | 2.3.5.4 | Caltrans | Construction |
| BIO-16. All protected species would be allowed to leave under their own volition unless otherwise approved by CDFW and/or USFWS. | 2.3.5.4 | Caltrans | Construction |
| BIO-17. Vegetation where construction activities is closer than 50 feet of the edge of pickleweed vegetation would be removed at the location of the creek diversion system. | 2.3.5.3 | Caltrans | Construction |
| BIO-18. This measurement sets up protocols for vegetation removal to avoid impacts to harvest mouse and other sensitive species, such as requiring inspections for sensitive species before removing vegetation. | 2.3.5.3 | Caltrans | Construction |
| BIO-19. Fish Passage Assessment. To evaluate potential impacts to native fish species and fisheries resources, Caltrans shall submit a fish passage assessment to CDFW and add it to the PAD database. | 2.3.5.3 | Caltrans | Preconstruction |

Table B-1: Environmental Commitments (Continued)

| Minimization and/or Mitigation Measure | IS/EA Section Reference | Responsible Party | Timing |
|---|-------------------------|-------------------|--------------|
| Invasive Species | | | |
| BIO-20. Invasive Species Management: In compliance with the Executive Order 13112 on invasive species and guidance from FHWA, landscaping and erosion control measures included in the project would not use species listed as invasive. In areas of particular sensitivity, extra precautions would be taken if invasive species are found in or next to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. | 2.3.6.4 | Caltrans | Construction |

This page intentionally left blank

Appendix C. Species Lists

This page intentionally left blank



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:

April 07, 2021

Consultation Code: 08ESMF00-2020-SLI-1856

Event Code: 08ESMF00-2021-E-04333

Project Name: 2J730 Caltrans - Cordilleras Creek Bridge Replacement

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

<http://>

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

San Francisco Bay-Delta Fish And Wildlife

650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

Project Summary

Consultation Code: 08ESMF00-2020-SLI-1856

Event Code: 08ESMF00-2021-E-04333

Project Name: 2J730 Caltrans - Cordilleras Creek Bridge Replacement

Project Type: TRANSPORTATION

Project Description: This project is located at the Cordilleras Creek Bridge (BR# 35-0019) on US Route 101 in San Mateo County in the city of Redwood City at PM 7.13. The project proposes to replace the existing box culvert with a new structure. The existing bridge is a 180-ft long, 3-cell Reinforced Concrete (RC) box culvert with stepped wing walls and stepped guide walls at the ends of the pier walls. The original structure was built in 1930 as a 100-ft long, 3-cell RC box culvert. The structure was widened 55-ft on the downstream (east) side in 1958 and again in 1971 by an additional 25-ft on the same downstream (east) side to the current width of 180-ft. There are two alternatives being considered for the improvement of the bridge.

Alternative 1:

Alternative 1 proposes to replace the existing triple box culvert with three new precast, Reinforced Concrete (RC) box culverts. This alternative proposes to replace the existing drainage system, construct a new box culvert wing wall Type-B on the east side of the freeway and a new box culvert wing wall Type-A on the westside of the freeway, temporarily realign Cordilleras Creek, and line Cordilleras Creek west of the highway with vegetated rock stabilized embankment.

Alternative 2:

Alternative 2 proposes to replace the existing triple box culvert with a new single-span precast, prestressed bridge. This alternative proposes to replace 30ft of the approach slabs on each side of the structure, replace the existing drainage system, construct new retaining walls on the west side of the freeway, realign Cordilleras Creek, and line Cordilleras Creek with vegetated rock stabilized embankment.

Construction is to occur over three seasons and take place from June 15 through October 15, and work is scheduled to begin in 2023.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.49984817152605,-122.24061415599479,14z>



Counties: San Mateo County, California

Endangered Species Act Species

There is a total of 24 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

| NAME | STATUS |
|--|------------|
| Salt Marsh Harvest Mouse <i>Reithrodontomys raviventris</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/613 | Endangered |

Birds

| NAME | STATUS |
|--|------------|
| California Clapper Rail <i>Rallus longirostris obsoletus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4240 | Endangered |
| California Least Tern <i>Sterna antillarum browni</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104 | Endangered |
| Marbled Murrelet <i>Brachyramphus marmoratus</i> Population: U.S.A. (CA, OR, WA) There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467 | Threatened |
| Western Snowy Plover <i>Charadrius nivosus nivosus</i> Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8035 | Threatened |
| Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911 | Threatened |

Reptiles

| NAME | STATUS |
|--|------------|
| Alameda Whipsnake (=striped Racer) <i>Masticophis lateralis euryxanthus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5524 | Threatened |
| Green Sea Turtle <i>Chelonia mydas</i> Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199 | Threatened |
| San Francisco Garter Snake <i>Thamnophis sirtalis tetrataenia</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5956 | Endangered |

Amphibians

| NAME | STATUS |
|--|------------|
| California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 | Threatened |
| California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076 | Threatened |

Fishes

| NAME | STATUS |
|--|------------|
| Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321 | Threatened |
| Tidewater Goby <i>Eucyclogobius newberryi</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/57 | Endangered |

Insects

| NAME | STATUS |
|--|------------|
| Bay Checkerspot Butterfly <i>Euphydryas editha bayensis</i> There is final critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2320 | Threatened |
| Mission Blue Butterfly <i>Icaricia icarioides missionensis</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6928 | Endangered |
| Myrtle's Silverspot Butterfly <i>Speyeria zerene myrtleae</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6929 | Endangered |
| San Bruno Elfin Butterfly <i>Callophrys mossii bayensis</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394 | Endangered |

Crustaceans

| NAME | STATUS |
|--|------------|
| Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498 | Threatened |

Flowering Plants

| NAME | STATUS |
|--|------------|
| Fountain Thistle <i>Cirsium fontinale</i> var. <i>fontinale</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7939 | Endangered |
| Marin Dwarf-flax <i>Hesperolinon congestum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5363 | Threatened |
| San Mateo Thornmint <i>Acanthomintha obovata</i> ssp. <i>duttonii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2038 | Endangered |
| San Mateo Woolly Sunflower <i>Eriophyllum latilobum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7791 | Endangered |
| Showy Indian Clover <i>Trifolium amoenum</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459 | Endangered |
| White-rayed Pentachaeta <i>Pentachaeta bellidiflora</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7782 | Endangered |

Critical habitats

There are 3 critical habitats wholly or partially within your project area under this office's jurisdiction.

| NAME | STATUS |
|--|--------|
| Bay Checkerspot Butterfly <i>Euphydryas editha bayensis</i> https://ecos.fws.gov/ecp/species/2320#crithab | Final |
| California Red-legged Frog <i>Rana draytonii</i> https://ecos.fws.gov/ecp/species/2891#crithab | Final |
| Marbled Murrelet <i>Brachyramphus marmoratus</i> https://ecos.fws.gov/ecp/species/4467#crithab | Final |

This page intentionally left blank

Species List

Tables C-1 and C-2 describe the potential for plant and animal species to occur in the BSA. Most species of the species addressed in Tables C-1 and C-2 are not expected to occur within the BSA, either because of a lack of suitable habitat, local range/elevation restrictions, regional extirpations, or lack of connectivity between areas of suitable or occupied habitat. Only those species having some potential to occur within the BSA are addressed further in Section 2.3, Biological Environment.

Project Description : Replace bridge at Cordilleras Creek on State Route 101 at PM 7.1 in San Mateo County, CA

Quad Name **Redwood Point**

Quad Number **37122-E2**

ESA Anadromous Fish

SONCC Coho ESU (T) –

CCC Coho ESU (E) –

CC Chinook Salmon ESU (T) –

CVSR Chinook Salmon ESU (T) –

SRWR Chinook Salmon ESU (E) –

NC Steelhead DPS (T) –

CCC Steelhead DPS (T) – **X**

SCCC Steelhead DPS (T) –

SC Steelhead DPS (E) –

CCV Steelhead DPS (T) –

Eulachon (T) –

sDPS Green Sturgeon (T) – **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat –

CCC Coho Critical Habitat –

CC Chinook Salmon Critical Habitat –

CVSR Chinook Salmon Critical Habitat –

SRWR Chinook Salmon Critical Habitat –

NC Steelhead Critical Habitat –

CCC Steelhead Critical Habitat – **X**

SCCC Steelhead Critical Habitat –

SC Steelhead Critical Habitat –

CCV Steelhead Critical Habitat –

Eulachon Critical Habitat –

sDPS Green Sturgeon Critical Habitat – **X**

ESA Marine Invertebrates

Range Black Abalone (E) –

Range White Abalone (E) –

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat –

ESA Sea Turtles

East Pacific Green Sea Turtle (T) –

Olive Ridley Sea Turtle (T/E) –

Leatherback Sea Turtle (E) –

North Pacific Loggerhead Sea Turtle (E) –

ESA Whales

Blue Whale (E) –

Fin Whale (E) –

Humpback Whale (E) –

Southern Resident Killer Whale (E) –

North Pacific Right Whale (E) –

Sei Whale (E) –

Sperm Whale (E) –

ESA Pinnipeds

Guadalupe Fur Seal (T) –

Steller Sea Lion Critical Habitat –

Essential Fish Habitat

Coho EFH – **X**

Chinook Salmon EFH – **X**

Groundfish EFH – **X**

Coastal Pelagics EFH – **X**

Highly Migratory Species EFH –

MMPA Species (See ESA lists of Whales and Pinnipeds above)

ESA and MMPA Cetaceans/Pinnipeds
See lists above and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans –
MMPA Pinnipeds –

X

Gregory Pera
Branch Chief, South Counties Biology
111 Grand Avenue, Oakland CA, 94612
(510) 459-1783

From: [NMFS SpeciesList - NOAA Service Account](#)
To: Pera_Gregory@DOT
Subject: Federal ESA - - NOAA Fisheries Species List Re: Cordilleras Creek Species List 2J730 SM-101
Date: Tuesday, April 27, 2021 2:15:49 PM

EXTERNAL EMAIL. Links/attachments may not be safe.

Please retain a copy of each email request that you send to NOAA at nmfs.wcrca.specieslist@noaa.gov as proof of your official Endangered Species Act SPECIES LIST. The email you send to NOAA should include the following information: your first and last name; email address; phone number; federal agency name (or delegated state agency such as Caltrans); mailing address; project title; brief description of the project; and a copy of a list of threatened or endangered species identified within specified geographic areas derived from the NOAA Fisheries, West Coast Region, California Species List Tool. You may only receive this instruction once per week. If you have questions, contact your local NOAA Fisheries liaison.

Table C-1: Potential for Special-Status Plants to Occur in the BSA

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|---|--|--|---------------------|---|--|
| Alkali milk-vetch (<i>Astragalus tener</i> var. <i>tener</i>) | - / - / 1B.2 | Occupies alkali playa, valley and foothill grassland, vernal pools. Prefers low ground, alkali flats, and flooded lands. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Anderson's manzanita (<i>Arctostaphylos andersonii</i>) | - / - / 1B.2 | Broadleaved upland forest Chaparral North coast coniferous forest. Open sites, redwood forest. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Arcuate bush-mallow (<i>Malacothamnus arcuatus</i>) | - / - / 1B.2 | Occurs on gravelly alluvium in chaparral, and cismontane woodland. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Ben Lomond buckwheat (<i>Eriogonum nudum</i> var. <i>decurrens</i>) | - / - / 1B.1 | Chaparral, Cismontane woodland, Lower montane coniferous forest. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Bent-flowered fiddleneck (<i>Amsinckia lunaris</i>) | - / - / 1B.2 | Occupies cismontane woodland, valley and foothill grassland, coastal bluff scrub. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Big-scale balsamroot (<i>Balsamorhiza macrolepis</i>) | - / - / 1B.2 | Chaparral Cismontane woodland Ultramafic Valley & foothill grassland. Sometimes on serpentine. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| California seablite (<i>Suaeda californica</i>) | FE / - / 1B.1 | Margins of coastal salt marshes and swamps. | Present | No potential to occur. Suitable habitat exists within the BSA, but no recorded occurrences exists within 5 miles and species is believed to be extirpated from San Francisco Bay. | No effect |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|--|--|--|---------------------|---|--|
| Caper-fruited tropidocarpum (<i>Tropidocarpum capparideum</i>) | - / - / 1B.1 | Occupies valley and foothill grassland (alkaline clay). | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Chaparral ragwort (<i>Senecio aphanactis</i>) | - / - / 2B.2 | Chaparral, Cismontane woodland, Coastal scrub | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Choris' popcornflower (<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>) | - / - / 1B.2 | Occupies mesic areas in chaparral, coastal prairie, and coastal scrub. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Coast lily (<i>Lilium maritimum</i>) | - / - / 1B.1 | Closed-cone coniferous forest, coastal prairie, coastal scrub, broadleafed upland forest, north coast coniferous forest, marshes and swamps. Historically in sandy soil, often on raised hummocks or bogs; today mostly in roadside ditches. | Present | No potential to occur. Suitable habitat exists within the BSA, but no recorded occurrences exists within 5 miles and species is believed extirpated south of San Francisco. | — |
| Coastal marsh milk-vetch (<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i>) | - / - / 1B.2 | Coastal dunes Coastal scrub Marsh & swamp Wetland. Mesic sites in dunes or along streams or coastal salt marshes. | Present | No potential to occur. Suitable habitat exists within the BSA, but no recorded occurrences exists within 5 miles and location is outside of known range. | — |
| Congdon's tarplant (<i>Centromadia parryi</i> ssp. <i>congdonii</i>) | - / - / 1B.1 | Valley and foothill grassland (alkaline) | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|---|--|---|---------------------|---|--|
| Contra Costa goldfields (<i>Lasthenia conjugens</i>) | FE / - / 1B.1 | Valley and foothill grassland, vernal pools, alkaline playas, cismontane woodland. Vernal pools, swales, low depressions, in open grassy areas. | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |
| Crystal Springs fountain thistle (<i>Cirsium fontinale</i> var. <i>fontinale</i>) | FE / SE / 1B.1 | Occurs in serpentinite seeps in chaparral (openings), cismontane woodland, meadows, and valley/foothill grassland. | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |
| Crystal Springs lessingia (<i>Lessingia arachnoidea</i>) | - / - / 1B.2 | Coastal sage scrub, valley and foothill grassland, cismontane woodland. Grassy slopes on serpentinite; sometimes on roadsides. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Davidson's bush-mallow (<i>Malacothamnus davidsonii</i>) | - / - / 1B.2 | Occurs on sandy washes in chaparral, cismontane woodland, coastal scrub, and riparian woodland. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Diablo helianthella (<i>Helianthella castanea</i>) | - / - / 1B.2 | Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Dudley's lousewort (<i>Pedicularis dudleyi</i>) | - / SR / 1B.2 | Chaparral, cismontane woodland, North Coast coniferous forest, valley and foothill grassland. Deep shady woods of older coast redwood forests; also in maritime chaparral. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Fragrant fritillary (<i>Fritillaria liliacea</i>) | - / - / 1B.2 | Occurs in cismontane woodland, coastal prairie, coastal scrub, and valley/foothill grassland. Often on serpentinite. Various soils reported, though usually on clay in grassland. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Franciscan onion (<i>Allium peninsulare</i> var. <i>franciscanum</i>) | - / - / 1B.2 | Occurs on cismontane woodland, valley and foothill grassland. Prefers clay soils and dry | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|--|-------------------------------------|---|------------------|--|--|
| | | hillsides. Weak affinity to serpentine and sometimes on volcanics. | | | |
| Hairless popcornflower (<i>Plagiobothrys glaber</i>) | - / - / 1A | Meadows and seeps, marshes and swamps. Coastal salt marshes and alkaline meadows. 5 | Present | No potential to occur. Suitable habitat exists within the BSA, but no recorded occurrences exists within 5 miles and species is believed extirpated in California. | — |
| Hillsborough chocolate lily (<i>Fritillaria biflora</i> var. <i>ineziana</i>) | - / - / 1B.1 | Cismontane woodland Ultramafic Valley & foothill grassland. Probably only on serpentine; most recent site is in serpentine grassland. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Hoover's button-celery (<i>Eryngium aristulatum</i> var. <i>hooveri</i>) | - / - / 1B.1 | Vernal pool Wetland. Alkaline depressions, vernal pools, roadside ditches and other wet places near the coast. 1-50 m. | Present | Low potential to occur. Suitable habitat exists within the BSA, but no recorded occurrences exists within 5 miles. | — |
| Jepson's coyote thistle (<i>Eryngium jepsonii</i>) | - / - / 1B.2 | Occupies clay soils in valley/foothill grassland and vernal pools. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Kings Mountain manzanita (<i>Arctostaphylos regismontana</i>) | - / - / 1B.2 | Occupies granitic or sandstone outcrops in broadleafed upland forest, chaparral, and North Coast coniferous forest. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Legenere (<i>Legenere limosa</i>) | - / - / 1B.1 | In beds of vernal pools. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Loma Prieta hoita (<i>Hoita strobilina</i>) | - / - / 1B.1 | Chaparral, cismontane woodland, riparian woodland. Serpentine; mesic sites. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|--|-------------------------------------|--|------------------|--|--|
| Long-styled sand-spurrey (<i>Spergularia macrotheca</i> var. <i>longistyla</i>) | - / - / 1B.2 | Marshes and swamps, meadows and seeps. Alkaline. | Present | Low potential to occur. Suitable habitat exists within the BSA, but no recorded occurrences exists within 5 miles. | — |
| Lost thistle (<i>Cirsium praeteriens</i>) | - / - / 1A | Habitat unknown, known only from two collections from Palo Alto (last in 1901). Perhaps represents a casual introduction from the Old World. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Marin western flax (<i>Hesperolinon congestum</i>) | FT / ST / 1B.1 | Occupies serpentinite in chaparral and valley/foothill grassland. | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |
| Minute pocket moss (<i>Fissidens pauperculus</i>) | - / - / 1B.2 | North coast coniferous forest Redwood. Moss growing on damp soil along the coast. In dry streambeds and on stream banks. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Montara manzanita (<i>Arctostaphylos montaraensis</i>) | - / - / 1B.2 | Chaparral (maritime), Coastal scrub | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Most beautiful jewelflower (<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>) | - / - / 1B.2 | Chaparral, valley and foothill grassland, cismontane woodland. Serpentine outcrops, on ridges and slopes. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Oregon polemonium (<i>Polemonium carneum</i>) | - / - / 2B.2 | Coastal prairie, coastal scrub, lower montane coniferous forest. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Patterson's navarretia (<i>Navarretia paradoxiclara</i>) | - / - / 1B.3 | Serpentinite, openings, vernal mesic, often drainages. Meadows and seeps. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|---|-------------------------------------|---|------------------|---|--|
| Pincushion navarretia (<i>Navarretia myersii</i> ssp. <i>myersii</i>) | - / - / 1B.1 | Vernal pools, often acidic. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Point Reyes bird's-beak (<i>Chloropyron maritimum</i> ssp. <i>palustre</i>) | - / - / 1B.2 | Marsh and swamp Salt marsh Wetland. Usually in coastal salt marsh with <i>Salicornia</i> , <i>Distichlis</i> , <i>Jaumea</i> , <i>Spartina</i> , etc. | Present | Low potential to occur. 2 occurrences exist, however they are 100+ years old and listed as likely extirpated. | — |
| Round-headed Chinese-houses (<i>Collinsia corymbosa</i>) | - / - / 1B.2 | Occurs in coastal dunes. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Saline clover (<i>Trifolium hydrophilum</i>) | - / - / 1B.2 | Marshes and swamps, valley and foothill grassland, vernal pools. Wetlands. Mesic, alkaline sites. | Present | Low potential to occur. One occurrence within 5 miles, but record is 100+ years old. | — |
| San Francisco Bay spineflower (<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>) | - / - / 1B.2 | Occurs in coastal bluff scrub, coastal dunes, coastal prairie, and coastal scrub. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| San Francisco champion (<i>Silene verecunda</i> ssp. <i>verecunda</i>) | - / - / 1B.2 | Occurs in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|--|--|--|---------------------|---|--|
| San Francisco collinsia (<i>Collinsia multicolor</i>) | - / - / 1B.2 | Occurs on decomposed shale (mudstone) mixed with humus; sometimes on serpentine in closed-cone coniferous forest and coastal scrub. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| San Francisco owl's-clover (<i>Triphysaria floribunda</i>) | - / - / 1B.2 | Occurs in coastal prairie, coastal scrub, valley and foothill grassland | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| San Joaquin spearscale (<i>Extriplex joaquinana</i>) | - / - / 1B.2 | Alkali playa Chenopod scrub Meadow & seep Valley & foothill grassland. In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , <i>Frankenia</i> , etc. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| San Mateo thorn-mint (<i>Acanthomintha duttonii</i>) | FE / SE / 1B.1 | Occupies uncommon serpentinite vertisol clays in chaparral and valley/foothill grassland. Strict endemic to serpentine. Found in relatively open areas. | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |
| San Mateo woolly sunflower (<i>Eriophyllum latilobum</i>) | FE / SE / 1B.1 | Occurs in cismontane woodland, found on and off serpentine. | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |
| Santa Cruz tarplant (<i>Holocarpha macradenia</i>) | FT / SE / 1B.1 | Coastal prairie, coastal scrub, valley and foothill grassland. Light, sandy soil or sandy clay; often with nonnatives. | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |
| Scouler's catchfly (<i>Silene scouleri</i> ssp. <i>scouleri</i>) | - / - / 2B.2 | Occurs in coastal bluff scrub, coastal prairie, valley and foothill grassland | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|--|-------------------------------------|--|------------------|---|--|
| Short-leaved evax (<i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>) | - / - / 1B.2 | Occurs in coastal bluff scrub (sandy), Coastal dunes, Coastal prairie | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Slender-leaved pondweed (<i>Stuckenia filiformis</i> ssp. <i>alpina</i>) | - / - / 2B.2 | Occurs in marshes and swamps (assorted shallow freshwater) | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| Two-fork clover (<i>Trifolium amoenum</i>) | FE / - / 1B.1 | Occurs in coastal bluff scrub, Valley and foothill grassland (sometimes serpentinite) | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |
| Western leatherwood (<i>Dirca occidentalis</i>) | - / - / 1B.2 | Occurs in mesic areas in broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, north coast coniferous forest, riparian forest, and riparian woodland. On brushy slopes and mesic sites. Mostly in mixed evergreen and foothill woodland communities. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| White-flowered rein orchid (<i>Piperia candida</i>) | - / - / 1B.2 | North Coast coniferous forest, lower montane coniferous forest, broadleaved upland forest. Sometimes on serpentine. Forest duff, mossy banks, rock outcrops, and muskeg. | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |
| White-rayed Pentachaeta (<i>Pentachaeta bellidiflora</i>) | FE / SE / 1B.1 | Valley and foothill grassland, cismontane woodland. Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. | Absent | No potential to occur. No suitable habitat is present within the BSA. | No effect |

| Common Name (Scientific Name) | Federal / State/ Rare Plant Rank | Habitat Description | Habitat Presence | Potential to Occur | Effect Determination for Species by USFWS and NMFS |
|--|-------------------------------------|---|------------------|---|--|
| Woodland woollythreads (<i>Monolopia gracilens</i>) | - / - / 1B.2 | Occupies chaparral (maritime), cismontane woodland, north coast coniferous forest, and valley /foothill grassland. Prefers grassy sites, in openings with sandy to rocky soils. Often seen on serpentine after burns, but may have only weak affinity to serpentine | Absent | No potential to occur. No suitable habitat is present within the BSA. | — |

Notes:

^a Scientific nomenclature based on the California Natural Diversity Data Base (CNDDDB; CDFW 2018); common names from CNDDDB and other sources.

^b Acronym definitions are as follows:

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.

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.

California Native Plant Society (CNPS) Rankings:

1A Plant presumed extinct in California

1B Plants rare, threatened or endangered in California and elsewhere.

CNPS threat categories:

.1 Seriously endangered in California.

.2 Moderately threatened in California.

^c Blooming period and habitat information from CNPS (2018).

Sources:

CDFW 2021. *California Natural Diversity Database (CNDDDB) Rarefind 5*: Habitat Conservation Division. Sacramento, California.

<https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>

CNPS 2021. *The California Native Plant Society's Inventory of Rare and Endangered Plants of California* (Online edition, version 7.7).

<http://www.rareplants.cnps.org>

USFWS 2021. *The Information, Planning, and Consultation System (IPAC System)*. <https://ecos.fws.gov/ipac/>

Table C-2: Potential for Special-Status Wildlife to Occur Within the BSA

| Common Name (<i>Scientific name</i>) | Federal Status | State Status | Habitat | Habitat Presence | Potential to Occur | Effect Determination by USFWS and NMFS |
|--|----------------|--------------|---|------------------|---|--|
| Birds | | | | | | |
| California clapper rail (<i>Rallus longirostris obsoletus</i>) | Endangered | | Nests and forages in tidal marshes, and would occur in upland transitional habitats during high tides or flooding events when marshes are inundated. | Present | Low potential to occur. Suitable foraging habitat exists within the BSA, but birds are unlikely to use the area due to high levels of disturbance and the wide availability of habitat nearby. | Not likely to adversely affect |
| California least tern (<i>Sterna antillarum browni</i>) | Endangered | Endangered | Open sheltered waters. | Present | Low potential to occur. Suitable foraging habitat exists within the BSA, but there is a lack of recent records supporting presence. | No effect |
| Marbled Murrelet (<i>Brachyramphus marmoratus</i>) | Threatened | Threatened | Marine subtidal and pelagic habits from Oregon to Point Sal, Santa Barbara. Uses stands of mature Douglas fir and redwoods up to 40 miles inland for nesting. | Absent | No: The footprint does not contain suitable habitat. | No effect |
| Western Snowy Plover (<i>Charadrius nivosus nivosus</i>) | Threatened | SSC | Found on sandy beaches, salt pond levees, and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting. | Present | Low potential to occur. Suitable foraging habitat exists within the BSA, but birds are unlikely to use the area due to high levels of disturbance and the wide availability of habitat nearby. | Not likely to adversely affect |
| Yellow-billed Cuckoo (<i>Coccyzus americanus</i>) | Threatened | Endangered | Nesting habitat is cottonwood/willow riparian forest. Occurs only along the upper Sacramento Valley portion of the Sacramento River, the Feather River in Sutter County, the south fork of the Kern River in Kern Co., and along the Santa Ana, Amargos, and lower Colorado Rivers. | Absent | No: The footprint does not contain suitable habitat. | No effect |

Table C-2: Potential for Special Status Wildlife to Occur Within the BSA (Continued)

| Common Name (<i>Scientific name</i>) | Federal Status | State Status | Habitat | Habitat Presence | Potential to Occur | Effect Determination by USFWS and NMFS |
|--|----------------|--------------|---|------------------|---|--|
| Mammals | | | | | | |
| salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>) | Endangered | Endangered | Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Salicornia is the primary habitat. Does not burrow, but builds loosely organized nests. Requires higher areas for flood escape. | Present | Low potential to occur. Suitable habitat exists within the BSA, but mice are unlikely to use the area due to high levels of disturbance and the wide availability of habitat nearby. | Not likely to adversely affect |
| San Francisco dusky-footed woodrat (<i>Neotoma fuscipes annectens</i>) | — | SSC | Forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves and other material. May be limited by availability of nest-building materials. | Absent | No: The footprint does not contain suitable habitat. | — |
| Amphibians | | | | | | |
| California Red-legged Frog (<i>Rana draytonii</i>) | Threatened | Endangered | Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to estivation habitat. | Absent | No: The footprint does not contain suitable habitat. | No effect |
| California Tiger Salamander (<i>Ambystoma californiense</i>) | Threatened | Threatened | Cismontane woodland, meadow and seep, riparian woodland, valley and foothill grassland, vernal pool, wetland. Needs underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding. | Absent | No: The footprint does not contain suitable habitat. | No effect |

Table C-2: Potential for Special Status Wildlife to Occur Within the BSA (Continued)

| Common Name (<i>Scientific name</i>) | Federal Status | State Status | Habitat | Habitat Presence | Potential to Occur | Effect Determination by USFWS and NMFS |
|--|----------------|--------------|---|------------------|---|--|
| Fish | | | | | | |
| Southern DPS Green Sturgeon (<i>Acipenser medirostris</i>) | Threatened | — | The Southern DPS breeds in the upper Sacramento River system, and utilizes estuarine and marine waters of California for foraging and dispersal. | Present | Low potential to occur: Low numbers of this species may be present in the tidally influenced waters of San Francisco Bay and its tributaries year round. | Not likely to adversely affect |
| CCC DPS Steelhead (<i>Oncorhynchus mykiss</i>) | Threatened | — | The Central California Coast DPS extends from the Russian River to Soquel Creek, and includes Cordilleras Creek. | Present | Low potential to occur: The species is known to occur in nearby tributaries and historical records support use of Cordilleras Creek. There is a lack of historical records that species occurs in Cordilleras Creek. | Not likely to adversely affect |
| Delta Smelt (<i>Hypomesus transpacificus</i>) | Candidate | Endangered | Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater. | Absent | No: The project would not occur in suitable aquatic habitat. | No effect |
| Tidewater Goby (<i>Eucyclogobius newberryi</i>) | Endangered | SSC | Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River, Humboldt County. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels. | Absent | No: The project would not occur in suitable aquatic habitat. | No effect |

Table C-2: Potential for Special Status Wildlife to Occur Within the BSA (Continued)

| Common Name (<i>Scientific name</i>) | Federal Status | State Status | Habitat | Habitat Presence | Potential to Occur | Effect Determination by USFWS and NMFS |
|---|----------------|--------------|--|------------------|---|--|
| Reptiles | | | | | | |
| Alameda Whipsnake (<i>Masticophis lateralis euryxanthus</i>) | Threatened | — | Typically found in chaparral – northern coastal sage scrub and coastal sage. Rock outcrops, rock crevices and mammal burrows are important features. | Absent | No: The footprint does not contain suitable habitat. | No effect |
| East Pacific Green Sea Turtle (<i>Chelonia mydas</i>) | Threatened | — | Marine species that needs adequate supply of seagrasses and algae. The species primarily uses three types of habitat: beaches for nesting open ocean convergence zones, and coastal areas for "benthic" feeding. | Absent | No: The project would not occur in marine habitat. | No effect |
| San Francisco Gartersnake (<i>Thamnophis sirtalis tetrataenia</i>) | Endangered | Endangered | Freshwater marshes, ponds, and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important. | Absent | No: The footprint does not contain suitable habitat. | No effect |
| Crustaceans | | | | | | |
| Vernal Pool Tadpole Shrimp (<i>Lepidurus packardii</i>) | Endangered | — | Vernal pools and swales in valley grassland in the Central Valley from Shasta County to Merced County. It also known to occur in the San Francisco bay area at the Don Edwards San Francisco Bay National Wildlife Refuge. | Absent | No: The footprint does not contain suitable habitat. | No effect |

Table C-2: Potential for Special Status Wildlife to Occur Within the BSA (Continued)

| Common Name (<i>Scientific name</i>) | Federal Status | State Status | Habitat | Habitat Presence | Potential to Occur | Effect Determination by USFWS and NMFS |
|---|----------------|--------------|---|------------------|---|--|
| Insects | | | | | | |
| Bay Checkerspot Butterfly (<i>Euphydryas editha bayensis</i>) | Threatened | — | Coastal dunes, and valley and foothill grassland. Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. <i>Plantago erecta</i> is the primary host plant, and <i>Orthocarpus densiflorus</i> and <i>O. purpurascens</i> are the secondary host plants. | Absent | No: The footprint does not contain suitable habitat. | No effect |
| Mission Blue Butterfly (<i>Plebejus icarioides missionensis</i>) | Endangered | — | Hills and ridgetops, as well as slopes with southern exposure with caterpillar food plants, <i>Lupinus spp.</i> | Absent | No: The footprint does not contain suitable habitat. | No effect |
| Myrtle's Silverspot Butterfly (<i>Speyeria zerene myrtilae</i>) | Endangered | — | Coastal terrace prairie, coastal bluff scrub, and associated nonnative grassland habitats where the larval foodplant, <i>Viola adunca</i> , occurs. | Absent | No: The footprint does not contain suitable habitat. | No effect |
| San Bruno Elfin Butterfly (<i>Callophrys mossii bayensis</i>) | Endangered | — | 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 <i>Sedum spathulifolium</i> . | Absent | No: The footprint does not contain suitable habitat. | No effect |

Appendix D. List of Acronyms

| | |
|----------|---|
| ABAG | Association of Bay Area Governments |
| A CHP | Advisory Council on Historic Preservation |
| ACM | asbestos-containing material |
| ADA | Americans with Disabilities Act |
| AADT | Annual Average Daily Traffic |
| APE | Area of Potential Effects |
| BAAQMD | Bay Area Air Quality Management District |
| BMP | best management practices |
| BSA | Biological Study Area |
| Caltrans | California Department of Transportation |
| Cal/OSHA | California Division of Occupational Safety and Health |
| CARB | California Air Resources Board |
| CDFG | California Department of Fish and Game |
| CDFW | California Department of Fish and Wildlife |
| CEQ | Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| CFGC | California Fish and Game Code |
| CHP | California Highway Patrol |
| CIDH | cast-in-drilled-hole |
| CNDDB | California Natural Diversity Data Base |
| CO | carbon monoxide |
| CRHR | California Register of Historical Resources |
| CTP | California Transportation Plan |
| CWA | Clean Water Act |
| dBA | decibel(s) A-Weighted |

| | |
|-------|--|
| DTSC | Department of Toxic Substances Control |
| EA | Environmental Assessment |
| EIR | Environmental Impact Report |
| EO | Executive Order |
| ESA | environmentally sensitive area |
| FCAA | Federal Clean Air Act |
| FT | feet |
| FEMA | Federal Emergency Management Agency |
| FESA | Federal Endangered Species Act |
| FHWA | Federal Highway Administration |
| FTA | Federal Transit Administration |
| FTIP | Federal Transportation Improvement Program |
| GHG | greenhouse gas |
| IS | Initial Study |
| LUST | leaking underground storage tank |
| MBTA | Migratory Bird Treaty Act |
| MND | Mitigated Negative Declaration |
| MLD | Most Likely Descendant |
| MLP | U.S. 101 Managed Lanes Project |
| MOU | memorandum of understanding |
| MS4 | municipal separate storm sewer systems |
| MSAT | mobile source air toxics |
| MTC | Metropolitan Transportation Commission |
| NAAQS | National Ambient Air Quality Standards |
| NAHC | Native American Heritage Commission |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NMFS | National Marine Fisheries Service |

| | |
|-------------------|---|
| NRHP | National Register of Historic Places |
| NHTSA | National Highway Traffic Safety Administration |
| NO ₂ | nitrogen dioxide |
| NOAA Fisheries | National Oceanic and Atmospheric Administration Fisheries |
| NPDES | National Pollutant Discharge Elimination System |
| O ₃ | ozone |
| OCRS | Office of Cultural Resource Studies (Caltrans) |
| OHWM | ordinary high water mark |
| OSHA | Occupational Safety and Health Act |
| PA | Programmatic Agreement (Section 106) |
| PA&ED | Project Approval and Environmental Document |
| PCB | polychlorinated biphenyl |
| PDA | priority development areas |
| PDT | Project Development Team |
| PG&E | Pacific Gas and Electric Company |
| PM | post mile |
| PM ₁₀ | particulate matter 10 micrometers or smaller |
| PM _{2.5} | particulate matter 2.5 micrometers or smaller |
| PRC | Public Resources Code |
| PS&E | plans, specifications, and estimates |
| RC | reinforced concrete |
| RCRA | Resource Conservation and Recovery Act |
| ROW | right-of-way |
| RTP | Regional Transportation Plan |
| RWQCB | Regional Water Quality Control Board |
| SFBAAB | San Francisco Bay Area Air Basin |
| SHPO | State Historic Preservation Officer |
| SLR | sea level rise |

| | |
|----------|---|
| SFPUC | San Francisco Public Utilities Commission |
| SIP | State Implementation Plan |
| SR | State Route |
| STGA | Significant Trash Generation Area |
| SWMP | Storm Water Management Plan |
| SWPPP | Storm Water Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TCEs | Temporary Construction Easements |
| TIP | Transportation Improvement Program |
| TMDL | total maximum daily load |
| TMP | Transportation Management Plan |
| TSM | traffic systems management |
| U.S. 101 | United States Highway 101 |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| USDOT | United States Department of Transportation |
| USFWS | United States Fish and Wildlife Service |
| VIA | visual impact assessment |
| VMT | vehicle mile(s) traveled |

Appendix E. List of Technical Studies

The following technical studies were prepared for this project (EA 04-2J730/EFIS 0415000004):

Office of Cultural Resource Studies (OCRS) Section 106 Memo for the Cordilleras Creek Bridge Replacement Project at Postmile 7.13 on U.S. 101 in San Mateo County, April 20, 2020.

Structures Final Hydraulic Report, Cordilleras Creek Bridge (Replacement), Located on Route 101 over Cordilleras Creek in the County of San Mateo, March 10, 2020.

Natural Environment Study, San Mateo 101 Cordilleras Creek Bridge Replacement Project, May 2020.

Construction-Related Vibration Assessment Memorandum, December 12, 2019.

Scenic Resource Evaluation and Visual Impact Assessment Memorandum, February 19, 2020.

Biological Assessment and Essential Fish Habitat Assessment for the National Marine Fisheries Service, prepared by AECOM for National Marine Fisheries Service, November 2020.

Biological Assessment U.S. Highway 101 Cordilleras Creek Bridge Replacement Project, prepared by Caltrans for United States Fish and Wildlife Service, December 2020.

Additional technical input not listed here was provided by the Caltrans District 4 offices of Hazardous Waste, Air and Noise, and Water Quality.

This page intentionally left blank

Appendix F. Section 4(f)

Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determination(s)

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that “it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.”

This section of the document discusses parks, recreational facilities, wildlife refuges, and historic properties found within or next to the project area that do not trigger Section 4(f) protection because: 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, or 4) the project does not permanently use the property and does not hinder the preservation of the property.

Section 4(f) Properties

Section 4(f) properties within a 0.25-mile radius from the project area include: Bair Island Ecological Reserve, Don Edwards San Francisco Bay National Wildlife Refuge, and the San Francisco Bay Trail.

The project would not require the permanent use of any Section 4(f) properties, as the project would not acquire any property outside of the state ROW. Following project construction, the project would be visually consistent with the existing freeway infrastructure and would not affect reserve, refuge or trail use. Construction activities would not require TCEs from, or closure, alteration, or other use of, the facilities listed above. No construction staging or other construction impacts would affect the use or enjoyment of these facilities. Users of San Francisco Bay Trail may momentarily see construction equipment as they pass by the project area to the west. However, visual effects would be temporary and short-term during construction.

These properties are Section 4(f) properties, but no “use” would occur. Therefore, the provisions of Section 4(f) do not apply.

This page intentionally left blank

Appendix G. Public Comments

Circulation, Review, and Comment on the Draft Environmental Document

Public input on the project was solicited during the review period for this IS/EA, which lasted 30 days from July 31, 2020, to August 31, 2020. The public was notified of the availability of the IS/EA using a number of methods, including a posting on the Caltrans District 4 Environmental Document website, mailed announcement to interested agencies and individuals, post card mailings to residences in the zip codes surrounding the project area, and a newspaper ad to the San Mateo Daily Journal. During the review period, Caltrans held a public meeting to share information about the project and collect comments on the IS/EA from interested parties. The review period and instructions for submitting comments were also included on the first page of this document. All formal comments are addressed, and responses published in this Final IS/EA as described below.

Introduction

This section contains all comments receive by the public. One comment letter that included six comments was received by the California Department of Fish and Wildlife (CDFW) on August 28, 2020. Responses follow each comment. Text changes resulting from the comments are summarized in the responses and have been incorporated into the IS/EA. Revisions made after the public review period are indicated by a vertical line in the margin of the IS/EA text, similar to the one shown to the left of this paragraph.

Memorandum

Date: August 28, 2020

To: Mr. Zachary Gifford
California Department of Transportation, District 4
Post Office Box 23660, MS-8B
Oakland, CA 94623
Zachary.Gifford@dot.ca.gov

DocuSigned by:

Gregg Erickson

BE74D4C93C604EA...

From: Mr. Gregg Erickson, Regional Manager
California Department of Fish and Wildlife-Bay Delta Region, 2825 Cordelia Road, Suite 100, Fairfield, CA 94534

Subject: U.S. Highway 101 Cordilleras Creek Bridge Replacement Project, Initial Study/Mitigated Negative Declaration, SCH No. 2020070578, City of Redwood City, San Mateo County

The California Department of Fish and Wildlife (CDFW) has reviewed the Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed U.S. Highway 101 Cordilleras Creek Bridge Replacement Project (Project) pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.¹ Pursuant to our jurisdiction, CDFW is submitting comments on the IS/MND as a means to inform the California Department of Transportation (Caltrans) as the Lead Agency, of our concerns regarding potentially significant impacts to sensitive resources associated with the proposed Project.

PROJECT LOCATION AND DESCRIPTION SUMMARY

Caltrans proposes to replace the existing Cordilleras Creek Bridge (Bridge #35-0019) located on United States (US) Highway 101 at post mile (PM) 7.13 in Redwood City, San Mateo County, in the State of California. The existing bridge is at the end of its service life and in need of replacement. The Project includes two build alternatives. Alternative 1 will replace the existing bridge with a new bridge that consists of a triple-box culvert. The culverts will be 10 feet by 10 feet in size; the existing culverts are 8 feet by 10 feet. Alternative 2 consists of replacing the existing bridge with a single-span bridge. Both alternatives will also include replacement of the existing drainage system, construction of a new retaining wall on the southbound side, minor reconfiguration of Cordilleras Creek, replacement of Median Barrier Guard Rails (MBGR) with Midwest Guard Rails (MGS), replacement of existing vehicle detector loops, as well as, the installation of safety lighting in the median. Installation of new fields of rock slope protection (RSP) along Cordilleras Creek on the east side of the bridge will also be conducted.

¹ CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

Mr. Zachary Gifford
California Department of Transportation

5

August 28, 2020

CDFW ROLE

CDFW is a Trustee Agency with responsibility under CEQA §15386 for commenting on projects that could impact fish, plant and wildlife resources. CDFW is also considered a Responsible Agency if a project would require discretionary approval, such as permits issued under the California Endangered Species Act (CESA), the Native Plant Protection Act, the Lake and Streambed Alteration (LSA) Program and other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources.

LAKE AND STREAMBED ALTERATION AGREEMENT

The Project has the potential to impact resources including mainstems, tributaries, floodplains as well as marsh complexes associated with Cordilleras Creek. If work is proposed that will impact the bed, bank channel or upland riparian habitat, including the trimming or removal of trees and riparian vegetation please be advised that the proposed Project may be subject to LSA Notification for impacts to drainage systems that connect to tributaries of main stem creeks and tributaries that occur within the Project Biological Study Area (BSA). CDFW requires an LSA Notification, pursuant to Fish and Game Code section 1600 et. seq., for or any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to notification requirements.

CALIFORNIA ENDANGERED SPECIES ACT

Please be advised that a CESA Incidental Take Permit (ITP) must be obtained if the Project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the Project. Under CESA, take is defined as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill." Issuance of an ITP is subject to CEQA documentation. If the Project will impact CESA-listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA Permit. The Project has the potential to result in take of the following species listed under CESA: salt-marsh harvest mouse (*Reithrodontomys raviventris*), State Endangered and Fully Protected.

ENVIRONMENTAL SETTING

The state special-status species that have the potential to occur in or near the Project site, include, but are not limited to:

- Salt-marsh harvest mouse (*Reithrodontomys raviventris*), State Endangered and Fully Protected

Mr. Zachary Gifford
California Department of Transportation

5

August 28, 2020

- California's Ridgeway's rail (*Rallus obsoletus obsoletus*), State Fully Protected
- Alameda song sparrow (*Melospiza melodia pusillula*), State species of special concern
- Western snowy plover (*Charadrius alexandrinus nivosus*), State species of special concern
- Steelhead – Central California Coast Distinct Population Segment (*Oncorhynchus mykiss*), Federally Endangered
- White tailed kite (*Elanus leucurus*), State Fully Protected
- Nesting birds
- Native and Rare Plants

COMMENTS AND RECOMMENDATIONS

CDFW acting as a Responsible Agency, has discretionary approval under CESA through issuance of an ITP and LSA Agreement as well as other provisions of the Fish and Game Code that afford protection to the State's fish and wildlife trust resources. CDFW would like to thank you for preparing the NOA and CDFW recommends the following updates, avoidance and minimization measures be imposed as conditions of Project approval by the lead agency, Caltrans, to ensure all Project-related impacts are mitigated to below a level of significance under CEQA:

COMMENT 1: Preferred Alternative and Design Analysis

Upon review of the proposed Project alternatives, CDFW recommends that the lead agency analyze and prepare a new bridge design alternative that fully spans the bankfull channel width. A bridge structure that fully spans the bankfull channel width will promote natural sediment transport patterns, provide unaltered fluvial debris movement, restore functional continuity and connectivity to the floodplain, provide fish passage for species like Central California Coast steelhead (Federally Endangered) and may provide opportunities for terrestrial wildlife connectivity. A bankfull spanning bridge structure can also help to reduce shear stresses and erosive velocities acting on the abutment channel banks which can help to eliminate the need for rock riprap in these areas. In addition, with the eventual rise in sea levels, lengthening the bridge opening will result in increased structure resiliency to climate change.

CDFW oppose alternatives currently presented due to the following: Alternative 1 recommends construction of a three-barrel, 10-foot by 10-foot, box culvert. This alternative represents a slight increase in size to the existing structure but represents the reinstallation of a similar structure that has created the current over-accumulation of sediments within the existing culvert and added to the degradation of the structure. CDFW does not support a multi-barrelled culvert structure at the Project location. Alternative 2 is a single-span bridge that does not fully span the bankfull channel and has an alignment that does not align correctly to stream flows. The proposed bridge opening is approximately 31 feet, 10 inches.

Mr. Zachary Gifford
California Department of Transportation

5

August 28, 2020

CDFW strongly recommends incorporation of the following design principles into the new bridge design alternative that fully spans the channel width to ensure the replacement structure allows the full functionality of Cordilleras Creek within its floodplain: (1) Design a bridge structure width 1.3 times the bankfull channel width to incorporate a larger than bankfull width of the existing channel to support a self sustaining stream-floodplain corridor and reduce the sediment load build up that currently exists; (2) Integrate bio-technical engineering revetments in lieu of rock slope protection into the Project design to avoid permanent impacts that result in an anthropogenic, hardscape structure with no habitat value within the bed, bank and channel.

Please reference the Federal Highway Administration's Hydraulic Engineering Circular No. 23 (HEC-23) Volume 1 - *Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance*, the NCHRP Report-544 *Environmentally Sensitive Channel and Bank-Protection Measures*, and Caltrans' Design Information Bulletin No. 87-01 *Hybrid Streambank Revetments: Vegetated Rock Slope Protection* for design details of various bio-technical engineering revetments that may be appropriate to offset permanent impacts and address fish passage as well as wildlife connectivity to reduce impacts below a level of significance.

CDFW recommends that the lead agency provide the following additional studies for the proposed alternative:

- (1) Hydrological analysis for the low and high design flows for fish passage, the bankfull flow or the 2-year flood event as a bankfull flow surrogate, and peak design flows (e.g. the 5-year, 10-year, and 100-year flood events);
- (2) Hydraulic analysis that provides development of the velocities, depths, shear stresses, and scour conditions acting on the channel bed and banks. This analysis must include inclusion of localized tidal events and future proposed sea level rise conditions; and
- (3) Geomorphic analysis that includes stream channel stability (both vertical and lateral stability), cross section analysis, and a longitudinal profile at the existing channel thalweg at unique and repeatable geomorphic features.

Please reference the *California Salmonid Stream Habitat Restoration Manual*, Parts IX and XII, for guidance in developing design flows for fish passage, data needs for a geomorphic analysis, and structure development that allows ecological connectivity above and below the stream crossing structure. CDFW strongly recommends that the lead agency engage in early coordination with CDFW's Conservation Engineering Branch on how to proceed with an appropriate design to adequately handle flow conveyance, sediment loads, and the effects of sea level rise within the Cordilleras Creek system.

COMMENT 2: Nesting Birds

CDFW encourages Project implementation outside of the bird nesting season, which extends from February through early September. However, if anthropogenic structure work activities, ground-disturbing or vegetation-disturbing activities must occur during the nesting season, the Project applicant is responsible for ensuring that implementation of the Project does not result in violation of the Migratory Bird Treaty Act or Fish and Game Code. To evaluate and avoid for potential impacts to nesting bird species, CDFW recommends incorporating the following mitigation measures, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 1: Nesting Bird Surveys

A qualified biologist conduct pre-activity surveys for active nests no more than seven (7) days prior to the start of ground or vegetation disturbance and every fourteen (14) days during Project activities to maximize the probability that nests that could potentially be impacted are detected. CDFW also recommends that surveys cover a sufficient area around the Project site to identify nests and determine their status. A sufficient area means any area potentially affected by the Project. Prior to initiation of ground or vegetation disturbance, CDFW recommends that a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests. Once Project activities begins, CDFW recommends having the qualified biologist continuously monitor nests to detect behavioral changes resulting from the Project. If behavioral changes occur, CDFW recommends halting the work causing that change and consulting with CDFW for additional avoidance and minimization measures.

Recommended Mitigation Measure 2: Nesting Bird Buffers

CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or on-site parental care for survival. Variance from these no-disturbance buffers is possible when there is compelling biological or ecological reason to do so, such as when the Project site would be concealed from a nest site by topography. CDFW recommends that a qualified biologist advise and support any variance from these buffers.

Comment 3: Fish Passage Assessment

Senate Bill 857 (SB-857), which amended Fish and Game Code 5901 and added section 156 to the Streets and Highways Code states in section 156.3, "For any project using state or federal transportation funds programmed after January 1, 2006, [Caltrans] shall insure that, if the project affects a stream crossing on a stream where anadromous fish are, or historically were, found, an assessment of potential barriers to fish passage is done prior to commencing project design. [Caltrans] shall submit the assessment to

the [CDFW] and add it to the CALFISH database. If any structural barrier to passage exists, remediation of the problem shall be designed into the project by the implementing agency. New projects shall be constructed so that they do not present a barrier to fish passage. When barriers to fish passage are being addressed, plans and projects shall be developed in consultation with the [CDFW].

CDFW strongly recommends incorporation of the language noted above as well as a discussion of Cordilleras Creek as identified in the fish passage assessment database (US 101, PM 7.13, San Mateo County), Fish Passage Assessment Database ID# 733784, fish barrier status: unknown. The fish passage section should discuss the current status of the crossing locations noted in the California Fish Passage Assessment Database, conduct first pass and or second pass fish assessments, as necessary, as well as, provide images of the upstream and downstream ends of water conveyance structures. CDFW requests a fish passage discussion section is included to address these potentially significant impacts through the following avoidance and minimization measure, which should be made a condition of approval by the lead agency.

Recommended Mitigation Measure 1: Fish Passage Assessment

To evaluate potential impacts to native fish species and fisheries resources, Caltrans shall submit the assessment to CDFW and add it to the CALFISH database. If any structural barrier to passage exists, remediation of the problem shall be designed into the Project by the implementing agency. New projects shall be constructed so that they do not present a barrier to fish passage. When barriers to fish passage are being addressed, plans and projects shall be developed in consultation with CDFW.

COMMENT 4: Light Impact Analysis and Discussion

Page 1-5 of the IS/MND notes that safety lights will be installed in the median barrier for both alternatives of the Project. No further information is provided on the type, location or specification outputs of the proposed lighting. CDFW recommends including additional details on the proposed safety lighting and if the lighting represents a potentially significant impact, the IS/MND should describe the type, quantity, location and specification outputs [in kelvin-scale and nanometers (wavelengths)] of all proposed new and replacement lighting installations. To accomplish this, the IS/MND should provide an analysis of the current lighting regime known to be present on-site as well as an analysis of the proposed changes in the lighting regime that will occur as a result of new or replacement lighting installations through the development and comparison of Isolux diagrams described in measure 1 below. The Isolux diagrams should illustrate the area and intensity over which artificial lighting will create additional light impacts over the natural landscape. Artificial lighting has the potential to create a significant impact because unlike the natural brightness created by the monthly cycle of the moon, the permanent and continuously powered lighting fixtures create an unnatural light regime that produces a constant light output, 365 days a year that can have a cumulatively significant impact on fish and wildlife populations. The IS/MND should

Mr. Zachary Gifford
California Department of Transportation

5

August 28, 2020

include a discussion in the Biological Resources section of the potentially significant impacts that could be created by increased permanent light installations or replacements or new installations to determine the extent of the impacts to rare, threatened, endangered, nocturnal and migratory bird species known to occur within the Project vicinity including but not limited to saltmarsh harvest mouse, migratory birds and native fish species. CDFW recommends the following avoidance and minimization measures are incorporated.

Recommended Mitigation Measure 1: Light Impact Assessment and Avoidance

The lead agency shall be required to submit to natural resource agencies, 30 days prior to the initiation of construction Isolux diagrams that note current light levels present during pre-Project conditions and the predicted Project light levels that will be created upon completion of the Project. Within 60 days of Project completion, the lead agency shall conduct a ground survey that compares predicated light levels with actual light levels achieved upon completion of the Project through comparison of Isolux diagrams. If an increase from the projected levels to the actual levels is discovered additional avoidance, minimization or mitigation measures may be required in coordination with the natural resource agencies.

Recommended Mitigation Measure 2: Light Output Limits

All LED's or bulbs installed as a result of the Project shall be rated to emit or produce light at or under 2,700 kelvin that results in the output of a warm white color spectrum.

Recommended Mitigation Measure 3: Vehicle Light Barriers

Solid concrete barriers at a minimum height of 3.5 feet should be installed in areas where they have the potential to reduce illumination from overhead lights and from vehicle lights into areas outside of the roadway. Barriers should only be utilized as a light pollution minimization measure if they do not create a significant barrier to wildlife movement. Additional barrier types should be employed when feasible, such as plastic inserts (privacy slats) into the spacing of cyclone fencing to create light barriers into areas outside the roadway.

Recommended Mitigation Measure 4: Reflective Signs and Road Striping

Retro-reflectivity of signs and road striping should be implemented throughout the Project to increase visibility of roads to drivers and reduce the need for electrical lighting. Reflective highway markers have also been proven effective to reduce raptor collisions on highways in California's central valley if installed along highway verges and medians.

COMMENT 5: Threatened, Endangered, Rare and Native Plant Species

CDFW recommends that the Project area be surveyed for special-status plants by a qualified botanist following the "Protocols for Surveying and Evaluating Impacts to

Mr. Zachary Gifford
California Department of Transportation

5

August 28, 2020

Special-Status Native Plant Populations and Natural Communities,” which can be found online at <https://wildlife.ca.gov/Conservation/Survey-Protocols>. This protocol, which is intended to maximize detectability, includes identification of reference populations to facilitate the likelihood of field investigations occurring during the appropriate floristic period. In the absence of protocol-level surveys being performed, additional surveys may be necessary. Rare plants known to occur within the vicinity of the Project include but are not limited to saline clover and Delta tule pea.

Recommended Mitigation Measure 1: Threatened, Endangered, Rare and Native Plants

A Qualified Biologist shall conduct a survey during the appropriate blooming period for all special-status plants that have the potential to occur within the Project site prior to the start of construction. Surveys should be conducted following the *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities*, prepared by CDFW, dated March 20, 2018². If special-status plants are found, the Project will be re-designed to avoid impacts to special-status plants to the greatest extent feasible. If impacts to special-status plants cannot be avoided completely during construction, compensatory mitigation and on-site restoration will be implemented and the plan provided for CDFW review and approval. A Qualified Biologist in this context should be knowledgeable about plant taxonomy, familiar with plants of the region, and have experience conducting botanical field surveys according to vetted protocols. If take of any species listed under CESA cannot be avoided either during Project activities or over the life of the Project, a CESA ITP is warranted (pursuant to Fish and Game Code Section 2080 *et seq.*).

COMMENT 6: Tidal Marsh Species Assessment and Avoidance

According to multiple records in the CNNDDB, the Project is located within and adjacent to habitat that may be suitable foraging and nesting habitat for tidal marsh species including California clapper rail (CCR) also known as, Ridgeway’s rail, a California Fully Protected Species also protected under and the federal Migratory Bird Treaty Act (MBTA). The Project is also located within and adjacent to suitable habitat for the salt marsh harvest mouse (SMHM), a California Fully Protected Species and State Listed Endangered species, according to multiple records in the California Natural Diversity Database. CDFW recommends the following avoidance and minimization measures are included in the draft IS/MND to reduce impacts below a level of significant.

Recommended Mitigation Measure 1: CCR and Tidal Marsh Species

Work may not be conducted in CCR habitat between February 1 and August 31 unless surveys indicate the species is not present. If Project activities within 700 feet of CCR habitat will be conducted during the nesting season (February 1 to August 31) then multiple, pre-construction, call back surveys shall be required prior to initiation of Project activities. A minimum of four surveys must be conducted between January and April, a

² <https://www.wildlife.ca.gov/Conservation/Survey-Protocols#377281280-plants>

Mr. Zachary Gifford
California Department of Transportation

5

August 28, 2020

minimum of 2-3 weeks apart. The listening stations will be established at 150-meter intervals along road, trails, and levees that will be affected by Project implementation. CCR vocalization recordings will be played at each station.

For CCR, each listening station will be occupied for a period of ten minutes, followed by one minute of playing CCR vocalization recordings, then followed by one additional minute of listening. Sunrise surveys will begin 60 minutes before sunrise and conclude 75 minutes after sunrise (or until presence is detected). Sunset surveys will begin 75 minutes before sunset and conclude 60 minutes after sunset (or until presence is detected). Surveys will not be conducted when tides are greater than 4.5 NGVD. A GPS receiver will be used to identify call location and distance. The call type, location, distance, and time will be recorded on a data sheet. CDFW reserves the right to provide additional measures to this agreement in the event rail species are detected. If CBR/CCR are detected through surveys, then Project activities will not occur within 700 feet of an identified calling center. If the activity occurs where the Project site is across a major channel or slough from the Project site greater than 700 feet in distance the activity may continue. If bird activity is surveyed or discovered within the buffer limits immediate consultation with CDFW is required.

If a CCR is observed within the Project area at any time, work shall be stopped immediately by a qualified biologist and the rail species will be allowed to leave the area on its own. If the rail species does not leave the area, then no work shall commence until CDFW has made a determination on how to proceed with work activities. Daily monitoring surveys of Project sites shall occur for CCR until the Project is complete. If an injured or dead CCR is discovered at the Project sites, consultation with CDFW is required immediately.

Recommended Mitigation Measure 2: Tidal Marsh Species

In Project locations where suitable or potentially suitable tidal marsh and pickle weed habitat is present, a qualified biologist shall conduct pre-construction surveys for SMHM in any areas designated for vegetation disturbance, sediment removal, bank protection, vegetation management, operation of large equipment, staging, or access within seven days prior to commencing work and immediately preceding equipment mobilization in an area where Project activities will occur. The qualified biologist shall have previous SMHM experience and shall be approved by CDFW to conduct the surveys. If SMHM activity is detected or a SMHM is discovered, immediate consultation with CDFW is required before work may continue.

If a mouse of any species is observed within the Project area, work shall be halted immediately by the qualified biologist within 300 feet of discovery and the mouse shall be allowed to leave the work area on its own. If the mouse does not leave the area, no work shall commence until CDFW can reasonably conclude that no take shall occur. Temporary, exclusionary fencing shall be installed around the work area defined in the Project description and at access roads for each site immediately following vegetation removal, and before excavation activities begin. The fence should be made of non-

Mr. Zachary Gifford
California Department of Transportation

5

August 28, 2020

woven material (i.e., heavy gauge plastic) that does not allow SMHM to pass through or over. The biologist/biological monitor must ensure the fence remains an effective barrier to prevent entry of SMHM into work area. Alternative PVC exclusion systems may also be employed. Daily inspection and monitoring of the areas with the potential for SMHM shall occur by the Qualified Biologist throughout the course of the Project. Upon completion of fence installation a biological monitor may begin monitoring all work within 250 feet of tidal or pickle weed habitats as determined by the CDFW approved biologist. The biologist shall inspect the work area and adjacent habitats to determine if SMHM are present for a minimum of once per week for the duration of the Project. The biologist/biological monitor shall ensure the exclusionary fence has no holes and the base remains buried. The fenced area will be inspected daily to ensure that no mice are trapped. If any mice are found along or inside the fence work shall be stopped and the mice will be closely monitored until they move away from the construction area of their own accord. The qualified biologist/biological monitor shall remain on-site while work activities are occurring.

SMHM may not be handled or captured at any time during site preparation or Project activities. If an injured or dead SMHM is discovered at the Project site, consultation with CDFW is required immediately before work can proceed.

CONCLUSION

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California's fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

Questions regarding this letter or further coordination should be directed to Mr. Robert Stanley, Senior Environmental Scientist (Specialist), at (707) 428-2093 or Robert.Stanley@wildlife.ca.gov; or Mr. Craig Weightman, Environmental Program Manager at (707) 944-5577 or Craig.Weightman@wildlife.ca.gov.

cc: State Clearinghouse #2020070578

Responses to CDFW Comments

Response to Comment CDFW-1

In comment 1, CDFW recommends that the lead agency analyze and prepare a new bridge design with a span over the creek that is 1.3 times the bankfull channel width and integrates bio-technical engineering revetments in lieu of riprap. CDFW also recommends additional studies including hydrologic analysis, hydraulic analysis, and geomorphic analysis. Caltrans has reviewed and acknowledges CDFW's comments and recommendations regarding bridge design and additional analyses. Caltrans has selected the free-span bridge alternative (Alternative 2) for design, which has been refined to greatly reduce the proposed extent of riprap. Caltrans has also initiated some of the additional analyses recommended by CDFW. These analyses would be further developed during the design phase and Caltrans would host an interagency kickoff meeting at the beginning of the design phase. Caltrans would seek CDFW's input on the refinement of the project's design going forward.

Preferred Alternative

Alternative 2 would remove the existing triple box culvert and replace it with a single-span bridge. This change would improve habitat conditions in the Action Area by removing roughly 1,800 square feet of concrete that underlies the channel and replacing it with a structure that provides a natural channel bottom. Additionally, the proposed project would result in an increase in the width of the channel under the bridge. Exhibit 3 [from 2/1/21 response to NMFS on BA comments] represents the latest design information and includes cross sections that show the existing channel and structure geometry as well as the proposed placement of the riprap, and geometry of the new structure. The first page shows the locations of three sections in plan view and the second page shows the cross sections. The inner surface of the walls of the new structure would be at approximately the same location as the inner surface of the two outer-most walls of the existing triple box culvert, with a span of 31.83 feet. However, because the two middle walls of the box culvert would be removed, each of which is 12 inches in width, this represents an increase in total channel width of 2 feet.

NMFS design guidelines for salmonid passage at stream crossings are that bridge widths should be 1.5 times the active channel width or equal to or greater than the bankfull channel width (NMFS 2019), and NMFS has stated that a typical recommendation for bridge openings is 1.2 times the bankfull width (J. Wooster pers. comm. 2020). However, both active channel width and bankfull channel width are fluvial concepts most relevant to inland waterways; they may not translate well to the project area because the channel is tidally influenced and not formed by stream processes alone. Additionally, these guidelines were developed to facilitate migration of anadromous salmonids, and Cordilleras Creek is not expected to support anadromy.

An alternative metric to use for design purposes in a tidal channel is the top-of-bank to top-of-bank width. Top-of-bank is the point in the channel where the flow is no longer contained in the channel and overflows onto the floodplain, typically characterized by a distinct break in slope. In most tidal marsh plains, the mean higher high water (MHHW) level is above the top-of-bank. However, in a man-made flood conveyance channel such as the reach of Cordilleras Creek that passes through the project area, the MHHW is typically kept below top-of-bank to maximize conveyance and minimize flooding. Because top-of-bank is above MHHW in the project area,

and because a highly constrained stream such as Cordilleras Creek is not expected to meander or widen, if the new bridge is designed to be wider than the adjacent top-of-bank widths upstream and downstream, the influence of the bridge on fluvial and tidal processes should be minimized.

Stream widths were measured at three cross sections taken perpendicular to the shoreline downstream of the Cordilleras Creek Bridge, where the channel width stabilizes through a straight section before it hits the Bair Island levee, turns north, and empties into Smith and Steinberger sloughs (see Figure 8 from NMFS BA below). Using topographic data obtained from a LiDAR-derived surface of existing conditions, where MHHW is defined as 7.02 feet NAVD (MHHW obtained from the tidal datums at the Redwood City NOAA tidal gauge [#9414523]), MHHW and top-of-bank channel widths were measured at the three cross sections shown in Figure 8. The average MHHW width was 29.6 feet and the average top-of-bank width was 31.3 feet. Because the channel width under the new Cordilleras Creek Bridge (31 feet 10 inches [or 31.83 feet], assuming 2.5 foot-thick bridge walls) would be greater than the 31.3 foot top-of-bank width, and because this is also wider than the existing condition (30 feet), it would be an improvement to channel and habitat conditions in the project area relative to the existing condition.

Although Caltrans has not proposed biotechnical engineered revetments for this project, the proposed extent of riprap has been reduced from what was proposed when the DED was published, and it would be covered with soil and planted. This project is currently still in the “Project Approval / Environmental Document” (PA/ED) phase, and as such, the project is currently at 35% design completion. Caltrans’ goal is to minimize the construction footprint in Cordilleras Creek and some refinements have been made to the assumptions, including assumptions related to placement of riprap. As part of Caltrans’ refinement of the project design, the anticipated footprint of the riprap has been reduced from 405 square feet to a total of 210 square feet, to be placed only at the bridge wingwalls to protect the abutments. This includes 60 square feet on each side of the Cordilleras Creek channel at the west, or upstream, end of the bridge and 45 square feet on each side of the channel at the east, or downstream end of the bridge

The size of the riprap appropriate for this application has not yet been confirmed but is anticipated to be a mix of either Class I to IV riprap (median riprap diameter ranging from 6 inches to 15 inches) or Class V to VII (median riprap diameter ranging from 18 inches to 24 inches). The depth at which the riprap would be placed would be determined by its size, and the riprap would be covered with soil. The depth of soil over the riprap would be determined during the design phase. Caltrans would often increase the depth of topsoil to spread over the riprap based on the riprap size (e.g., Class I to IV = 12-inch topsoil depth, Class V to VII = 18-inch depth, and 24-inch depth for riprap beyond Class VII). No bank lining material other than the riprap, soil fill, and plantings are proposed, and these materials are proposed only at the abutments of the wingwalls of the new bridge, to protect the abutments. Planting design details would be developed during the PS&E phase of the project.

Additional Analyses

Caltrans has initiated additional hydrologic and hydraulic analyses and modeling requested by CDFW. The results of those analyses would inform the final design for the project and would be provided to CDFW when available. However, Caltrans does not intend to model future sea level rise conditions. The purpose of the project is to replace the existing bridge in kind because it is at

the end of its service life. The project is funded out of the SHOPP which is intended to be a “fix-it first” program and does not including funding for addressing long-term sea level rise adaptation strategies and fixes. Lengthening or raising the bridge would necessitate that the approach sections to U.S. 101 also be raised and substantially drive up construction costs as a result. There is no long-term sea level rise adaptation strategy in the region or along this corridor. Addressing sea level rise in the project vicinity would require a more comprehensive assessment of the corridor and surrounding land use. As described in the Department’s Structures Draft Final Hydraulic Report for the Cordilleras Creek Bridge (Replacement) dated May 21, 2020, (Hydraulic Report), the existing flood control channel upstream of U.S. 101 is undersized and does not contain the 50-year flood, with substantial flood waters spilling from the channel upstream of the project area.

Available hydraulic analysis for the proposed project is described in the Hydraulic Report (Alternative 2, a single-span bridge with top of deck grade equivalent to the existing culvert). Based on this analysis, at the 100-year flood peak discharge there would be zero freeboard at the upstream side of the proposed bridge, the same as the modeling results for the existing triple box culvert. Water velocities under the new bridge would remain the same as the existing condition for the 100-year flood (6.8 feet per second [fps]). The analysis in the hydraulic report found that the proposed project would not raise the water surface elevation at the upstream face of the bridge at the peak of the 100-year flood event. The hydraulic report also concludes that there would be no long-term channel degradation in the project area, contraction scour would not occur with the proposed project, and that local pier and abutment scour is expected to be minimal.

Caltrans’ hydraulic report summarizes potential sea level rise predictions for a range of scenarios assuming low or high emissions and at various times, from 2030 through 2100. These sea level rise scenarios range from 0.3 foot to 10.2 feet. Because the upstream channel is already undersized, as sea levels rise the frequency and volume of flow leaving the channel upstream of the project area may increase during high-flow events. Since the crossing currently lacks freeboard during extreme flood events, sea level rise may further reduce the ability of the crossing to pass flood flows with freeboard. However, this effect has not been modeled or quantified.

Because it must integrate with the adjacent sections of U.S. 101, the proposed bridge is not designed to address sea level rise and it is beyond the scope of this replacement project to address sea level rise. The existing crossing at Cordilleras Creek is already higher than the adjacent roadway to the north and south and the proposed bridge would further increase the elevation of the roadway surface at the crossing relative to the adjacent roadway. Raising the bridge beyond what is proposed would require raising the roadway approaches on either side of the bridge, which could trigger a need to modify nearby overpasses and would extend the footprint of the proposed project substantially up and down the U.S. 101 corridor. The proposed project is to replace the current structure with an in-kind structure, as the current structure has reached the end of its useful life. Sea level rise resiliency in this corridor would need to be addressed through a much larger and more comprehensive regional adaptation strategy. In the interim, the proposed project is required to address immediate structural issues at the Cordilleras Creek crossing, mitigate an existing hazard, and maintain public safety and continuity of the regional transportation network.

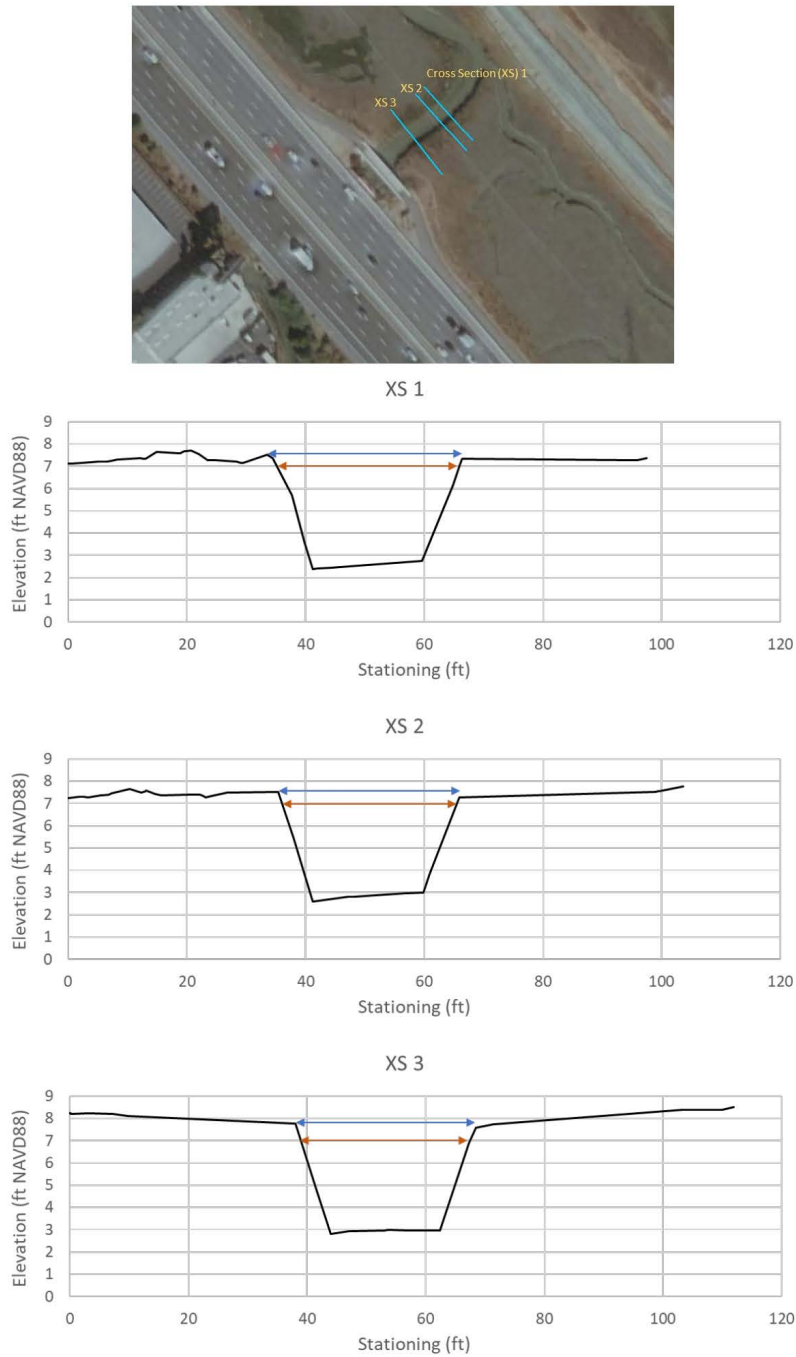


Figure 8. Channel Width Measurements with MHHW Shown in Red and Top-of-Bank Shown in Blue

Response to Comment CDFW-2

In Comment 2, CDFW makes recommendations for nesting birds including implementing project construction outside of the nesting season, conducting nesting bird surveys, and implementing nesting bird buffers during construction activities. Caltrans has reviewed and acknowledges CDFW's comments and recommendations regarding nesting birds. The project design has been refined to limit impacts to nesting birds and their habitats to the maximum extent possible. Caltrans would adhere to all regulations related to nesting birds. Furthermore, Caltrans would implement applicable measures to avoid or reduce potential project impacts to nesting birds.

Section 2.3.4.3 of the final IS/EA identifies measures to avoid and minimize the likelihood of taking nesting birds protected under the Migratory Bird Treaty Act and California Fish and Game Code Sections 3503, 3503.5, and 3513. BIO-11: Migratory Bird Treaty Act would be implemented during construction activities to protect migratory birds and their nests. All initial major vegetation clearing, except for grubbing, would be conducted between October 1 and January 31, outside the typical bird nesting season, when possible. Vegetation would be cleared only where necessary and would be cut above soil level to allow for re-sprouting of plants after construction.

During the nesting season, pre-construction surveys for nesting birds would be conducted by a qualified biologist no more than 72 hours prior to the start of construction activities. Furthermore, Caltrans would implement the buffers as prescribed by CDFW to further reduce the likelihood of taking migratory birds and their nests. Caltrans would coordinate with CDFW during construction. This discussion on surveys and nesting buffers has been added to the final IS/EA in section 2.3.4.3.

Response to Comment CDFW-3

In comment 3, CDFW recommends that Caltrans conduct a fish passage assessment of the existing condition at Cordilleras Creek Bridge and, if any structural barrier to passage exists, include remediation of the problem in the proposed project. Although anadromous fish are not expected to use Cordilleras Creek, the proposed project includes measure BIO-5, Fish Passage, "Design of the proposed replacement structures would incorporate hydraulic modeling to ensure that structures provide adequate fish passage," and Caltrans would complete the fish passage analysis requested by CDFW. Caltrans has initiated fish passage assessment of the existing condition, as well as a fish passage analysis that would compare the existing condition to the proposed condition. A first pass, or green-grey-red fish passage analysis following CDFW's protocol, has been initiated at the existing crossing and a report would be prepared and submitted to the PAD database. Caltrans is developing a new, two-dimensional hydraulic model that would be used to complete some of the analyses requested in Comment CDFW-1. It would also be used to compare the existing condition to the proposed condition and evaluate potential project effects on fish passage. Reports describing both studies would be provided to CDFW for review when they are available and would be considered during final design.

Following habitat analyses and literature reviews, Caltrans has determined habitat in Cordilleras Creek is unsuitable for anadromous fish and the creek's tidal reach is of limited value to estuarine species. Upstream of the estuarine portions, Cordilleras Creek is highly channelized with numerous manmade partial and complete barriers to fish passage including numerous drop

structures and a 10-foot dam. There are also a lack of reports documenting steelhead within Cordillera Creek historically or currently. On November 30, 2020, NMFS emailed Caltrans and stated that steelhead and green sturgeon are not likely to be present in the project area during construction. The estuarine habitat associated with San Francisco Bay that is designated critical habitat for Central California Coast steelhead (*Oncorhynchus mykiss*) and southern green sturgeon (*Acipenser medirostris*) extends less than 1,000 feet up Cordilleras Creek from the project area (to the upper extent of MHHW in Cordilleras Creek, see Figure 7 in the BA). This constructed flood control channel surrounded by commercial and industrial development is expected to be of little or no value to fish species of commercial or conservation concern. Because fish of commercial or conservation concern have no need to move between San Francisco Bay and Cordilleras Creek, despite undertaking the analyses requested by CDFW, Caltrans questions the need for additional fish passage analysis at this location.

The existing crossing has not been identified as a fish passage impediment and the proposed bridge would provide similar or better opportunities for fish passage. Passage for some fish may be limited by shallow depths through the project area at low tide when stream flow is at low or base levels, but daily tidal fluctuations create deeper water and conditions expected to be suitable for passage of all fish species and life stages on a daily basis. Sea level rise would increase depths through the project area, which may increase the duration of passage opportunity under most flow conditions. Given that the proposed project would slightly increase the cross-sectional area available for the conveyance of water and sediment through this crossing, the proposed project is not expected to significantly impact flow depths, water velocities, or fish passage.

Response to Comment CDFW-4

In Comment 4, CDFW recommends providing additional details on safety lighting and its potential impacts on biological resources in the IS/EA. Furthermore, CDFW recommends that Caltrans incorporate four avoidance and minimization measures, including conducting a light impact assessment; setting light outputs under 2,700 Kelvin; installing vehicle light barriers; and using reflective signs and striping to reduce the need for lights.

Caltrans has reviewed and acknowledged CDFW's comments and recommendations regarding project lighting impacts. More detailed information pertaining to safety lights has been added to the IS/EA on page 1-5. Briefly, twenty-two overhead "butterfly" lights are proposed in the new median barrier, approximately every 200 feet for a 0.83 mile stretch. The safety lights would incorporate directional shielding to minimize spillover beyond U.S. 101. An existing lighting conditions discussion has been added to the Final IS/EA in Section 2.3.5.3.

The project's lighting design is preliminary and would undergo refinement as part of advance design work. The exact specifications of lighting fixtures, including outputs, would not be developed until the design phase. Therefore, an analysis cannot occur until specifications of lighting are determined. Caltrans would work with CDFW to develop a lighting analysis during the design phase and seek opportunities to reduce the number of lights being proposed.

Per CDFW's recommended Mitigation Measure 1, 30 days prior to the initiation of construction, Caltrans would submit Isolux diagrams to resource natural resource agencies, including CDFW. Per CDFW's recommended Mitigation Measure 2, as discussed above, lighting specifications have not been determined at this time. However, Caltrans would consider light outputs under

2,700 Kelvin. Per CDFW's recommended Mitigation Measure 3, implementing vehicle light barriers are not part of the scope of this project. Per Mitigation Measure 4, traffic lanes would be restriped as part of the project. No additional reflective signs are proposed for this project.

Response to Comment CDFW-5

Threatened, Endangered, Rare and Native Plant Species

In Comment 5, CDFW makes recommendations that Caltrans conduct surveys for threatened, endangered, rare, and native plant species before construction activities. The project design has been refined to limit impacts to threatened, endangered, rare, and native plant species to the maximum extent possible. Avoidance and minimization measures have been developed to protect these plant species and are addressed in Section 2.3.3.4 of the IS/EA. Caltrans would have a qualified biologist conduct preconstruction surveys, in accordance with CDFW protocol, during the blooming periods for all special-status plants that have the potential to occur in the project area. If special-status plants are found, the Project would be redesigned to avoid impacts to special-status plants to the greatest extent feasible. An Incidental Take Permit would be prepared if take of any CESA listed plant cannot be avoided.

As discussed in Section 2.3.3.2, CNDDDB, CNPS, and USFWS records were reviewed, and botanical surveys were previously conducted in the study area during bloom periods for target plants. Four special-status plants species were identified to have a low potential to occur based on nearby known occurrences but were not observed during surveys. The majority of plants observed are considered nonnative and invasive. Measures BIO-2 and BIO-4 would be implemented to avoid and minimize impacts to special status plant species should they be present. These measures involve having a qualified biologist conduct appropriately timed surveys for the listed plant species during these species' blooming periods before construction, and limiting vegetation removal during construction of the project.

Vegetation removal would be limited to designated work areas needed for access and workspace. Where possible, vegetation would be trimmed instead of removed. Removal in temporary work areas would be cut above soil level to promote re-vegetative growth of established plants following construction to the maximum extent feasible. Vegetation would be mowed to a height greater than 4 inches. If special-status plant species are observed on site and cannot be avoided completely during construction, Caltrans would consult with CDFW to attempt translocations of plants out of the footprint.

Response to Comment CDFW-6

In Comment 6, CDFW makes recommendations to avoid impacts to tidal marsh species, including the CCR and SMHM.

CDFW's Mitigation Measure 1 is related to preconstruction surveys for CCR. CDFW states that construction work may not be conducted in CCR habitat between February 1 and August 31, unless surveys indicate the species is not present. Caltrans would be required to conduct multiple, pre-construction, call back surveys for construction activities that occur within 700 feet of CCR habitat during the nesting season. Caltrans has developed avoidance minimization measures for CCR and other nesting bird species that could occur in the project area. These measures are addressed in Section 2.3.5.4 of the final IS/EA.

In Mitigation Measure 2, CDFW recommends that a qualified biologist conduct preconstruction surveys for SMHM if suitable or potentially suitable tidal marsh and pickle weed habitat is present before construction activities commence. As stated in Section 2.3.5.3, if a SMHM gains access to a construction zone, work would be halted immediately within 50 feet until the animal leaves the site or is captured and relocated by the USFWS-Approved Biological Monitor. Caltrans would implement BIO-1 (Environmentally Sensitive Area Fencing), BIO-8 (Biological Monitor and Protocol for Observation), BIO-10 (Preconstruction/Daily Surveys), BIO-13 (Worker Environmental Awareness Training), BIO-15 (Light Restrictions), and BIO-14 (Proper Use of Erosion Control Devices), as described on pages 2-77 and 2-78 of the IS/EA. Furthermore, Caltrans has added Measures BIO-17 (Removal of Pickleweed Vegetation) and BIO-18 (Protocol for Removing Vegetation) as a result on ongoing consultation with USFWS. These two measures establish protocols for work in potential SMHM habitat and are describe on page 2-78 of the IS/EA.

This page intentionally left blank

Appendix H. Consultation and Coordination

This appendix includes the following consultation and correspondence regarding the proposed project:

- USFWS Biological Opinion
- NMFS Letter of Concurrence

This page intentionally left blank



United States Department of the Interior



FISH AND WILDLIFE SERVICE
San Francisco Bay-Delta Fish and Wildlife Office
650 Capitol Mall, Suite 8-300
Sacramento, California 95814

In reply refer to:
08FBDT00-2021-F-0048

Mr. Christopher Caputo
California Department of Transportation
District 4
Office of Biological Sciences and Permits
111 Grand Ave, MS-8E
Oakland, CA 94612

Subject: Formal Consultation on the U.S. Highway 101 Cordilleras Creek Bridge
Replacement Project in San Mateo County, California

Dear Mr. Caputo:

This letter is in response to the California Department of Transportation (Caltrans) December 4, 2020, request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed U.S. Highway 101 Cordilleras Creek Bridge Replacement Project (Project) in San Mateo County, California. Your request was received by the Service on December 4, 2020. At issue are the proposed project's effects on the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is Caltrans' proposed replacement of an existing three-box culvert with a new precast single-span bridge. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*).

In considering your request, we based our evaluation on the following: (1) Caltrans' December 4, 2020, letter requesting initiation of formal consultation and the enclosed Biological Assessment; (2) email correspondence between the Service and Caltrans; and (3) other information available to the Service.

The remainder of this document provides our biological opinion on the effects of the proposed project on the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*).

Mr. Christopher Caputo

Consultation History

- October 14, 2020: Caltrans requested technical assistance from the Service for this project.
- October 22, 2020: The Service and Caltrans had an online meeting to discuss this project.
- November 9, 2020: The Service received a revised noise analysis summary from Caltrans.
- December 4, 2020: The Service received a request for formal consultation and a biological assessment from Caltrans.

BIOLOGICAL OPINION

Description of the Proposed Action

Caltrans is proposing the U.S. Highway 101 Cordilleras Creek Bridge Replacement Project, located in San Mateo County on Highway (HWY) 101 at post mile 7.1, in the city of San Carlos.

The proposed project would include removal of a triple box culvert, installation of two new 30-foot approach slabs, four new wing walls, 118 cast-in-drilled-hole (CIDH) concrete piles, and vegetated rock slope protection (RSP), and minor grading and widening of the engineered Cordilleras Creek channel. Some vegetation removal and temporary creek diversion and dewatering would also be required.

Site Preparation

Prior to the initiation of construction activities, construction personnel will install Temporary High Visibility Fencing to protect environmentally sensitive areas (ESAs) as delineated by the project biologist. The fencing will remain in place during each construction season and will be inspected regularly and fully maintained. The fencing will be completely removed at the end of each construction season, after all off-pavement construction activities are completed. Preconstruction surveys for special status species will be conducted by a Service-approved biologist immediately prior to the start of ground-disturbing activities. Surveys will be conducted within all areas subject to ground-disturbing activities, or at the direction of the Caltrans Biologist. Surrounding areas will also be surveyed to an appropriate extent which captures the effects of disturbance-causing activities (e.g. noise, vibration).

Vegetation Removal

Vegetation removal would primarily occur along the southbound shoulder of HWY 101 to prepare the area for the temporary roadway and bridge extensions. Most of the vegetation removed would be ruderal vegetation along the shoulder of the highway. A small portion of the vegetation removed would be saline emergent wetland associated with the ditch that runs parallel to the southbound side of HWY 101 north of Cordilleras Creek.

Mr. Christopher Caputo

Access and Staging

Access to the work area would occur from HWY 101, commercial properties on the western side of the Action Area, and potentially via the pedestrian trail adjacent to the highway. While construction activities will occur within the State right of way, one or more temporary construction easements will be required for commercial properties adjacent to the Action Area to provide equipment access. All staging would occur on the roadway or other paved areas and staging areas would be designated by the project biologist.

Temporary Bridge Extension

The temporary bridge extension would widen the existing Cordilleras Creek bridge by 22 feet on the southbound side of HWY 101 and would require placement of temporary fill on the banks and in the channel of Cordilleras Creek. The temporary bridge extension and associated fill would be installed in Stage 1 and removed in Stage 6, and would therefore be in place from the summer of the first year of construction until the fall of the second year of construction (up to 17 months). The temporary bridge and associated fill would remain in place during the winter and spring between the two construction seasons. The exact dimensions of the bridge extension and details about the fill have not yet been determined, but design will be finalized in the plans, specifications, and estimate (PS&E) design phase.

Temporary Roadway Extension

A temporary roadway extension would be built along the ditch on the southbound side of HWY 101. The temporary roadway and bridge extensions would be used to shift lanes of traffic to allow adequate space for construction. Construction of the temporary roadway would require geotextile fabric and imported fill to be installed along at least 1,000 feet of the shoulder and the adjacent ditch north of Cordilleras Creek, along approximately 750 feet of the shoulder and adjacent ruderal habitat south of Cordilleras Creek, and in Cordilleras Creek. The geotextile fabric and fill would taper off at the beginning and end of the roadway extension. The temporary roadway and bridge extension would remain in place through Stage 6.

Creek Diversion and Dewatering

A temporary creek diversion system would be installed and a portion of Cordilleras Creek would be dewatered to create a work area in which equipment could operate in the Cordilleras Creek channel. Dewatering and in-channel construction activities would be limited to the dry season (June 15 through October 15) during both years of construction.

Bridge Construction

The Project will replace the existing triple-box culvert with a new single-span precast, prestressed bridge that is 185 feet wide with 20 feet high cantilever abutments. The bridge span will be 36 feet -10 inches with 1 abutment on each side. Class 140 piles will be installed 5-foot center to center on the outer 80 feet of each travel way, and about 0.04 foot center to center spacing near the median barrier. The entire increase in width of the structure will take place on

Mr. Christopher Caputo

the southbound HWY side, and no widening would take place on the northbound side. Retaining walls, likely secant pile walls, will be constructed on the southbound side of the roadway with approximately 266 concrete driven piles for abutment and wingwall construction. An elevation depth of 62 feet will be required for the piles. The Project would also install new 30-foot approach slabs on each side of the structure, replace the existing drainage system, construct new wing walls at each end of the bridge, realign Cordilleras Creek, and line a portion of Cordilleras Creek with vegetated rock stabilized embankment (approximately 405 square feet).

Other Work

The Project would also include the following:

- Replacement of existing Metal Beam Guardrails with Midwest Guardrail System.
- Replacement of existing vehicle detector loops on HWY 101.
- Install roadway safety lighting in the median.
- Temporary relocation of an existing 24-inch Redwood City reclaimed water line.
- Application of Hot Mix Asphalt to the roadway in order to eliminate an existing elevational difference between the northbound and southbound traffic lanes.

Traffic Management

Temporary lane closures and shifting of traffic lanes will be established to create the necessary workspace for construction. To maintain as many lanes of traffic as possible, lanes will need to be reduced from 12-foot wide to 11-foot wide and no highway shoulders will be provided. A temporary road surface will need to be constructed along the southbound highway shoulder in order to shift traffic for stage construction while maintaining six traffic lanes in both directions. Additional traffic control measures could include portable changeable message signs, temporary traffic control signage, flashing signal lights, and traffic cones. A Transportation Management Plan will be implemented during construction to minimize traffic impacts to the public and may include lane and shoulder closures, and public notification.

Site Cleanup and Restoration

All disturbed areas will be treated with standard Caltrans erosion control methods during and after construction. All construction-related materials, including Temporary High Visibility Fencing, will be removed after construction activities are completed. All temporarily impacted areas will be restored, and erosion control measures, including soil stabilization measures (e.g. hydroseeding, coir netting) will be applied to minimize erosion after construction. Any remaining construction waste will be removed and hauled to an appropriate waste disposal facility.

Mr. Christopher Caputo

Construction Equipment

Excavators, loaders, and dump trucks will be required for material handling, digging, and removal of existing pavement and drainage pipe. Compactors, pavers, and rollers will be used for the overlaying of pavement. Trenchers and boring equipment will be used for drainage pipe installation. A backhoe/loader will be required to excavate and load. Concrete trucks with mobile concrete mixers and vibrators will be used to place concrete. A crane or boom truck will lift and load the pilings vertically in CIDH holes. Portable generators, jackhammers, sawcut machines, pile rigs and drivers, and small trucks and trailers will also be required for other construction-related activities. A temporary concrete washout will be needed, the location and type will be decided by the contractor in the Storm Water Pollution Prevention Plan. The washout is to be no closer than 50 feet from any storm drain inlets, open drainage facilities, ESA, or watercourse.

Construction Methodology and Schedule

The bridge would be constructed in sections, starting on the southbound (western) side, then moving to the northbound (eastern) side, and ending in the middle section. The Project would be implemented in six stages over the course of two construction seasons in order to maintain six general-purpose traffic lanes on HWY 101 throughout construction. The six construction stages are described in detail below:

Stage 1

There is an elevational difference of 1.38 feet between the northbound and southbound medians. To eliminate this difference, a 1.38-foot permanent hot mix asphalt overlay would be added to all six southbound lanes to match the pavement elevation of the northbound lanes.

- Vegetation would be cleared and grubbed along the southbound shoulder of HWY 101 and along the ditch that runs parallel to the southbound shoulder to prepare the area for roadway extension. Vegetation removal on the southbound side of HWY 101 would likely occur for at least 1,000 feet north of Cordilleras Creek and for approximately 750 feet south of Cordilleras Creek and would taper off at the beginning and end of the roadway extension.
- A portion of Cordilleras Creek would be dewatered. To accomplish this, cofferdams would be constructed on the upstream and downstream ends of Cordilleras Creek Bridge. Cofferdams would consist of bags filled with washed gravel, covered with impermeable plastic sheeting. A diversion pipe would pass through each cofferdam and would route water through the dewatering area and under Cordilleras Creek Bridge. These components would be installed no earlier than June 15 and removed no later than October 15 each year.
- There would be minor contour grading on the banks and channel of Cordilleras Creek in the dewatered area at both ends of the bridge.
- A temporary roadway extension would be built along the ditch on the southbound side of HWY 101, and a temporary bridge extension would be built on the southbound edge of the

Mr. Christopher Caputo

Cordilleras Creek Bridge to widen the bridge by approximately 22 feet. The temporary roadway and bridge extensions would be used to shift lanes of traffic around future construction zones. Construction of the temporary roadway would require geotextile fabric and imported fill to be installed along at least 1,000 feet of the shoulder and the adjacent ditch north of Cordilleras Creek; along approximately 750 feet of the shoulder and adjacent ruderal habitat south of Cordilleras Creek; and in Cordilleras Creek. The geotextile fabric and fill would taper off at the beginning and end of the roadway extension. Construction of the temporary bridge extension would require some imported fill to be added to the banks and channel of Cordilleras Creek to support the bridge extension and prevent erosion around the base of the bridge extension. In-channel work associated with construction of the temporary roadway extension in Cordilleras Creek would occur between June 15 and October 15, after the temporary stream diversion has been installed and the channel dewatered. The temporary roadway and bridge extension would remain in place through Stage 6 and would be designed to withstand and pass tidal ebb and flow and winter stream flows.

Stage 2

- The median concrete barrier would be shifted east (toward the northbound direction), and traffic would be shifted east to create a 52-foot-wide construction zone on the westernmost portion of the southbound direction.
- A portion of Cordilleras Creek would remain dewatered, as described for Stage 1 above.
- The southbound (western) portion of the existing triple-box culvert would be removed and replaced with a new single-span bridge.
- CIDH concrete piles would be used for new approach slabs and wingwalls. Approach slab piles would be spaced at approximately 5 feet center to center. Because the groundwater is shallow at the site, the CIDH piles may need temporary or permanent steel casing that can be vibrated into the ground. All pile installation would occur within the boundaries of the dewatered area; there would be no inwater pile installation.
- The final roadway structural section for the outside 54 feet of the southbound direction would be established.

Stage 3

- Traffic would be shifted toward the southbound (western) side of the roadway to provide a construction zone on the eastern side of the bridge.
- Redwood City's reclaimed waterline on the northbound side of HWY 101 would be relocated.
- A portion of Cordilleras Creek would remain dewatered, as described for Stage 1 above.
- The northbound (eastern) portion of the existing triple-box culvert would be removed and replaced with a single-span bridge.

Mr. Christopher Caputo

- CIDH concrete piles would be installed for new approach slabs and wingwalls, as described for Stage 2 above.

In-channel work associated with Stages 1, 2, and 3 would occur between June 15 and October 15 of the first year of construction. From October 16 to the following June 14, the stream diversion and dewatering system would be removed and in-channel work would stop. Work on the surface of HWY 101 would continue, but this work would have no potential to impact Cordilleras Creek. The temporary roadway extension and the 22-foot temporary bridge extension on the southbound side of HWY 101 would remain in place over the winter and spring. Design of the temporary roadway and bridge extensions would occur in the PS&E design phase and would focus on minimizing potential impacts to fish in Cordilleras Creek, including minimizing the introduction of suspended sediments. For example, if gravel fill is selected to support the temporary bridge and roadway extensions, then it would be washed gravel in bags or wrapped in geotextile fabric. The temporary bridge extension would have an open bottom and would span most of the Cordilleras Creek channel, allowing for passage of flows and sediment during the winter and spring. Stage 4 would begin on June 15 of the second year of construction.

Stage 4

- Northbound traffic would be shifted toward the northbound (eastern) side of the roadway to provide a construction zone in the middle of the bridge.
- A portion of Cordilleras Creek would be dewatered, as described for Stage 1 above.
- The middle portion of the existing triple-box culvert would be removed and replaced with a single-span bridge.
- CIDH concrete piles would be installed for new approach slabs and wingwalls, as described for Stage 2 above.

Stage 5

- Northbound traffic would remain shifted toward the northbound (eastern) side of the roadway; southbound traffic would be shifted east, closing the construction zone in the middle of the bridge and creating a construction zone on the southbound (western) side of the bridge.

Stage 6

- The temporary roadway and bridge extension would be demolished.
- Vegetated RSP would be added on the upstream (west) end of the bridge on both sides of the creek. The creek diversion and dewatering system would be removed by October 15.
- Six lanes of traffic would be established in each direction. The proposed Project would take 235 working days and work would occur year-round; but

Mr. Christopher Caputo

all in-channel and off-highway work, including creek diversion and dewatering, pile installation, vegetated RSP placement, and grading, would be restricted to the period from June 15 through October 15 each year. Night work may be required for on-highway activities, such as moving K rails, but there would be no night work in the Cordilleras Creek channel or adjacent habitat. Construction is anticipated to begin in 2023.

Conservation Measures

General Avoidance and Minimization Measures

1. **Worker Environmental Awareness Training:** Construction personnel will attend a mandatory environmental education program delivered by the Service-approved Biological Monitor prior to taking part in site construction, including ground-disturbing and/or vegetation clearing activities and fence installation. The program will focus on the conservation measures that are relevant to an employee's personal responsibility and will include an explanation as how to best avoid take of listed species. At a minimum, the training will include a description of the species; how they might be encountered within the Action Area; their status and protection; and the relevant Conservation Measures and Terms and Conditions of the Biological Opinion. 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 species, compliance reminders, and relevant contact information. Documentation of the training, including sign-in sheets, will be kept on file and made available to the Service upon request.
2. **Environmentally Sensitive Area Fencing:** Before the start of construction, ESAs (defined as areas containing sensitive areas adjacent to or within construction work areas for which physical disturbance is not allowed) will be clearly delineated using Temporary Reinforced Silt Fence (Type 1) and/or Temporary High Visibility Fence. Construction work areas will include the active construction site and all areas providing support for the Project, including areas used for vehicle parking, equipment and material storage and staging, and access roads. The high-visibility fencing will remain in place throughout the duration of each construction season, will be inspected regularly, and fully maintained at all times. The final project plans will show all locations where the fencing will be installed and will provide installation specifications. The bid solicitation package special provisions will clearly describe acceptable fencing material and prohibited construction-related activities, including vehicle operation, material and equipment storage, access roads and other surface-disturbing activities within ESAs.
3. **Staging:** Staging and parking areas will be in designated areas, as specified by the project biologist in coordination with the Project Engineer.
4. **Vegetation Removal:** Vegetation removal will be limited to the designated work areas needed for access and workspace. Where possible, vegetation removal in temporary work areas will be cut above soil level to promote re-vegetative growth of established plants following construction.

Mr. Christopher Caputo

5. Replant, Reseed, and Restore Disturbed Areas: Caltrans will restore temporarily disturbed areas to the preconstruction contours and functions to the maximum extent practicable. Exposed slopes and bare ground will be reseeded with native grasses and shrubs to stabilize and prevent erosion. If disturbance includes the removal of trees and woody shrubs, native species will be replanted, based on the local species composition and available planting space.
6. Invasive Species Management: To reduce the spread of invasive non-native plant species and minimize the potential decrease of palatable vegetation for wildlife species, Caltrans will comply with Executive Order 13112. The purpose of this order is to prevent the introduction of invasive species and provide for their control to minimize economic, ecological, and human health impacts. In the event that high- or medium-priority noxious weeds, as defined by the California Department of Food and Agriculture or the California Invasive Plant Council, are disturbed or removed during construction-related activities, the contractor will contain the plant material associated with these noxious weeds and will dispose of it in a manner that will not promote the spread of the species. The contractor will be responsible for obtaining all permits, licenses, and environmental clearances for properly disposing materials. Areas subject to noxious weed removal or disturbance will be replanted with fast-growing native grasses or a native erosion control seed mixture. If seeding is not possible, the area will be covered to the extent practicable with heavy black plastic solarization material until completion of construction. All earthmoving equipment, as well as seeding equipment to be used during Project construction would be thoroughly cleaned before arriving on the project site.
7. Implementation of Water Quality/Erosion Control Best Management Practices (BMPs): Erosion control BMPs will be developed and implemented to minimize any wind or water-related erosion, in compliance with the requirements of the Regional Water Quality Control Board. Protective measures will include, at a minimum:
 - a. No discharge of pollutants from vehicle and equipment cleaning will be allowed into any storm drains or watercourses.
 - b. Vehicle and equipment fueling and maintenance operations will be kept at least 50 feet away from watercourses, except at established commercial gas stations or established vehicle maintenance facilities.
 - c. Concrete wastes will be collected in washouts, and water from curing operations will be collected and disposed. Neither will be allowed into watercourses.
 - d. Spill containment kits will be maintained on-site at all times during construction operations and/ or staging or fueling of equipment.
 - e. Dust control measures will include use of water trucks and dust palliatives to control dust in excavation-and-fill areas, covering temporary access road entrances and exits with rock (rocking), and covering temporary stockpiles when weather conditions require.

Mr. Christopher Caputo

- f. Coir rolls or straw wattles that do not contain plastic or synthetic monofilament netting will be installed along or at the base of slopes during construction, to capture sediment.
 - g. Graded areas will be protected from erosion using a combination of silt fences and fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (e.g., jute or coir) will be used as appropriate on sloped areas. Erosion control materials that use plastic or synthetic monofilament netting will not be used within the Action Area. This will include products that use photodegradable or biodegradable synthetic netting, which can take several months to decompose. Acceptable materials will include natural fibers, such as jute, coconut, twine or other similar fibers.
8. Construction Site BMPs: The following site restrictions will be implemented to avoid or minimize impacts on special-status species and their habitats:
- a. Routes and boundaries of work will be clearly marked before the start of construction or grading.
 - b. All food and food-related trash items will be enclosed in sealed trash containers and will be properly disposed off-site.
 - c. No pets belonging to Project personnel will be allowed anywhere in the Action Area during construction.
 - d. No firearms will be allowed in the Action Area except for those carried by authorized security personnel, or local, State or Federal law enforcement officials. A Spill Response Plan will be prepared. Hazardous materials (e.g., fuels, oils, solvents) will be stored in sealable containers in a designated location that is at least 50 feet from any hydrologic features.
 - f. All equipment will be properly maintained and free of leaks. Servicing of vehicles and construction equipment, including fueling, cleaning, and maintenance, will occur at least 50 feet from any hydrologic features unless it is an existing gas station.
9. Avoidance of Entrapment: To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 1-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 and/or buried.
10. CIDH Piles to Reduce Vibration: Caltrans will use CIDH piles instead of concrete pile driving to reduce vibration. This will be accomplished by drilling a pile hole to a depth prescribed by the Engineer and then pouring concrete into the pile hole. Because

Mr. Christopher Caputo

groundwater is shallow at the site, temporary or permanent steel casings may need to be vibrated into the ground to support the concrete.

11. Light Restrictions: Construction personnel will turn portable tower lights on no more than 30 minutes before the beginning of civil twilight, and off no more than 30 minutes after the end of civil sunrise. Portable tower lights will have directional shields attached to them, and personnel will only direct lights downward and toward active construction and staging areas. Lighting per portable tower light will not exceed 2,000 lumens.

Salt Marsh Harvest Mouse Avoidance Measures

1. Biological Monitor: The names and qualifications of proposed biological monitor(s) will be submitted to the Service and California Department of Fish and Wildlife (CDFW) for approval prior to the start of construction. The Service-Approved Biological Monitor(s) will keep a copy of the biological opinion in their possession when on-site. Through communication with the Resident Engineer, the Service-Approved Biological Monitor(s) will be on-site during all work that could reasonably result in the take of the salt marsh harvest mouse. The Service-Approved Biological Monitor(s) will have the authority to stop work that may result in the unauthorized take of special status species. If the Service-Approved Biological Monitor exercises this authority, the Service will be notified by telephone and e-mail message within one (1) working day.
2. Pre-Construction/Daily Surveys: Pre-construction surveys for special status species will be conducted by the Service-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 Temporary High Visibility Fencing Installation) within the Project footprint. These efforts will consist of walking surveys of the footprint and, if possible, accessible adjacent areas within at least 50 feet of the footprint. The Service-Approved Biological Monitor will investigate potential cover sites when it is feasible and safe to do so. Safety permitting, the Service-Approved Biological Monitor will also investigate areas of disturbed soil for signs of salt marsh harvest mouse within 30 minutes following initial disturbance of the given area. The need for further pre-construction surveys would be determined by the Biologist based on site conditions and realized construction timelines.
3. Protocol for Species Observation: The Service-Approved Biological Monitor(s) will have the authority to halt work through coordination with the Resident Engineer in the event that a listed species is observed in the Action Area. The Resident Engineer will keep construction activities suspended 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 and the biologist determines that no wildlife is being disturbed or harmed by construction activities.
4. If a listed species is discovered, the Resident Engineer and Service-Approved Biological Monitor will be immediately informed.

Mr. Christopher Caputo

- If a salt marsh harvest mouse gains access to a construction zone, work will be halted immediately within 50 feet until the animal leaves the site voluntarily.
 - The Service will be notified within one (1) working day if a salt marsh harvest mouse is discovered within the construction site.
5. **Injured Animals:** Injured salt marsh harvest mouse will be cared for by a Service-Approved Biological Monitor (s) or a licensed veterinarian, if necessary. Any deceased salt marsh harvest mouse will be preserved according to standard museum techniques and will be held in a secure location. The Service 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 Service, and any other pertinent information.
 6. **Reporting:** Caltrans will submit post-construction compliance reports prepared by the Service-Approved Biological Monitor to the Service 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.
 7. **Service Access:** If requested, Caltrans will allow access by Service personnel into the project footprint to inspect the Project and its activities.

Vegetation Removal

1. Vegetation within the Action Area footprint that is closer than 50 feet of the edge of pickleweed vegetation will be removed at the location of the creek diversion system.
2. Prior to removal of vegetation a Service-Approved Biological Monitor will inspect suitable habitat for signs of harvest mice species or other sensitive species. Following inspection, personnel, under the supervision of the qualified biologist, will disturb vegetation to encourage movement of individuals into adjacent marsh areas (i.e., flush). Vegetation will be removed using hand tools (e.g., string trimmers) and trimmed down to no taller than 2 inches. Trimming will begin farthest away from marsh or pickleweed habitat and proceed toward the remaining habitat.

Action Area

The Action Area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the

Mr. Christopher Caputo

proposed Project, the Action Area encompasses 38.85 acres and includes the entirety of the Project footprint, plus an additional buffer of 250 feet to accommodate the potential impacts from construction activity and human presence. This includes construction-related noise, vibration, ground disturbance, vegetation removal, and compaction. Some Project-related traffic management activities would occur on Highway 101 but are not included in the boundaries of the Action Area because they would occur entirely on the highway surface and have no potential to impact salt marsh harvest mice.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species.

“Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed Federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the Action Area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the Action Area to the survival and recovery of the species; (3) the *Effects of the Action*, which includes all effects that are caused by the proposed Federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the Action Area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of listed species.

Status of the Species

There are two subspecies of the salt marsh harvest mouse: the northern subspecies (*R. r. halicoetes*) and the southern subspecies (*R. r. raviventris*) both of which are listed as endangered. For the most recent comprehensive assessment of the species' range-wide status, please refer to the *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*, available at: www.fws.gov/sfbaydelta/documents/tidal_marsh_recovery_plan_v1.pdf (Service 2013). Critical habitat has not been designated for this species. Threats evaluated during the drafting of the recovery plan and discussed in the final document have continued to act on the species since its publication, with loss of habitat being the most significant effect. The Service is in the process of developing our current 5-year review for the species.

Mr. Christopher Caputo

Environmental Baseline

Environmental Baseline refers to the condition of the listed species or its designated critical habitat in the Action Area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the Action Area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the *Environmental Baseline*.

Wetland and Water Features

Wetland and water features are present within the Action Area. Cordilleras Creek is within the larger San Mateo Creek-Frontal San Francisco Bay Estuaries watershed (Hydrological Unit Code [HUC] 10: 1805000409) and within the Cordilleras Creek-Frontal San Francisco Bay Estuaries Hydrological Unit (HUC 12: 180500040902) sub-watershed. The headwaters of the Cordilleras Creek Watershed are southwest of the Action Area in Pulgas Ridge Open Space Preserve and Edgewood County Park. Moving downstream from its headwaters, Cordilleras Creek flows northeast along the border of San Carlos and Redwood City through suburban and urban development, through a frequently incised channel that has been hardened at many locations to protect the properties that border the stream. Upstream of the Action Area, at approximately Stafford Street, Cordilleras Creek enters an engineered channel (Sowers 2005). This channel carries streamflow through a portion of the watershed that includes the Action Area and was entirely within the marsh plain that surrounded San Francisco Bay prior to development. Today the stream flows through this channel, under HWY 101, to its terminus where Smith Slough meets Steinberger Slough.

Saline Emergent Wetland is present on both sides of the highway. Saline Emergent Wetlands (SEW) occur along the margins of bays, lagoons, and estuaries sheltered from excessive wave action. SEW are characterized as salt or brackish marshes consisting mostly of perennial graminoids and forbs, the latter often succulent and woody, along with algal mats on moist soils and at the base of vascular plant stems.

Vegetation

Two vegetation land cover types were identified within the Action Area, ruderal and saline emergent wetland. A pedestrian trail and a narrow strip of ruderal vegetation separates HWY 101 and wetland.

Ruderal land cover exists primarily to the west of HWY 101, along the roadway shoulders and adjacent to portions of Cordilleras Creek, though a small portion of wetland is also present in this area. Ruderal habitats are typified by species that are able to establish on disturbed sites, especially when the disturbance includes soil alteration, such as plowing, landfills, graded sites, etc., and are often suitable for weedy, non-native, and invasive species. Ruderal species traits

Mr. Christopher Caputo

include shade intolerance, wind dispersal, and high reproductive capacity. These habitat conditions often occur on roadway shoulders, which are typically composed of fill and gravel substrates.

Saline Emergent Wetland exists primarily in the eastern portion of the Action Area, though a small strip is present along the southbound HWY 101 shoulder.

Plants observed on-site include Italian thistle (*Carduus pycnocephalus*), fennel (*Foeniculum vulgare*), small melilot (*Melilotus indicus*), slender wild oat (*Avena barbata*), Bermuda buttercup (*Buttercup oxalis*), mallow (*Malva sp.*), blackwood (*Acacia melanoxylon*), alkali heath (*Frankenia salina*), glasswort (*Salicornia pacifica*), Pampas grass (*Cortaderia selloana*), rescue brome (*Bromus catharticus*), iceplant (*Carpobrotus edulis*), pickleweed (*Salicornia virginica*), and wild radish (*Raphanus raphanistrum*). No special-status plant species were observed within the Action Area.

Habitat Conditions

HWY 101 is the predominant land feature and heavily influences the quality of other habitats within the Action Area. HWY 101 within the Action Area conveys an average of approximately 236,300 vehicles per day, and as a result adjacent habitat is subjected to high levels of noise and vibrational baseline disturbance.

The western portion of the Project footprint is dominated by ruderal cover and is isolated from other open areas by the creek, HWY 101, and developed land cover. Beyond is almost entirely developed with commercial and light industrial properties.

A bicycle and pedestrian trail, part of the San Francisco Bay Trail, is located just east of HWY 101. This popular trail is subject to frequent use and results in substantial anthropogenic disturbance to nearby habitats. In addition, an active homeless encampment is present on the eastern side of HWY 101, where the pedestrian/bicycle trail crosses over Cordilleras Creek. A large amount of encampment-related debris and other items cover this portion of the Project footprint and creek. A second pedestrian trail is located on the Inner Bair Island levee on the eastern edge of the Action Area and further adds to the levels of anthropogenic disturbance. As a result of these factors, habitat in this area is of generally poor quality for species sensitive to disturbance. The Action Area does contain portions of pickleweed, which may be utilized by salt marsh harvest mouse; however, plants in these areas have low plant heights and are not the species' preferred habitat of much taller pickleweed and cordgrass.

Wildlife Use and Habitat Connectivity

The Action Area has a marked dichotomy, with the western portion containing habitat of little to no value and the eastern portion, though subject to substantial disturbance, containing habitat of higher value. Additionally, little if any wildlife habitat exists west of the Action Area as most of the land cover is developed.

Mr. Christopher Caputo

HWY 101 is likely a complete barrier to terrestrial wildlife movement in the area. It is also unlikely that species would disperse or move through vegetated land on the western side of the Action Area, as this area is bounded on all sides by highway and ramps, local roads, and commercial development that extends well beyond the boundaries of the Action Area.

Connectivity between the eastern and western portions of the Action Area is presumed to be low to none for terrestrial species as they are unlikely to utilize the culvert (the only source of access between areas) due to noise and vibration from traffic above, the lack of illumination within the culvert, and the length of the culvert (185-foot). Connectivity exists between the eastern portion of the Action Area and habitat beyond the Action Area. Though there is some development in the area, there are generally no physical barriers to wildlife movement. Use of this area by wildlife is common and species that have been observed within or in the vicinity of the eastern Action Area include those such as the white-tailed kite (*Elanus leucurus*), bufflehead (*Bucephala albeola*), European starling (*Sturnus vulgaris*), northern shoveler (*Spatula clypeata*), American avocet (*Recurvirostra americana*), Canada goose (*Branta canadensis*), red-tailed hawk (*Buteo jamaicensis*), snowy egret (*Egretta thula*), northern pintail (*Anas acuta*), black-tailed jackrabbit (*Lepus californicus*), and striped skunk (*Mephitis mephitis*).

Salt Marsh Harvest Mouse

The Action Area contains 5.95 acres of suitable salt marsh harvest mouse habitat on the east side of HWY 101. Although no salt marsh harvest mouse surveys were conducted at this location, five recorded occurrences of salt marsh harvest mouse exist within five miles of the Action Area. California Natural Diversity Database (CNDDDB) records show salt marsh harvest mouse have been found as close as 0.75 mile away on Bair Island.

The marsh adjacent to the Action Area, between HWY 101 and the Inner Bair Island levee, though low quality, may be utilized by salt marsh harvest mice. Salt marsh harvest mice have been documented to occur on Outer and Middle Bair Islands to the north (CDFW 2020, SFEI 2009), and there are no barriers to dispersal between Inner Bair and Middle and Outer Bair islands, though the open water between them likely limits dispersal between all three islands. Because suitable salt marsh is present within the Action Area and no barriers to dispersal occur between on-site salt marsh and documented occurrences to the north, the salt marsh harvest mouse is assumed present throughout suitable salt marsh and adjacent marsh/upland transition zones within the Action Area. The portion of the footprint on the western side of the highway with SEW does not provide suitable habitat for the salt marsh harvest mouse.

Effects of the Proposed Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

Mr. Christopher Caputo

Adverse effects to salt marsh harvest mouse could occur from the use of heavy equipment, use of hand tools, soil removal and distribution, fence installation, noise, vibration, and dust.

An analysis of noise attenuation incorporating site topography and surface materials was performed. The elevation where jackhammer related noise originates in the Action Area is approximately 8 feet above mean sea level (MSL). This elevation is generally maintained in the easterly direction until reaching the Inner Bair Island levee/pedestrian trail, at which point the elevation increases to approximately 10 feet above MSL. Beyond the levee the elevation quickly falls to approximately three to four feet above MSL within Inner Bair Island. An analysis was performed incorporating these elevational changes and using a correction factor to account for the ground surface being vegetated.

The result of this analysis shows the levee as an effective noise barrier, preventing construction noise >60 decibels (dB) from reaching habitat east of the levee. This noise analysis also shows the lateral limit of noise >60-dB to be 175 meters (574 feet). The resulting area subject to noise levels above this threshold is 5.96 acres. However, this measurement includes waters and ruderal habitat and, due to modeling limitations, ignores the effects of noise from highway traffic. As such the salt marsh harvest mouse habitat impacted by construction noise is anticipated to be less than the 5.96 acres calculated, because a portion of this area is already experiencing >60-dB due to highway noise. This extent would only be applicable during the use of the loudest equipment (jackhammer) and during the portion of the Project in which the existing bridge is removed.

Vibration and soil movement resulting from construction activities have the potential to cause disturbance to salt marsh harvest mouse behavior. Studies have concluded that vibrational energy decreases fairly rapidly over distance from the source of disturbance (Attewell and Farmer 1973; Caltrans 2004). The road prism within the Action Area is likely compacted to at least 95 percent per industry standards and will absorb construction related vibration. However, the use of equipment during the dewatering and in-channel construction activities, within salt marsh harvest mouse habitat, still has a low potential to cause harm or behavioral changes to salt marsh harvest mouse.

Other effects may result from fence installation. These stressors may create disturbance or cause minor temporary changes in behavior. This project will result in the temporary loss of 0.915 acre of salt marsh harvest mouse habitat (0.831 acre of ruderal, 0.068 acre of wetland, and 0.016 acre of pickleweed) from installation and removal of the creek diversion system at the beginning and end of each construction system. The general, salt marsh harvest mouse, and vegetation removal avoidance and minimization measures, including preconstruction surveys and the use of biological monitors, will avoid and minimize impacts to the salt marsh harvest mouse from these stressors.

The use of heavy equipment and hand tools for vegetation removal or soil movement could result in increased erosion and dust. These impacts could occur either during construction or post-construction. Discharge of soil or dust into nearby SEW has the potential to degrade salt marsh harvest mouse habitat. In addition, construction activities could result in the introduction of chemical contaminants to a work site or staging area, such as oil or toxic chemicals leaking from construction equipment. Construction activities could also spread

Mr. Christopher Caputo

invasive species present in the Action Area to other sites that support salt marsh harvest mice. All of these effects will be avoided through the Implementation of Water Quality/Erosion Control BMPs and general construction BMPs.

If salt marsh harvest mice are present during project implementation they will likely experience disruption in their normal behavioral patterns. They may respond to construction activities by relocating to refugial habitat within upland marsh to avoid noise and human interactions. If they are present during vegetation removal, salt marsh harvest mice will likely also experience harassment from the intentional flushing activities.

Although vegetation removal will reduce the potential for mortality from entombment or crushing during construction activities, salt marsh harvest mice will still be affected. Depending on time of year and food availability, the relocation to adjacent habitat could be energetically costly due to a lack of familiarity with the microhabitat and result in lower survivability. Individual salt marsh harvest mice that move into adjacent upland habitat may be exposed to increased predation levels during more frequent active movement to forage or seeking shelter in vegetation communities with less dense canopy cover where there are predators present. Displaced salt marsh harvest mice may also be subject to increased competition for resources in a more densely-occupied habitat or habitat which contains sparser patches of suitable food. Disturbance to females from March to November could result in consequences such as nest abandonment or failure of the current litter. Therefore, displaced salt marsh harvest mice will likely suffer from increased predation, competition, and potentially reduced reproductive success overall.

Although restoration activities will include replanting of native grasses and shrubs, the temporary absence of suitable vegetation will also amount to the loss of food availability, a barrier to dispersal in the area, and potentially reduced fecundity and reproductive success due to the habitat being unavailable for multiple life cycles. However, these consequences will occur at a small enough scale (temporary loss of 0.915 acre) to ensure that survival and recovery of the species is not appreciably diminished by the proposed activities.

It is also possible some individuals could be accidentally harmed or killed during construction activities by equipment, or the transport of materials on access routes. The implementation of the *Conservation Measures* described in the *Description of the Proposed Action* section for the salt marsh harvest mouse will also ensure the likelihood of harm, injury, and mortality resulting from the proposed actions remains low. No enduring permanent impacts are anticipated to occur.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the Action Area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the Action Area of the proposed project.

Mr. Christopher Caputo

Conclusion

After reviewing the current *Status of Species* for the salt marsh harvest mouse, the *Environmental Baseline* for the Action Area, the *Effects of the Proposed Action*, and the *Cumulative Effects*, it is the Service's biological opinion that the U.S. Highway 101 Cordilleras Creek Bridge Replacement Project, as proposed, is not likely to jeopardize the continued existence of the salt marsh harvest mouse. The Service reached this conclusion because the project-related effects to the species, when added to the *Environmental Baseline* and analyzed in consideration of all potential *Cumulative Effects*, will not rise to the level of reducing the likelihood of survival and recovery of the species based on the following: (1) significant mortality or reduction in the population size is not anticipated to result from the proposed project, and (2) the habitat affected by the proposed project will not be permanently altered, fragmented, or reduced in foraging and sheltering quality to the extent the population of salt marsh harvest mouse in the area is at risk of extirpation.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by Service regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by Caltrans so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this incidental take statement. If Caltrans (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Mr. Christopher Caputo

Amount or Extent of Take

The Service anticipates incidental take of salt marsh harvest mouse will be difficult to detect or quantify for the following reasons: the inherently elusive behavior, propensity to move rapidly through vegetation, and their cryptic occupancy of vegetation types resulting in low detectability. There is a risk of injury or mortality as a result of the proposed activities and subsequent temporary loss or degradation of suitable habitat. Therefore, the Service anticipates take incidental to the proposed action in the form of harm from flushing of all salt marsh harvest mice within the 0.915 acre of suitable habitat of the Action Area to be temporarily removed, from habitat modification of 0.915 acre of suitable habitat, and from construction related noise which would impair essential behaviors like predator avoidance within 5.95 acres of suitable habitat.

Upon implementation of the following reasonable and prudent measures, incidental take of salt marsh harvest mouse associated with the project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to jeopardize the salt marsh harvest mouse.

Reasonable and Prudent Measure

All necessary and appropriate measures to avoid or minimize effects on the salt marsh harvest mouse resulting from implementation of this project have been incorporated into the project's proposed *Conservation Measures*. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the incidental take of the salt marsh harvest mouse:

- 1) All *Conservation Measures*, as described in the *Description of the Proposed Action* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the Term and Condition below.

Terms and Condition

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans shall ensure compliance with the following term and condition, which implement the reasonable and prudent measure described above. This Term and Condition is non-discretionary.

- 1) Term and Condition 1 implements Reasonable and Prudent Measure 1:
 - A) Caltrans shall minimize the potential for harm, killing or other forms of take of the salt marsh harvest mouse from project-related activities by implementation of the *Conservation Measures* proposed in the *Description of the Proposed Action* in this biological opinion.

Mr. Christopher Caputo

- B) Caltrans shall immediately notify the Service of any killed, injured, or entrapped salt marsh harvest mice, within one (1) working day of the detection. Please contact the Assistant Field Supervisor of the Endangered Species Division at: San Francisco Bay-Delta Fish and Wildlife Office, 650 Capitol Mall, Suite 8-300, Sacramento, California 95814 or by telephone at (916) 930-2664.
- C) Caltrans shall educate and inform personnel involved in the project as to the *Conservation Measures* and Terms and Conditions in this biological opinion.
- D) Caltrans shall comply with the reporting requirements of this biological opinion, including a post-construction report outlining how the *Conservation Measures* were implemented for this project.
- E) Caltrans shall ensure any personnel identified as biological monitors or biologists, who are responsible for ensuring compliance with the *Conservation Measures* or other parts of the project which may affect federally-listed species, be Service-approved prior to implementing those activities.

Reporting Requirements

In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, Caltrans shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, Caltrans must reinitiate formal consultation as per 50 CFR § 402.16.

- 1) The Service must be notified within 24 hours of the finding of any injured or dead listed species or any unanticipated damage to its habitat associated with the proposed project. Injured listed species shall be cared by a licensed veterinarian or other qualified person, such as the Service-approved biologist for the proposed project. Notification will be made to the contact above in Term and Condition 1B, and must include the date, time, and precise location of the individual/incident clearly indicated on a U.S. Geological Survey 7.5 minute quadrangle or other maps at a finer scale, as requested by the Service, and any other pertinent information. When an injured or dead individual of the listed species is found, Caltrans shall follow the steps outlined in the Salvage and Disposition of Individuals Taken section below.
- 2) Sightings of any listed or sensitive animal species shall be reported to the Service and the CNDDDB (<https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>).

Salvage and Disposition of Individuals

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen

Mr. Christopher Caputo

in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact persons are the Assistant Field Supervisor of the Endangered Species Division at (916) 930-2664; and the Resident Agent-in-Charge of the Service's Office of Law Enforcement, 5622 Price Way, McClellan, California 95562, at (916) 569-8444.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

- 1) Encourage or require the use of appropriate California native species in restoration efforts.
- 2) Facilitate additional educational programs geared toward the importance and conservation of tidal marsh and seasonal wetlands.
- 3) Assist the Service with implementing other recovery actions identified within the most current recovery plans for salt marsh harvest mouse.
- 4) Encourage the participation of the Applicant in programs being developed by the Federal and State resource agencies to limit and reverse the spread of non-native species, such as *Phragmites*, *Lepidium*, clams, and other invasive species.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION – CLOSING STATEMENT

This concludes formal consultation on the U.S. Highway 101 Cordilleras Creek Bridge Replacement Project. As provided in 50 CFR § 402.16,

(a) Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

- (1) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

Mr. Christopher Caputo

(3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or

(4) If a new species is listed or critical habitat designated that may be affected by the identified action.

(b) An agency shall not be required to reinitiate consultation after the approval of a land management plan prepared pursuant to 43 U.S.C. 1712 or 16 U.S.C. 1604 upon listing of a new species or designation of new critical habitat if the land management plan has been adopted by the agency as of the date of listing or designation, provided that any authorized actions that may affect the newly listed species or designated critical habitat will be addressed through a separate action-specific consultation. This exception to reinitiation of consultation shall not apply to those land management plans prepared pursuant to 16 U.S.C. 1604 if:

(1) Fifteen years have passed since the date the agency adopted the land management plan prepared pursuant to 16 U.S.C. 1604; and

(2) Five years have passed since the enactment of Public Law 115-141 [March 23, 2018] or the date of the listing of a species or the designation of critical habitat, whichever is later.

If you have any questions regarding this biological opinion, please contact Andrew Raabe, Fish and Wildlife Biologist (Andrew_Raabe@fws.gov) or Kim Squires, Section 7 Division Manager (Kim_Squires@fws.gov) at the letterhead address or at or at 916-930-5603. Please reference the Service File Number 08FBTD00-2021-F-0048 in any correspondence regarding this project.

Sincerely,

Daniel Welsh
Acting Field Supervisor

Mr. Christopher Caputo

LITERATURE CITED

- Attewell, P.B. and Farmer, I.W. 1973. "Attenuation of Ground Vibrations from Pile Driving", *Ground Engineering*, pp. 26-29.
- California Department of Fish and Wildlife (CDFW). 2020. California Natural Diversity Database (CNDDDB). Biogeographic Data Branch, Department of Fish and Game. April 2020.
- Caltrans [California Department of Transportation]. 2004. Transportation- and Construction- Induced Vibration Guidance Manual. California Department of Transportation Environmental Program, Environmental Engineering, Noise, Vibration, and Hazardous Waste Management Office. Prepared by Jones & Stokes, Sacramento, CA.
- San Francisco Estuary Institute (SFEI). 2009. Salt marsh harvest mouse database and maps. San Francisco Estuary Institute, Richmond, California. Available at <http://www.sfei.org/content/salt-marsh-harvest-mouse-database-and-maps>.
- Sowers, J. M. 2005. Cordilleras Creek Watershed Map. A portion of "Creek and Watershed Map of Palo Alto and Vicinity." Published by the Oakland Museum of California. Funded By CALFED, San Francisco Watershed Council, Silicon Valley Pollution Prevention Center, cities of Mountain View and Palo Alto, William Lettis & Assoc., Oakland Museum of California, and Santa Clara Valley Water District. Available online at: <http://explore.museumca.org/creeks/1490-OMCordilleras.html>. Accessed October 24, 2020.
- U.S. Fish and Wildlife Service (Service). 2013. Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California. https://www.fws.gov/sfbaydelta/documents/tidal_marsh_recovery_plan_v1.pdf.



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

March 31, 2021

Refer to NMFS No: WCRO-2020-03198

Cristin Hallissy, Office Chief
Office of Biological Sciences and Permits
California Department of Transportation, District 4
P.O. Box 23660
Oakland, California 94623-0660

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens
Fishery Conservation and Management Act Essential Fish Habitat Response for the U.S.
Highway 101 Cordilleras Creek Bridge Replacement Project (EA 2J730)

Dear Ms. Hallissy:

On December 4, 2020, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that the California Department of Transportation's (Caltrans)¹ Highway 101 Cordilleras Creek Bridge Replacement Project (Project) is not likely to adversely affect species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA and implementing regulations at 50 CFR 402.

Thank you also for your request for consultation pursuant to the essential fish habitat (EFH) provisions in Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. 1855(b)) for this action. However, after reviewing the proposed action, we concluded that there are no adverse effects on EFH. Therefore, we are hereby concluding EFH consultation.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The document will be available within two weeks at the Environmental Consultation Organizer [<https://eco.fisheries.noaa.gov>]. A complete record of this consultation is on file at the NMFS North-Central Coast Office in Santa Rosa, California.

¹ Effective October 1, 2012, Caltrans serves as the lead agency per the Memorandum of Understanding (MOU) between the Federal Highway Administration (FHWA) and Caltrans pursuant to the Moving Ahead for Progress in the 21st Century Act (MAP-21). This law allows the Secretary of Transportation to assign, and Caltrans to assume, responsibility for the environmental review, consultation, or other actions required under any environmental law with respect to one or more highway projects within the state of California. The MOU is an extension of previous agreements between FHWA and Caltrans in 2007 and 2010, under a similar law. Therefore, Caltrans is considered the federal action agency for ESA consultations with NMFS for federally funded projects involving FHWA.



Consultation History

Caltrans initiated formal consultation for the Project with NMFS via letter dated November 9, 2020. With this letter requesting consultation, Caltrans provided the November 2020 Biological Assessment for the U.S. 101 Cordilleras Creek Bridge Replacement Project (BA). Following NMFS' review of the BA and project description, NMFS contacted Caltrans' project manager by email message on November 30 to discuss the likely presence of CCC steelhead or green sturgeon during construction of the replacement bridge. Subsequently, Caltrans revised their determination regarding the potential for adverse effects to listed species and provided a letter to NMFS on December 4, 2020 requesting informal consultation.

After further review of the project description, NMFS requested by letter dated December 14, 2020, Caltrans provide additional information regarding the amount and placement of rock slope protection (RSP), hydraulic modelling results, and potential effects of sea level rise on the project site. A conference call between NMFS and Caltrans on January 6, 2021, confirmed the information requested by NMFS and Caltrans responded with a letter on February 1, 2021, with answers to NMFS questions. NMFS asked for additional information regarding the placement of RSP via email on February 12, 2021, and Caltrans responded via email on February 25, 2021. Sufficient information was provided to NMFS on February 25, 2021, to initiate consultation for the Project.

Proposed Action and Action Area

Caltrans is proposing to replace the Cordilleras Creek Bridge in San Mateo County on U.S. Highway 101 at post mile 7.13 in Redwood City, California. The proposed Project would include removing a triple box culvert, replacing it with a new single-span bridge, replacing an existing drainage system, minor grading of Cordilleras Creek, and adding new vegetated RSP to the corners of the new bridge abutments.

The existing 180-foot-long bridge that spans Cordilleras Creek is a reinforced-concrete triple 10-by 8-foot box culvert, with straight stepped wing walls at the upstream end and straight end walls at the downstream end. The original structure was built in 1930 to be 100 feet long and was extended 55 feet on the downstream side in 1958. A straight end wall was also placed at the downstream end of the culvert in 1958. In 1971, the structure was again extended by an additional 25 feet on the downstream side, for a total length of 180 feet. In July 2002, a routine inspection of the Cordilleras Creek Bridge found cracks, delamination, and spalls in the structure. It was determined that the structural conditions would affect the integrity of the bridge potentially endangering public safety. The purpose of the Project is to maintain connectivity and a safe highway facility for the traveling public along U.S. Highway 101 by replacing the existing deteriorated bridge over Cordilleras Creek.

The existing triple box culverts would be replaced with a new single-span, precast, prestressed bridge. The new bridge would be 185 feet long, as measured from the upstream end in Cordilleras Creek to the downstream end. The length of the span across the creek is approximately 37 feet. The channel underneath the new bridge would be composed of natural substrate, and the finished grade would be completely flat; there would be no slope from left bank to right bank or from upstream to downstream. For construction, two new 30-foot approach slabs would be installed on each side of the bridge and four new wing walls would be

constructed; one on each end of the approach slabs, and requiring 118 cast-in-drilled-hole (CIDH) concrete piles. The CIDH piles may need temporary or permanent steel casing that can be vibrated into the ground. All pile installation would occur within the boundaries of the dewatered channel area, described below.

Minor grading would be implemented and the Cordilleras Creek engineered channel would be widened at the upstream and downstream ends of the bridge. RSP will be placed at the bridge wingwalls to protect the abutments. This includes 60 square feet on each side of the Cordilleras Creek channel at the west, or upstream, end of the bridge and 45 square feet on each side of the channel at the east, or downstream end of the bridge totaling 210 square feet of RSP.

The existing drainage inlets would be replaced and one or more bioswales would be constructed to treat runoff from the new and reworked impervious area. Full trash capture devices would be incorporated where there are significant trash generation areas in the Project footprint. Guard rails and vehicle detector loops would be replaced and safety lighting would be installed in the median.

The bridge would be constructed in sections, starting on the southbound (western) side, then moving to the northbound (eastern) side, and ending in the middle section. The Project would be implemented in six stages over the course of two construction seasons to maintain six general-purpose traffic lanes on U.S. Highway 101 throughout construction. Construction is expected to take 235 working days and would occur year-round; however, in-channel work would be restricted to the period from June 15 through October 15 each year.

To facilitate construction, the channel under the bridge would be dewatered with cofferdams and a streamflow diversion system. Cofferdams would consist of bags filled with washed gravel, covered with impermeable plastic sheeting. A diversion pipe would pass through each cofferdam and would route water through the dewatering area and under Cordilleras Creek Bridge. These components would be installed no earlier than June 15 and removed no later than October 15 each year. The system will be required each summer during construction and would be removed during each intervening winter.

A temporary roadway extension would be built along the ditch on the southbound side of U.S. Highway 101, and a temporary bridge extension would be built on the southbound edge of the Cordilleras Creek Bridge to widen the bridge by approximately 22 feet. The temporary roadway and bridge extensions would be used to shift lanes of traffic around the construction zones. Construction of the temporary roadway would require geotextile fabric and imported fill to be installed along at least 1,000 feet of the shoulder and the adjacent ditch north of Cordilleras Creek; along approximately 750 feet of the shoulder and adjacent ruderal habitat south of Cordilleras Creek; and in Cordilleras Creek. The temporary roadway and bridge extension would remain in place through the end of the construction period and would be designed to withstand and pass tidal ebb and flow, and winter streamflows.

Construction equipment anticipated to be used on this project includes chainsaws, skip loaders, drill rigs/augers, excavators, skid steers, dozers, vibratory plate compactors, cranes, rollers, disc trenchers, concrete trucks, concrete saws, pavers, water trucks, sweepers, pile rigs, vibratory pile

drivers, generators, concrete boom trucks, concrete vibrators, and flatbed trucks; standard two-axle vehicles and diesel-powered vehicles with air brakes (e.g., dump trucks) may also be used. The contractor may select alternative but similar vehicles or equipment based on site-specific considerations.

During Project construction, Caltrans proposes the following best management practices (BMPs) to prevent erosion and protect water quality:

- Temporary silt fences will be installed to intercept and slow the flow of sediment-laden sheet flow runoff.
- Street sweeping will be done to remove tracked soil particles from paved roads to prevent the sediment from entering a storm drain or watercourse.
- Temporary fiber rolls consisting of straw or other similar materials will be placed on the face of the slopes at regular intervals to intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff.
- Temporary such as geosynthetic fabrics (geotextiles), plastic covers, or erosion control blankets/mats will be placed on the ground to stabilize disturbed soil areas and protect soil from erosion by wind or water.
- Temporary concrete washout facilities will be used. This waste management BMP contains procedures and practices that will minimize or eliminate the discharge of concrete waste materials to the storm drain systems or watercourses.
- Job site management would include considerations for operations, illicit discharge detention and reporting, vehicle and equipment cleaning, vehicle and equipment fueling, and material use.
- A Spill Prevention and Control Plan will be prepared in accordance with Storm Water Pollution Prevention Plan (SWPPP) requirements. Hazardous materials (e.g., fuels, oils, or solvents) will be stored in sealable containers in a designated location that is at least 100 feet from any hydrologic features.
- Caltrans will restore temporarily disturbed areas to the preconstruction or improved contours and functions to the maximum extent practicable. Where disturbance includes the removal of trees native species will be replanted at a 3:1 ratio for every native tree removed and 1:1 (native) for every nonnative tree removed, based on the local species composition.
- Falsework will be installed to keep bridge debris and construction, maintenance, and repair materials from falling into streams during demolition, construction, and substantial maintenance and repair activities.

- Equipment will be inspected on a daily basis for leaks and completely cleaned of any external petroleum products, hydraulic fluid, coolants, and other deleterious materials prior to operating equipment.
- Cofferdams and diversions will affect no more of the stream channel than is necessary to support completion of the maintenance or construction activity.
- Immediately upon completion of in-channel work all temporary fills including cofferdams, diversion pipes, and other in-channel structures that will not remain in the stream will be removed in a manner that minimizes disturbance to downstream flows and water quality.
- RSP, sheet piles, and other erosion control materials will be prewashed to remove sediment and/or contaminants.

We considered, under the ESA whether or not the proposed action would cause any other activities and determined that it would not.

The action area of the Project is located at U.S. Highway 101 post mile 7.13 where the existing Cordilleras Creek Bridge crosses over Cordilleras Creek in Redwood City, San Mateo County, California. Cordilleras Creek within the action area is a tidally influenced, engineered channel. The bridge structure consists of three 10-foot by 8-foot concrete box culverts that are 180 feet in length, measured from upstream to downstream. The action area includes approximately 12,750 square feet of creek channel slated for dewatering. Beyond the area to be dewatered by the cofferdams, the action area includes an additional 100 feet downstream in the Cordilleras Creek where any temporary water quality effects (e.g., fine sediment plume) might be detectable during construction activities. The creek bed under the bridge is currently the concrete-bottomed culvert with some overlaying fine clay and silt.

The vegetated portions of the action area consist of ruderal vegetation and saline emergent wetland. Ruderal cover exists primarily along the west roadway shoulder and adjacent to portions of the engineered Cordilleras Creek channel, though a small portion of saline emergent wetland vegetation does exist in this area. Though present on the southbound roadway shoulder, the majority of saline emergent wetland exists on the eastern side of U.S. Highway 101.

Action Agency's Effects Determination

Caltrans has determined the proposed action may affect, but is not likely to adversely (NLAA) listed species and their critical habitat. Caltrans's finding of NLAA is based upon the June 15 to October 15 in-channel work period when listed fish species are unlikely to be present.

Available information indicates the following listed species (distinct population segment [DPS]) and designated critical habitat under the jurisdiction of NMFS may be affected by the proposed Project:

Central California Coast steelhead DPS (*Oncorhynchus mykiss*)
 threatened (71 FR 834; January 5, 2006);
 critical habitat (70 FR 52488; September 2, 2005);

North American green sturgeon southern DPS (*Acipenser medirostris*)
 threatened (71 FR 17757; April 7, 2006);
 critical habitat (74 FR 52300; October 9, 2009).

The life history of steelhead in California is summarized in Busby *et al.* (1996). CCC steelhead are anadromous fish, spending time in both fresh and marine waters. The older juveniles and adult life stages occur in the ocean until adults ascend freshwater streams to spawn. Steelhead migrate to the ocean as smolts from January through May and migrate from the ocean upstream to spawn from December through April (Fukushima and Lesh 1998).

The life history of green sturgeon in California is summarized by Heublein *et al.* (2017) and NMFS (2015). The Southern DPS (sDPS) of North American green sturgeon spawn in the deep turbulent sections of the upper reaches of the Sacramento River. As juvenile green sturgeon age, they migrate downstream and live in the lower delta and bays, spending from three to four years there before entering the ocean. Within San Francisco Bay, information provided by Kelly *et al.* (2007) suggests depths less than 10 meters (33 feet) may be preferred during foraging and migration. Adult green sturgeon return from the ocean every few years to spawn, and generally show fidelity to their upper Sacramento River spawning sites. Adult sDPS green sturgeon enter San Francisco Bay in late winter through early spring and juvenile and adult sDPS green sturgeon may be present in San Francisco Bay year-round.

Effects of the Action

Under the ESA, “effects of the action” are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02). In our analysis, which describes the effects of the proposed action, we considered 50 CFR 402.17(a) and (b). When evaluating whether the proposed action is not likely to adversely affect listed species or critical habitat, NMFS considers whether the effects are expected to be completely beneficial, insignificant, or discountable. Completely beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Effects are considered discountable if they are extremely unlikely to occur.

The effects of the proposed action include temporary degradation of water quality and disturbance of benthic habitat during construction and use of cofferdams, as well as potential release of contaminants into the water by construction activities. By restricting in-channel construction activities to the period between June 15 and October 15, the Project’s construction schedule would avoid the migration seasons of adult and juvenile CCC steelhead in Cordilleras

Creek. Thus, NMFS anticipates no CCC steelhead will be present in the action area during work site dewatering and in-channel construction activities.

Threatened sDPS green sturgeon are known to occur within San Francisco Bay year-round. The action area is tidally influenced and accessible from the estuary, so it is possible for green sturgeon to use Project site for foraging.

To facilitate in-channel construction, the Project proposes to dewater approximately 12,750 square feet of Cordilleras Creek with cofferdams and a diversion pipe. As discussed above, in-channel work will occur during periods outside the migration season of CCC steelhead and steelhead presence during channel dewatering is unlikely. For the sDPS green sturgeon, this species may occur year-round in the San Francisco Estuary. However, sDPS green sturgeon are unlikely to occur in the action area due to habitat conditions and habitat quality. The majority of the site is shallow at low tide, so access is generally restricted to high tide periods. The action area also lacks natural cover and has been highly modified by development. The channel under the Cordilleras Creek Bridge, which blocks light, is divided into three culverts with concrete bottom and sides. Additionally, in the San Francisco Estuary, sDPS green sturgeon tend to occur most frequently in the northern portion of the Estuary. Acoustic transmitter tagging studies found that tagged green sturgeon were more often detected in the northern portion of the Estuary than in the central portion (Kelly et. al. 2007, Chapman et. al. 2019). For the reasons mentioned above, NMFS anticipates that sDPS green sturgeon are unlikely to be present in the action area during work site dewatering and in-channel construction activities.

With a very low probability of listed fish occurring at the work site during the construction period, the fish collection and relocation activities associated with dewatering and cofferdam installation are not expected to encounter steelhead or green sturgeon. With the cofferdams in place, the work site will be isolated from the tidal waters of San Francisco Bay. The proposed bypass diversion system is expected to maintain streamflow around the work site. With the proposed diversion system in place during construction, streamflow and tidal flows above and below the work site will not be affected during the Project's in-channel activities.

Water quality adjacent to the work site may be affected by workers, equipment, and the installation of the cofferdams. These activities can mobilize sediment in the streambed and along the bank. Minor and localized elevated levels of turbidity associated with construction activities are expected, but should be contained to areas within the cofferdams and a short distance immediately downstream of the work site. Any elevated levels of turbidity in the water column are expected to quickly disperse from the Project area with streamflow and/or tidal circulation. As stated above, listed fish are not expected to be within the action area during the construction period and not exposed to the potential effects of elevated turbidity during construction activities.

The temporary bridge extension would widen the existing Cordilleras Creek Bridge by 22 feet on the southbound side of U.S. Highway 101 for a period of approximately 16 months and would require placement of temporary fill on the banks and in the channel of Cordilleras Creek. Installation of the temporary bridge extension would increase shading over 726 square feet of Cordilleras Creek. The placement of fill on the banks and in the channel would narrow the channel. Upon completion of bridge replacement construction, the temporary bridge extension

and associated fill will be removed from the channel. It is unlikely that this small temporary increase in shade and fill would affect habitat conditions for listed fish in the action area. Due to the small size of the bridge extension and the fact that steelhead or green sturgeon could only encounter the temporary bridge extension during one wet season, the potential effects of the temporary bridge extension are expected to be insignificant.

Pile installation is expected to generate construction noise, primarily during vibratory driving of the steel casing that would support the 118 CIDH piles for the approach slabs and wingwalls. However, all pile installation would occur in the dewatered work area and without the use of impact drivers. With no in-water pile installation, elevated levels of underwater sound are expected to be minor and the effects of pile installation insignificant.

Releases of diesel fuel, lubricants, hydraulic fluid, and other potential contaminants from construction equipment could potentially result in acute adverse impacts to fish directly via physiological impairment, the interruption of essential behaviors, or direct mortality. Hazardous material spills may also impact aquatic invertebrates and fish habitat. For this project, proposed BMPs are expected to prevent, control, and minimize hazardous substances from entering flowing waters.

The action area is located within designated critical habitat for CCC steelhead and the sDPS of green sturgeon. The designations of critical habitat for CCC steelhead and green sturgeon use the term primary constituent element (PCE) or essential features. The new critical habitat regulations (81 FR 7414) replace this term with physical or biological features (PBFs). This shift in terminology does not change the approach used in conducting our analysis, whether the original designation identified primary constituent elements, physical or biological features, or essential features. In this letter of concurrence, we use the term PBF to mean PCE or essential feature, as appropriate for the specific critical habitat.

PBFs of designated critical habitat for CCC steelhead include estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes supporting growth and maturation. The PBFs of designated critical habitat for the sDPS of green sturgeon in estuarine areas include food resources, water flow, water quality, migratory corridor, water depth, and sediment quality.

During project activities, critical habitat will be affected by increases in turbidity, disturbance of benthic habitat, and temporary increase in shading and fill associated with the temporary bridge extension. As mentioned above, the temporary effects of increased shading and fill are expected to be insignificant on listed fish and their habitat. Dewatering of the 12,750 square foot reach would result in the loss of aquatic benthic macroinvertebrates in the dewatered area. However, benthic macroinvertebrates are expected to recolonize the dewatered area quickly once the cofferdams are removed. The effects of the temporary reduction of benthic macroinvertebrates on fish foraging is expected to be negligible because macroinvertebrates from upstream and

downstream of the dewatered area would remain available and flow would continue to pass through the diversion pipe with tidal fluctuations.

The Project will place 210 square feet of vegetated RSP on the banks of the engineered channel. This additional RSP in the manmade channel is not expected to degrade existing habitat conditions due to the small amount of rock and the RSP will be placed immediately adjacent to the replacement bridge. The Project's replacement of the existing concrete culvert with a free-span bridge will restore the natural channel bottom under the bridge and is expected to improve the habitat value for fish foraging in the action area. Additionally, the stream crossing would be widened relative to the existing condition, and fish passage under the bridge is likely to improve. Based on the above, the effects of the proposed project are considered insignificant and are not expected to degrade PBFs of critical habitat in the action area.

Conclusion

Based on this analysis, NMFS concurs with Caltrans that the proposed action is not likely to adversely affect the subject listed species.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by Caltrans or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) the proposed action causes take; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the written concurrence; or (4) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16).

Please direct questions regarding this letter to Andrew Trent at the North-Central Coast Office in Santa Rosa California at (707) 578-8553, or via email at andrew.trent@noaa.gov.

Sincerely,



Gary Stern

San Francisco Bay Branch Chief
North Central Coastal Office

cc: Gregory Pera, Caltrans, gregory.pera@dot.ca.gov
Samuel Aguilar, Caltrans, samuel.aguilar@dot.ca.gov
Copy to ARN # 151422WCR2020SR00232

REFERENCES

- Busby, P.J., T.C. Wainwright, G.J. Bryant., L. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. United States Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NOAA Fisheries-NWFSC-27. 261 pages.
- Chapman, E. D., A. R. Hearn, G. P. Singer, W. N. Brostoff, P. E. LaCivita, and A. P. Klimley. 2014. Movements of Steelhead (*Oncorhynchus mykiss*) smolts migrating through the San Francisco Bay Estuary. *Environmental Biology of Fishes*. 98(4): 1069 – 1080.
- Fukushima L., and E.W. Lesh. 1998. Adult and juvenile anadromous salmonid migration timing in California streams. *California Department of Fish and Game* 84(3):133-145.
- Heublein, J., R. Bellmer, R. Chase, P. Doukakis, M. Gingras, D. Hampton, J. Israel, Z. Jackson, R. Johnson, O. Langness, S. Luis, E. Mora, M. Moser, L. Rohrbach, A. Seesholtz, T. Sommer, and J. Stuart. 2017. Life History and Current Monitoring Inventory of San Francisco Estuary Sturgeon. 10.7289/V5/TM-SWFSC-589.
- Kelly, J. T., A. Klimley, and C. Crocker. 2007. Movements of green sturgeon, *Acipenser medirostris*, in the San Francisco Bay estuary, California. *Environ Biol Fish* 79:281–295
- NMFS (National Marine Fisheries Service). 2015. Southern Distinct Population Segment of the North American Green Sturgeon (*Acipenser medirostris*); 5-Year Review. West Coast Region, Long Beach, CA. Available online at: <https://repository.library.noaa.gov/view/noaa/17034>.