State Route 37 Sears Point to Mare Island Improvement Project

State Route 37 from State Route 121 to Mare Island
Napa, Sonoma, and Solano Counties, California

04-SON-SR 37 (PM 2.9/6.2); 04-SOL-SR 37 (PM 0.0/R7.4)

EA – 04-1Q7600; EFIS – 0418000329

Draft Environmental Impact Report/ Environmental Assessment VOLUME 1

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.

Caltrans

January 2022

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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 Draft Environmental Impact Report (EIR)/Environmental Assessment (EA), which examines the potential environmental impacts of the proposed project in Sonoma, Napa and Solano counties, California. Caltrans is the lead agency under the National Environmental Policy Act and the California Environmental Quality Act. The document explains why the project is being proposed, 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 proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read this Draft EIR/EA.
- This document may be downloaded at the following website: https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/d4-37-corridor-projects To protect public health and adhere to State and local requirements during the COVID-19 pandemic, this document is being made available via the provided website. Should a hardcopy be required, it may be provided upon request via the contact provided under "alternative formats" below.

Attend a virtual public meeting on: February 2, 2022

We would like to hear what you think. If you have comments about the proposed project, please attend and submit your comments at the public meeting and/or send your written comments to Caltrans by the deadline.

Send comments via postal mail to:

Caltrans District 4
Attn: Yolanda Rivas,
P.O. Box 23660
MS: 8B
Oakland, CA 94623-0660

Send comments via email to: stateroute37@dot.ca.gov

Be sure to send comments by the deadline: February 28, 2022

What happens next:

After comments are received from the public and reviewing agencies, Caltrans may: (1) give environmental approval to the proposed project, (2) do additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, Caltrans could design and construct all or part of the project.

Alternative Formats:

For individuals with sensory disabilities, 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: Jeff Weiss, P.O. Box 23660 MS 8B, Oakland, CA, 94623-0660, e-mail stateroute37@dot.ca.gov, or at (510) 715-8770 (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.

SCH Number: 2020070226
04-SON-37-PM 2.9/6.2; 04-SOL-37-PM 0.0/R7.4)
EA No. 04-1Q7600
Project No. 0418000329

State Route 37 Sears Point to Mare Island Improvement Project

Draft Environmental Impact Report/Environmental Assessment

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C) and 49 USC 303

THE STATE OF CALIFORNIA
Department of Transportation

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

12.31.21
Date

Dina A. El-Tawansy
District Director,
District 4 – Bay Area
CEQA and NEPA Lead Agency

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

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Summary

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. MAP-21 (Public Law 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, the Department 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 term of 5 years. In summary, the Department 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 the Department assumed all of the United States Department of Transportation Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off the State Highway System in the State of California, except for certain categorical exclusions that FHWA assigned to the Department under the 23 USC 326 CE Assignment MOU; projects excluded by definition; and specific project exclusions.

Introduction

The California Department of Transportation (Caltrans)—in cooperation with the Metropolitan Transportation Commission and Sonoma County Transportation Authority, Solano Transportation Authority, and Napa Valley Transportation Authority—is proposing improvements to the portion of Highway 37 between Sears Point and Mare Island. Highway 37 is referred to as State Route (SR) 37 throughout the remainder of this document.

Four Build Alternatives and a No Build Alternative are being considered. The proposed section of SR 37 for improvement is a two-lane conventional highway (one lane in each direction) between SR 121 and the Mare Island Interchange (approximately 9 miles). East of the Mare Island, Interchange SR 37 is a four-lane freeway facility between Interstate 80 and Mare Island (approximately 4.5 miles). West of SR 121, it is a four-lane conventional highway between SR 121 and U.S. Highway 101 (approximately 7.3 miles).

The purpose of the project is to improve traffic flow and peak travel times, and increase vehicle occupancy (the number of people moved per vehicle). The project is needed to address reoccurring congestion in the near term on SR 37, where the highway narrows to one lane in each direction between SR 37/SR 121.

Each of the Build Alternatives would reconfigure the existing SR 37 highway lanes from west of the SR 121 intersection to the Walnut Avenue Overcrossing at Mare Island. Each alternative would involve widening the Tolay Creek Bridge. Alternative 1 would have three lanes during the peak period, two in the peak period flow direction and one in the nonpeak flow direction, using a movable center median barrier from Noble Road intersection to just west of the Mare Island interchange. Alternative 2 would also have three lanes by allowing traffic the use of the highway outside shoulders as a traffic lane during the peak periods in the peak direction, but with a fixed median barrier. For Alternatives 1 and 2, during the nonpeak periods SR 37 would revert to one lane in each direction. Alternatives 3A and 3B would have four lanes, with two full-time lanes in each direction. Alternative 3A would have 4-foot outside shoulders between Mare Island and SR 121, except at the Sonoma Creek Bridge, where there would be minimal shoulders to avoid the need to widen the bridge. Alternative 3B would have 8-foot shoulders and would require widening of the Sonoma Creek Bridge. Alternatives 3A and 3B involve introducing the eastbound high-occupancy vehicle (HOV) lane at the SR 121/SR 37 intersection vicinity using one of three possible scenarios. Scenario 1 introduces the HOV lane on the right side, approximately 0.6 mile west of SR 121. Scenario 2 introduces the HOV lane on the left side east of SR 121, in the vicinity of the Tolay Creek Bridge. Scenario 3 introduces the HOV lane on the left side, about 0.6 mile west of SR 121, and extends the eastbound left-turn lane approximately 0.5 mile west.

For all four Build Alternatives, the added lane(s) would be for HOV use during peak travel periods. The Build Alternatives would also involve installation of advance signs to alert drivers approaching the proposed HOV lanes. To allow for advance signs, the overall project limits extend on SR 37 from approximately Lakeville Highway in Sonoma County to the Sacramento Street Overcrossing in Vallejo, and on SR 121 to approximately 0.2 mile north of SR 37. The project includes the installation and operation of Open Road Tolling, which would require separate state and federal approvals.

Project Impacts

Table S-1 summarizes and compares the effects of Alternatives 1, 2, 3A, 3B, and the No Build Alternative. The proposed avoidance, minimization, and/or mitigation measures to reduce the effects of the Build Alternatives are also presented. A complete description of potential effects and recommended measures is provided in Chapter 2.

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

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Existing and Future Land Use	None	Alternative 1 would require temporary construction easements (TCEs) in the Napa-Sonoma Marshes Wildlife Area (NSMWA) and San Pablo Bay National Wildlife Refuge (Refuge). However, the affected parcels would be restored following construction, and no permanent change to any land use would result.	Same as Alternative 1	Alternative 3A would require TCEs, in addition to permanent right-of-way acquisition at the Refuge (1.65 acres). The partial acquisitions would occur along the edge of the Refuge, where it is bisected by the existing roadway and provides limited recreational value and would not affect existing land uses of the rest of the Refuge area. Therefore, project construction and operation would not result in major changes to the land use or zoning of any parcels in the project area.	Same as Alternative 3A, but total permanent acquisition would include additional parcel acquisition. Total acquisition at the Refuge would be 3.92 acres. The partial acquisitions would occur along the edge of the Refuge, where it is bisected by the existing roadway and provides limited recreational value and would not affect existing land uses of the rest of the Refuge area.	Acquisitions and TCEs would require compensation. Because the TCEs are on public lands, the temporary use of these lands and any compensation would be defined in coordination with the Refuge.

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Consistency with State, Regional, and Local Plans and Programs	The No Build Alternative would not be consistent with *Plan Bay Area 2050* because it would not encourage ridesharing, car-pooling, or vanpooling. It would also not be consistent with Solano, Napa, and Sonoma Counties because it would not involve traffic management improvements along SR 37 to reduce congestion and/or transportation improvements that make intra-city travel easier. The existing lane reductions in both directions would remain, and would result in congestion, backups, and delays.	Alternative 1 would be consistent with most applicable plans and policies. It would be partially consistent with plans, programs, and policies related to bicycle facilities. It would continue to provide accessible shoulders for bicycle access.	Alternative 2 would be consistent with most applicable plans and policies. It would not be consistent with plans, programs, and policies related to bicycle facilities because it would not accommodate bicyclists when the shoulder running lane is open to traffic during the peak hours in the peak direction. Legislation to prohibit bicycle use along the corridor would be proposed.	Alternative 3A would be consistent with most applicable plans and policies. It would not be consistent with plans, programs, and policies related to bicycle facilities. Shoulders would be narrower (4 feet) but would not continue at the Sonoma Creek Bridge. Legislation to prohibit bicycle use along the corridor would be proposed.	Alternative 3B would be consistent with most applicable plans and policies. It would be consistent with plans, programs, and policies related to bicycle facilities because it would provide a continuous shoulder along the corridor in both directions, similar to existing conditions.	None
Parks and Recreation Facilities	None	Alternative 1 would require TCEs in the NSMWA and Refuge but would not require the permanent use of any publicly owned park or recreational facility.	Same as Alternative 1.	Alternative 3A would require TCEs in the NSMWA and Refuge. It would also include permanent use of areas in the Refuge lands totaling 1.65 acres.	Same as Alternative 3B, but permanent acquisition at the Refuge lands would total 3.92 acres.	Land acquisition at the Refuge would require compensation.

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Farmlands	None	None	None	None	None	None
Growth	None	Build Alternative 1 would increase the capacity of SR 37 in the project area but would not change overall land use or provide access to previously undeveloped land. It would accommodate planned growth but would not affect land use decisions in a way that would encourage growth beyond reasonably foreseeable levels.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None
Community Character and Cohesion	None	The project would generally improve access to adjacent and nearby land uses by reducing congestion. Alternative 1 would not displace or relocate any residents or encourage more people to move to the surrounding areas.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Relocations and Real Property Acquisition	None	Alternative 1 would not require any full property acquisitions and would not require any home or business relocations. TCEs would be required. However, Build Alternative 1 would require TCEs of approximately 0.12 acre of the 15,200-acre NSMWA.	Alternative 2 would not require any full property acquisitions and would not require any home or business relocations. TCEs would be required. Build Alternative 2 would require TCEs of approximately 0.16 acre of the NSMWA and approximately 0.44 acre of the 19,000-acre Refuge.	Alternative 3A would require TCEs and permanent property acquisition of areas in the Refuge. It would not require any home or business relocations. TCEs would be required. However, Build Alternative 3A would require TCEs of approximately 0.15 acre of the NSMWA and 0.03 acre of the Refuge, in addition to permanent use of approximately 1.65 acres of the Refuge.	Alternative 3B would require TCEs and permanent property acquisition of areas in the Refuge. Build Alternative 3B would require TCEs of approximately 0.28 acre of the NSMWA and permanent use of 3.92 acres of the Refuge.	None. Acquisitions and TCEs would require compensation.
Environmental Justice	None	None	None	None	None	None
Utilities/Emergency Services	None	The relocation of electrical facilities may result in temporary interruptions of service. It would not result in long-term effects to utilities or emergency services.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Traffic and Transportation	The No Build Alternative would not improve traffic conditions along SR 37.	Alternative 1 would improve traffic conditions compared to the No Build conditions but would not eliminate all congestion, due to the limited hours of operation for HOV lanes. Daily Vehicle miles traveled (VMT) would increase by 6,346 in 2025 and 31,729 in 2045 (in comparison to the No Build). VMT would decrease compared to the No Build with tolling implemented. Vehicle hours of delay and vehicle hours traveled would decrease with or without tolling.	Same as Alternative 1	The project is expected to improve traffic conditions along SR 37, and to improve the traffic flow and travel times in the peak direction. Alternative 3A would eliminate the lane reductions in each direction at all times and shows benefits for the general purpose lane as well as the HOV lane in each direction. Delays are improved compared to the No Build Alternative. VMT would increase by 9,599 in 2025 and 47,992 in 2045 in comparison to the No Build. VMT would decrease compared to the No Build with tolling implemented. Vehicle hours of delay and vehicle hours traveled would decrease with or without tolling.	Same as Alternative 3A	VMT is an impact criteria under CEQA. With tolling implemented as proposed with the project, there would be no adverse impact requiring mitigation. Tolling would require legislative approvals. **VMT-1:** Reduction in VMT can be achieved if tolling cannot be implemented. These include project support of bus service within the SR 37 corridor that uses the HOV lanes. Support of additional park and ride facilities and ride sharing services that serve SR 37 commuters. The performance measure will be the difference between the VMT impact without mitigation, as identified for each alternative, and with mitigation. For Alternatives 1 and 2, VMT would increase by 6,346 in 2025 and 31,729 in 2045 (in comparison to the No Build) without mitigation.

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
						For Alternatives 3A/3B, VMT would increase by 9,599 in 2025 and 47,992 in 2045 in comparison to the No Build without mitigation.
Visual/Aesthetics	None. The existing 36-inch-high median barrier will remain. There are no existing outside barrier rail systems.	Alternative 1 would have moderate visual impacts in combination with the Midwest Guard Rail System outside barrier, but would not have substantial adverse effects. With the Type 85B outside barrier, Alternative 1 would create moderate-high to high visual impacts because of its potential to obstruct views of scenic landscapes on the other side of the highway for most motorists.	Alternative 2 would create substantial adverse effects to a scenic vista because the 42-inch median barrier would interfere with views of low-lying scenic landscapes on the other side of the highway for many drivers. The Type 85B outside barrier would add to the adverse impacts by reducing views on the same side of the highway.	Same as Alternative 2.	Same as Alternative 1.	**VIS-01**: Limit Light Pollution. For permanent impacts, lighting on new ramps, at intersections, in advance of tolling gantries, and at CHP enforcement areas will be designed to limit light pollution and have minimum impact on the surrounding environment. All light fixtures will have light-emitting diodes configured at the minimum necessary number of bulbs, optimal mounting height, mast-arm length, and angle to restrict light to the roadways. Where applicable, shields on the fixtures to prevent light trespass to adjacent properties will be considered during the detailed design phase.

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Cultural Resources	None	Ground-disturbing activities during construction of the project could affect unknown buried cultural resources in areas adjacent to SR 37.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	**CUL-1:** Previously unidentified cultural materials unearthed during construction would require a halt in work until the resource is assessed. **CUL-2:** If human remains are discovered, the Caltrans Office of Cultural Resources shall be contacted and work will stop. The County Coroner and Likely Descendants shall be contacted.
Hydrology and Floodplain	None	Most improvements in the project would be within the existing impervious area and would not change the 100-year floodplain. The amount of new impervious surface area added would not have an impact to the flows within the project's limits.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Water Quality and Storm Water Runoff	None	Alternative 1 would disturb 44.86 acres of soil area, add 12.17 acres of new impervious area, and replace 11.57 acres of disturbed impervious area. The project would comply with standard practices to reduce impacts to water quality and would be in compliance with National Pollutant Discharge Elimination System (NPDES).	Alternative 2 would disturb 44.86 acres of soil area, add 19.75 acres of new impervious area, and replace 20.42 acres of disturbed impervious area. The project would comply with standard practices to reduce impacts to water quality and would be in compliance with NPDES. The project would implement best management practices.	Alternative 3A would disturb 79.88 acres of soil area, add 21.19 acres of new impervious area, and replace 21.11 acres of disturbed impervious area. The project would comply with standard practices to reduce impacts to water quality and would be in compliance with NPDES.	Alternative 3B would disturb 87.42 acres of soil area, add 28.25 acres of new impervious area, and replace 21.27 acres of disturbed impervious area. The project would comply with standard practices to reduce impacts to water quality and would be in compliance with NPDES.	None. Standard project features would be implemented during design and construction to address stormwater runoff in compliance with Caltrans' municipal separate storm sewer system and NPDES permits.

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Geology/Soils/ Seismic	The No Build Alternative would be subject to the existing geologic, soils, and seismic hazards.	Earthmoving activities such as grading, excavation, and trenching have the potential to result in soil erosion and loss of topsoil, especially in areas where there are steeper slopes. Hazards related to landslides, lateral spreading, and liquefaction susceptibility are considered low or low to moderate. Work would be done to widen Sonoma Creek Bridge and Tolay Creek Bridge. The median barrier would also be removed and replaced.	Same as Alternative 1	Impacts will be similar to those under Alternative 1. The difference is that a retaining wall would be implemented west of the SR 121 interchange, which would require ground disturbances.	Same as Alternative 3A	None. Standard project features would be implemented during design and construction to address potential geological and seismic hazards.

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Paleontology	None	No known resources were identified at the project. Three fossil localities are potentially in the regional vicinity of the project and there are areas within the project limits that have potential sensitivity. Although there are areas of potential sensitivity, there is low potential of impact due to the implementation of project features.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None
Hazardous Waste/ Materials	None	Construction of the project could result in the potential disturbance of hazardous materials in the soil and groundwater. No long-term impacts are expected to occur.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None. Standard project features would be implemented during design and construction to address potential contamination hazards.

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Air Quality	None	When compared to the No Build Alternative, regional emissions under Build Alternative 1 would be the same or slightly higher, given that this alternative slightly increases VMT in the region and provides some increases in travel time. Over time, emissions associated with improvements in vehicle tailpipe emissions would decrease.	Same as Alternative 1	Build Alternative 3A would have regional emissions slightly lower or approximately the same as the No Build Alternative. This is due to a greater reduction in regional travel time (i.e., higher travel speeds) despite an increase in regional VMT. Over time, emissions associated with improvements in vehicle tailpipe emissions would decrease.	Same as Alternative 3A	None

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Noise	Existing noise levels will increase by 0 to 2 A-weighted decibels (dBA) by 2045.	Noise levels would increase by 1 to 2 dBA. Noise levels would approach or exceed noise abatement criteria at six locations, but would not achieve a minimum abatement reduction. One location at Sonoma Creek would achieve a minimum reduction, but the barrier did not meet cost reasonableness criteria. Construction would have temporary noise impacts, including impacts from pile driving.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None. Standard project features would be required of the contractor to control construction noise.
Energy	None	Alternative 1 would have small direct and indirect energy increases compared to the No Build Alternative. Operational daily fuel consumption would have a 0.03 percent change from the No Build Alternative in both 2025 and 2045.	Same as Alternative 1	Alternative 3A would have small direct and indirect energy increases compared to the No Build Alternative. Operational daily fuel consumption would have 0.02 percent change from the No Build Alternative in both 2025 and 2045.	Same as Alternative 3A	None

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Natural Communities	None	Alternative 1 would have substantial direct and indirect impacts to natural communities by impacting approximately 1.91 acres of sensitive marsh and wetland communities (i.e., salt marsh bulrush marshes, pickleweed mats, and California cordgrass marsh), and would have negligible impacts to trees and valley oaks.	Alternative 2 would have substantial direct and indirect impacts to natural communities by impacting approximately 3.29 acres of sensitive marsh and wetland communities (i.e., salt marsh bulrush marshes, pickleweed mats, and California cordgrass marsh), and would have negligible impacts to trees and valley oaks.	Alternative 3A would have substantial direct and indirect impacts to natural communities by impacting approximately 3.85 acres of sensitive marsh and wetland communities (i.e., salt marsh bulrush marshes, pickleweed mats, and California cordgrass marsh), and would have negligible impacts to trees and valley oaks.	Alternative 3B would have the most substantial impact to natural communities, impacting approximately 7.55 acres of sensitive marsh and wetland communities (i.e., salt marsh bulrush marshes, pickleweed mats, and California cordgrass marsh), and would have negligible impacts to trees and valley oaks.	**BIO-01:** Wetlands Protection – Invasive Plants **BIO-02:** Wetland Protection **BIO-03:** Tree Replacement, Landscaping, and Revegetation Plan
Wetlands and Other Water	None	Alternative 1 would have substantial direct impacts resulting in approximately 2.03 acres of permanent loss of wetlands and other waters in the project area, primarily from fill in wetlands where roadway expansion is planned. Approximately 6.34 acres of temporary impacts to wetlands and other	Alternative 2 would have substantial direct impacts resulting in approximately 3.49 acres of permanent loss of wetlands and other waters in the project area, primarily from fill in wetlands where roadway expansion is planned. Approximately 10.02 acres of temporary impacts to wetlands and other	Alternative 3A would have substantial direct impacts (similar to Alternative 2) resulting in approximately 4.28 acres of permanent loss of wetlands and other waters in the project area, primarily from fill in wetlands where roadway expansion is planned. Approximately 10.35 acres of temporary impacts to	Alternative 3B would have the greatest impact on wetlands and other waters, resulting in approximately 9.02 acres of permanent loss of wetlands and other waters in the project area, primarily from fill in wetlands where roadway expansion is planned, and for bridge widening at Sonoma Creek Bridge. An additional	**BIO-01:** Wetlands Protection – Invasive Plants **BIO-02:** Wetland Protection **BIO-04:** Estuarine Dewatering Work Window **BIO-05:** Turbidity Control **BIO-07:** Wetlands and Other Waters Compensation

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
		waters, primarily from temporary construction access, would occur and would be restored to pre-project conditions or better. Indirect impacts from soil disturbance and stormwater run-off would be minimal under all alternatives.	waters, primarily from temporary construction access, would occur and would be restored to pre-project conditions or better. Indirect impacts from soil disturbance and stormwater run-off would be minimal under all alternatives.	wetlands and other waters, primarily from temporary construction access, would occur and would be restored to pre-project conditions or better. Indirect impacts from soil disturbance and stormwater run-off would be minimal under all alternatives.	0.7 acre of wetlands and other waters would be permanently shaded by the Sonoma Creek Bridge widening. Approximately 7.02 acres of temporary impacts to wetlands and other waters, primarily from temporary construction access, would occur and would be restored to pre-project conditions or better. An additional 1.76 acres of wetlands and other waters would be temporarily shaded to install a temporary trestle during Sonoma Creek Bridge widening. Indirect impacts from soil disturbance and stormwater run-off would be minimal under all alternatives.	

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Plant Species	None	Alternative 1 is unlikely to have any direct or indirect impacts to special-status plant species. However, additional floristic surveys and monitoring during construction are proposed to confirm the presence or absence of all potential special-status species. Invasive plant control is proposed as a standard measure to limit potential impacts to special-status plant species.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	**BIO-08:** Targeted Pre-Construction Plant Survey **BIO-09:** Special-Status Plant Monitoring

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Animal Species: State Species of Special Concern	None	Alternative 1 has potential to impact nonlisted special-status species habitat during vegetation removal, including the pallid bat, San Pablo song sparrow, and nesting bird species protect by the Migratory Bird Treaty Act (MBTA). project impacts would be negligible for these species. Project features and proposed nesting bird protection measures (BIO-10) would serve to avoid impacts completely or to make impacts negligible. Suisun shrew habitat impacts would be permanently and temporarily impacted the same as those described for salt marsh harvest mouse for Alternative 1. Salt marsh harvest mouse measures would fully address impacts to the shrew, and no	Same as Alternative 1 for pallid bat, San Pablo song sparrow, nesting bird species protect by the MBTA, and the Western Burrowing Owl. Suisun shrew habitat impacts would be permanently and temporarily impacted. Impacts would be the same as those described for salt marsh harvest mouse for this alternative. Salt marsh harvest mouse measures would fully address impacts to the shrew, and no additional measures are proposed here. Sacramento Splittail habitat would be permanently and temporarily impacted. Habitat impacts would be the same as those described for threatened and endangered anadromous fish species for this alternative. Measures	Same as Alternative 1 for pallid bat, San Pablo song sparrow, nesting bird species protect by the MBTA, and the Western Burrowing Owl. Suisun shrew habitat impacts would be permanently and temporarily impacted. Impacts would be the same as those described for salt marsh harvest mouse for this alternative. Salt marsh harvest mouse measures would fully address impacts to the shrew, and no additional measures are proposed here. Sacramento Splittail habitat would be permanently and temporarily impacted. Habitat impacts would be the same as those described for threatened and endangered anadromous fish species for this alternative. Measures	Same as Alternative 1 for San Pablo song sparrow, nesting bird species protect by the MBTA, and the Western Burrowing Owl. Pallid bat: in addition to BIO-10, measures BIO-11 and BIO-12 are proposed to address potential impacts to bats and roosting habitat that may occur on bridges that would be widened under Alternative 3b. Suisun shrew habitat impacts would be permanently and temporarily impacted. Impacts would be the same as those described for salt marsh harvest mouse for this alternative. Salt marsh harvest mouse measures would fully address impacts to the shrew, and no additional measures are proposed here.	**BIO-10:** Nesting Bird Protection **BIO-11:** Pre-Construction Bat Surveys and Avoidance Measures **BIO-12:** Bat Monitoring Protocols **BIO-13:** Western Burrowing Owl Pre-Construction Surveys **BIO-14:** Western Burrowing Owl Nest Avoidance

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
		additional measures are proposed here. Western Burrowing Owl is not anticipated to be nesting in the project area, but has potential to overwinter or graze in adjacent grasslands outside of the project footprint. With implementation of proposed surveys and monitoring as appropriate (BIO-13 and BIO-14), no impacts are anticipated. Sacramento Splittail habitat would be permanently and temporarily impacted. Habitat impacts are the same as those described for threatened and endangered anadromous fish species for this alternative. Those measures would fully address impacts to Sacramento Splittail, and no additional measures are proposed here.	proposed for threatened and endangered fish species would fully address impacts to Sacramento Splittail, and no additional measures are proposed here.	proposed for threatened and endangered fish species would fully address impacts to Sacramento Splittail, and no additional measures are proposed here.	Sacramento Splittail habitat would be permanently and temporarily impacted. Habitat impacts would be the same as those described for threatened and endangered anadromous fish species for this alternative. Measures for threatened and endangered fish species, as well as measures for pile driving, would fully address impacts to Sacramento Splittail, and no additional measures are proposed here.	

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Threatened and Endangered Species	None	Alternative 1 would have substantial permanent and temporary impacts on habitat for listed Chinook salmon, Delta smelt, steelhead, green sturgeon, longfin smelt, Ridgway's rail, California black rail; salt marsh harvest mouse, and California red-legged frog habitat, respectively. Environmental commitments to address permanent and temporary habitat impacts to threatened and endangered species are proposed for Alternative 1 (BIO-18 through 30, BIO-35, and BIO-39). Soft bird's-beak, a federally listed plant species, is not likely to be directly or indirectly impacted. However, measures to avoid take of this species where it has potentially suitable	Alternative 2 would have relatively similar, but slightly greater, area of impacts to the same listed species habitat as Alternative 1. With implementation of proposed measures, direct impacts to all listed species with potential to occur would be limited to no greater than harassment during construction.	Alternative 3A would have relatively similar area of impacts to the same listed species habitat as Alternative 2. With implementation of proposed measures, direct impacts to all listed species with potential to occur would be limited to no greater than harassment during construction.	Alternative 3B would have the greatest area of impacts to the same listed species habitat as Alternatives 1, 2, and 3B. Alternative 3B has potential to result in harm or mortality for green sturgeon during in-water construction to widen the Sonoma Creek Bridge. With proposed measures for Alternative 3 BIO-36, BIO-37. and BIO-38, potential impacts to this species would be greatly reduced. With implementation of proposed measures, direct impacts to other listed species with potential to occur would be limited to no greater than harassment during construction.	**BIO-08:** Targeted Pre-Construction Plant Survey **BIO-09:** Special-Status Plant Monitoring **BIO-18:** Wildlife Species Relocation **BIO-19:** Construction Noise **BIO-20:** California Red-Legged Frog Habitat Work Window **BIO-21:** California Red-Legged Frog Pre-Construction Surveys **BIO-22:** California Red-Legged Frog Monitoring Protocols **BIO-23:** Compensation for California Red-Legged Frog Habitat Effects **BIO-24:** Ridgway's Rail and California Black Rail Pre-Construction Survey **BIO-25** Ridgway's Rail and California Black Rail Monitoring **BIO-26:** Compensation for Ridgway's Rail Habitat Effects

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
		habitat are proposed for all project alternatives (BIO-08 and BIO-09). With implementation of proposed measures, direct impacts to listed species would be limited to no greater than harassment during construction.				**BIO-27:** Salt Marsh Harvest Mouse Pre-Construction Surveys **BIO-28:** Salt Marsh Harvest Mouse Exclusion Fencing **BIO-29:** Salt Marsh Harvest Mouse Monitoring Protocols **BIO-30:** Compensation for Salt Marsh Harvest Mouse and California Black Rail Habitat Effects **BIO-31:** Vibratory Pile Driving **BIO-32:** In-Water Sheet Pile Fish Entrapment Avoidance **BIO-33:** Fish Monitoring **BIO-34:** Fish Relocation **BIO-35:** Compensation for Chinook salmon, steelhead, green sturgeon, longfin smelt and Delta smelt habitat **BIO-36:** In-Water Impact Pile Driving Work Window

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
						BIO-37: In-Water Impact Pile Driving Attenuation **BIO-38:** Hydroacoustic Monitoring **BIO-40:** Swainson's Hawk Pre-Construction Surveys
Invasive Species	None	Previously described measures for plant species and sensitive habitat would effectively avoid and minimize effects from nonnative invasive plants (NNIPs). With implementation of already proposed measures, no substantial impacts from NNIP species is anticipated, and no new measures are proposed.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	**BIO-01:** Wetlands Protection – Invasive Plants
Wildfire	Existing wildfire hazards are low in the project area. The No Build Alternative would not change fire risk conditions.	The project would not change fire risk conditions and it would not change the alignment of SR 37.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None

Affected Resource	Potential Impact: No Build Alternative	Potential Impact: Alternative 1	Potential Impact: Alternative 2	Potential Impact: Alternative 3A	Potential Impact: Alternative 3B	Avoidance, Minimization, or Mitigation Measures
Climate Change	The No Build Alternative would have lower greenhouse gas (GHG) emissions than existing conditions. Existing GHG gas emissions from vehicle use on SR 37 would occur. GHG emissions for base year 2020 are 24,555,199 million metric tons of carbon dioxide equivalent. Traffic congestion would not be improved, and GHG emissions due to idling vehicles will continue to occur. As traffic worsens due to regional growth, GHG would increase but would be at least partially offset by driver conversion to lower emission vehicles over time (the conversion to lower emission vehicles is not a result of implementing the No Build Alternative, however).	Alternative 1 would have lower GHG emissions than existing conditions. Modeling shows that Build Alternative 1 would have slightly higher annual GHG emissions than the No Build Alterative in 2025. In 2040 and 2045, Alternative 1 would be about the same or slightly higher. However, reducing queues and stop-and-go traffic would reduce idling and therefore reduce GHG emissions due to idling. Therefore, factoring these benefits in will result in additional GHG emission reduction benefits compared to the No Build Alternative. GHG emissions will be emitted during construction. The transition by drivers to lower emission vehicles over time will lower GHG emissions same as No Build (this is not a result of this alternative).	Same as Alternative 1	Alternative 3A would have lower GHG emissions than existing conditions. Modeling shows that Alternative 3A would have slightly lower GHG emissions than No Build conditions. In 2040 and 2045, Alternative 3A would be higher than No Build conditions. Reducing queues and stop-and-go traffic would reduce idling and therefore reduce GHG emissions due to idling. Therefore, factoring these benefits in will result in additional GHG emission reduction benefits compared to the No Build Alternative. GHG emissions will be emitted during construction. The transition by drivers to lower emission vehicles over time will lower GHG emissions same as No Build (this is not a result of this alternative).	Same as Alternative 3A	None.

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Native American Heritage Commission Coordination

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Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans)—in cooperation with the Metropolitan Transportation Commission (MTC) and the north bay partner agencies of Sonoma County Transportation Authority (SCTA), Solano Transportation Authority (STA), and Napa Valley Transportation Authority (NVTA)—is proposing improvements to the portion of State Route (SR) 37 that is one lane in each direction. Caltrans is the lead agency under CEQA and NEPA.

The section of SR 37 proposed for widening is a two-lane conventional highway between SR 121 and the Mare Island Interchange (approximately 9 miles). East of the Mare Island, Interchange SR 37 is a four-lane freeway facility between Interstate 80 (I-80) and Mare Island (approximately 4.5 miles). West of SR 121, it is a four-lane conventional highway between SR 121 and United States Highway 101 (U.S. 101) (approximately 7.3 miles). The highway allows local road and driveway access from adjoining properties, has acceleration and deceleration lanes at some local intersections, and has an existing median barrier along most of the route. Bridge crossings are at Sonoma and Tolay creeks.

The project is within or adjoins the counties of Sonoma, Solano, and Napa and would add a high-occupancy vehicle (HOV) lane(s) from just west of SR 121 to the Mare Island (Walnut Avenue) Overcrossing, within the portion of SR 37 that is currently served by only one lane in each direction. Four alternatives are being considered. Each of the four Build Alternatives would reconfigure the existing SR 37 highway lanes from west of the SR 121 intersection to the Walnut Avenue Overcrossing at Mare Island. Each alternative would involve widening the existing bridge over Tolay Creek.

The overarching design and traffic differences between the four alternatives are presented below:

- Alternative 1 would provide three lanes during the peak traffic periods—two in the peak period flow direction and one in the nonpeak flow direction—using a movable center median barrier from the Noble Road intersection to just west of Mare Island interchange. During non-peak periods the highway would remain as one lane in each direction within this section. SR 37 from SR 121 to Noble Road would be permanently widened from one lane in each direction to two lanes in each direction with a solid median barrier.

- Alternative 2 would provide three lanes in the peak period only by allowing traffic to access the outside shoulders for use as a traffic lane in the peak direction, but with a fixed median barrier. During non-peak periods the highway would remain as one lane in each direction.

- Alternatives 3A and 3B would provide four lanes, with two full-time lanes in each direction.

  - Alternative 3A would include the construction of 4-foot outside shoulders between Mare Island and SR 121, except at the Sonoma Creek Bridge, where existing shoulder widths would be reduced in both directions to avoid bridge widening.

  - Alternative 3B would include the construction of 8-foot outside shoulders between Mare Island and SR 121 that also would require widening of the Sonoma Creek Bridge.

  - Alternatives 3A and 3B would introduce an eastbound HOV lane at the SR 121/SR 37 intersection using one of three possible scenarios.

    - Scenario 1 introduces the HOV lane on the right side, approximately 0.6 mile west of SR 121.

    - Scenario 2 introduces the HOV lane on the left side east of SR 121, in the vicinity of the Tolay Creek Bridge.

    - Scenario 3 introduces the HOV lane on the left side, about 0.6 mile west of SR 121, and extends the eastbound left-turn lane approximately 0.5 mile west.

All alternatives would also involve installation of advance warning signs to alert drivers approaching the proposed HOV lanes. To allow for advance signs, the overall project limits extend on SR 37 from the Lakeville Highway in Sonoma County to the Sacramento Street Overcrossing in Vallejo, and on SR 121 to approximately 0.2 mile north of SR 37. The project proposes the installation and operation of Open Road Tolling (ORT), subject to approval. Figure 1-1 shows a view of the overall project vicinity and limits.

N

0 2
Miles

Study Area
Sonoma County, Napa County & Solano County

PM SON - Post Mile, Sonoma County
PM SOL - Post Mile, Solano County

Source: AECOM, 2020; CPAD, 2020; ESRI, 2016 (roads)

SR 37 Traffic Congestion Relief Project
Sonoma, Napa & Solano Counties, CA

FIGURE 1-1: PROJECT LOCATION

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HOV lanes, also known as carpool or diamond lanes, are a traffic management strategy used to promote and encourage ridesharing, which helps alleviate congestion and maximizes the people-carrying capacity of a highway. HOV or carpool vehicles may be configured as HOV 2+ (two or more occupants), HOV3+ (three or more occupants), or other. The option of using tolling allows for differential pricing that can further encourage the use of multi-occupant vehicles, such as through a discounted cost or no-charge cost for HOVs. A discounted means-based (income based) toll is also proposed. The application of tolling would require separate legislative approval, but is evaluated in this environmental document as a viable alternative.

Plan Bay Area 2050, the regional transportation plan (RTP), includes a Freeway Performance Program (RTP ID 21-T06-035) for SR 37, which was used for developing a corridor plan and funding preliminary studies to identify projects that address transportation congestion, sea-level rise (SLR) adaptation, and flooding. This proposed project was identified as the Interim Project to address traffic congestion that occurs where SR 37 narrows to one lane in each direction. The project would be included in a Transportation Improvement Program (TIP) for adoption by the MTC.

The RTP can be found on the following website: https://www.planbayarea.org/final plan2050. The project listing can be found on the following website, at page 4 of 14 (RTP ID # 21-T06-035): https://www.planbayarea.org/sites/default/files/documents/Plan_Bay_Area_2050_Transportation_Project_List_October_2021.pdf. The TIP ID #VAR210004 can be found on the following website: https://fms.mtc.ca.gov/fms/showProjectDetailPrepare.ds?projectVersionSeq=34482. The TIP listing is also included in Appendix D, with the MTC Air Quality Conformity Task Force Determination.

1.1.1 History and Other Corridor Projects

The SR 37 corridor has been the subject of several studies related to SLR and traffic congestion. These include the Highway 37 Stewardship Study (July 2013); the State Route 37 Integrated Traffic, Infrastructure, and Sea Level Rise Analysis (UC Davis Study, February 2016); and the Caltrans Transportation Concept Report (2015). These studies and the SR 37 Corridor Plan identified SR 37 between SR 121 and the Mare Island Interchange as a priority segment for capacity enhancement to address bottlenecks that extend at either end due to lane drops between the four-lane segments; and to address the vulnerability and risks associated with SLR and flooding, public safety, transit feasibility, recreational activities, economic impacts on commuters, and transport of goods.

In December 2019, a Project Study Report-Project Development Support (PSR-PDS) was approved that included the following alternatives:

- No Build
- Interim Build Alternatives (previously referred to as the SR 37 Congestion Relief Project and now the Highway 37 Sears Point to Mare Island Improvement Project)
  - Three-lane movable median barrier
  - Shoulder conversion to travel lane during peak hour
- Ultimate Build Alternatives (hereafter called Resilient 37 Project)
  - Hybrid Section
  - Causeway

The interim and Resilient 37 projects were identified in the PSR-PDS report as separate projects based on their individual purpose and need, priority, and lead time to gain funding to proceed. The purpose of the interim project is to address existing traffic congestion caused by the existing bottleneck of lanes between SR 121 and the Mare Island Interchange by increasing highway capacity and encouraging carpooling with the addition of HOV lanes.

The purpose of future Resilient 37 projects is to maintain traffic conditions, address the resiliency of the corridor with respect to SLR and flooding, and provide ecological and hydrologic enhancements. A future Resilient 37 project that addresses SLR requires a substantial long-term investment to fund the reconstruction of the highway's vertical profile and improve hydrologic connectivity with the Bay. The anticipated years of construction needed to build a project that addresses SLR means that the SR 37 highway must remain in place and intact until completion of any improvements that raise the highway, so that transportation access along this corridor is not substantially interrupted during long-term construction. Once a future Resilient 37 project is funded and constructed, the existing highway facility would be relinquished and used at least in part to provide continued access to local properties.

A number of other transportation studies or projects are planned or anticipated along SR 37 that address the need for separate safety improvements, roadway or bridge repair and maintenance, drainage/flooding, and traffic operations (Table 1-1). For further information related to the corridor, please visit the Caltrans website at https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/d4-37-corridor-projects.

Table 1-1 Other Studies or Proposed Projects within the SR 37 Corridor

Project Name/Description	Expenditure Authorization (EA) Number	County	Post Miles	Sponsor	Status
SR 37 Pavement Rehabilitation – Capital Preventive Maintenance	2K740	Marin	R11.2/14.6	Caltrans	Delivery 2024
SR 37 Resilience Project (U.S. 101 to SR 121) SR 37 Flood Reduction Project (U.S. 101 to SR 121)	4Q320	Marin/ Sonoma	R11.2/14.6; 0.0/3.9	Caltrans	Delivery 2025
SR 37 Ultimate SLR Resilience Design Alternatives Assessment (U.S. 101 to SR 121)	Not Identified	Marin/ Sonoma	R11.2/14.6; 0.0/3.9	MTC	Feasibility Study
SR 37 Petaluma River Bridge Preservation	2Q500	Marin	14.5/15.0	Caltrans	Delivery 2024
Reconstruct Intersection of SR 37 and SR 121	1Q480	Sonoma	3.8/4.0	Caltrans	Delivery 2024
SR 37 Lane Extension and Railroad Crossing at Tolay Creek	2Q200	Sonoma	3.9/4.1	Caltrans	Delivery 2024
SR 37 SLR Resilience Project (SR 121 to Mare Island)	1Q762	Sonoma/ Solano	3.9/6.2; 0.0/R7.4	MTC/CTAs	Feasibility Study
SR 37 Alternatives Assessment for the Ultimate Project (SR 121 to Mare Island Interchange) (completed)	Not Identified	Sonoma/ Solano	3.5/6.2; 0.0/R7.4	MTC	Feasibility Study
SR 37 Pedestrian Enhancements at Wilson Avenue and Fairgrounds Drive (Environmental Assessment)	0P760	Solano	Various	Caltrans	Delivery 2024
Fairgrounds Drive Interchange Improvements	4A441	Solano	10.6/11.2	STA	Delivery 2021
SR 37 Corridor SLR and Complete Streets (U.S. 101 to SR 29)	4Q960	Marin/ Sonoma/ Napa/Solano	R11.2/14.6; 0.0/6.2; 0.0/R9.6	Caltrans	Feasibility Study
SR 37 Corridor Planning and Environmental Linkages (PEL) Study (U.S. 101 to I-80)	Not Identified	Marin/ Sonoma/ Napa/Solano	R11.2/14.6; 0.0/6.2; 0.0/R11.4	Caltrans	Pre-Planning

Source: Caltrans 2020e; SR 37 Policy Committee January 2021

1.2 Purpose and Need

1.2.1 Purpose of the Project

The project is intended to address existing recurring congestion on SR 37 where the highway narrows to one lane in each direction between SR 121 and Mare Island. The purpose of the project is to:

- Improve traffic flow and peak travel times, and
- Increase vehicle occupancy (the number of people moved per vehicle).

1.2.2 Project Need

The project is needed to address reoccurring congestion in the near term on SR 37, where the highway narrows to one lane in each direction between SR 37/SR 121. Presently capacity and merging constraints result in traffic queueing at the SR 37/SR 121 intersection. Current and anticipated future transportation demand contribute to the need for this project. The following sections discuss congestion problems in more detail.

1.2.2.1 Existing Congestion and Transportation Demand

The information in this section is based on the *Traffic Operations Analysis Report* prepared in December 2021 (AECOM 2021a). Based on traffic observations performed in 2019, westbound SR 37 traffic typically experiences congestion approaching the lane drop west of the Mare Island Interchange for about 6 hours during the weekday AM peak period. Eastbound SR 37 congestion occurs approaching the lane drop east of the SR 121 intersection for about 6 hours during the weekday PM peak period. On typical weekdays, the maximum westbound delay in the AM peak period is about 50 minutes, and the maximum eastbound delay in the PM peak period is about 68 minutes from U.S. 101 to SR 29. Future traffic forecast conditions indicate that the traffic congestion would continue to worsen.

Existing roadway conditions on SR 37 affect the operations of the highway. Furthermore, capacity constraints affect traffic and merging operations east of SR 121 and west of the Mare Island Interchange where the lane drops from two to one lane in each direction. Faster vehicles are unable to pass slower trucks and trailers. These capacity and merging constraints result in traffic queueing at the SR 37/SR 121 intersection. In addition, roadway settlement causes traffic to slow near the railroad crossing near SR 121.

Existing Conditions

AM Peak Period: During the weekday AM peak period, a bottleneck occurs on westbound SR 37 between the lane drop west of the Mare Island Interchange and the SR 121 intersection, forming about 5 AM and dissipating about 11 AM. Data and observations collected in 2019 indicated that the longest queue associated with this bottleneck extended approximately 1.2 miles east to the Wilson Avenue Interchange. The bottleneck section for westbound SR 37 had a mainline throughput traffic volume between 1,200 and 1,300 vehicles per hour (vph) per lane, which is below the expected one-way capacity (approximately 1,400 or more vph per lane) for a similar conventional highway. The maximum travel time between SR 29 and U.S. 101 is observed to be approximately 50 minutes during the 6 to 7 AM hour; the minimum

travel time is observed to be approximately 25 minutes during the 10 to 11 AM hour. This is a 25-minute difference between the maximum and minimum travel times.

In the AM peak period, vehicles with two or more passengers account for approximately 19 percent of the total vehicle composition in the eastbound direction, and 13 percent in the westbound direction. In the AM peak period, truck volumes account for 10 percent in the eastbound direction and 6 percent in the westbound direction.

PM Peak Period: During the weekday PM peak period, there is a substantial bottleneck on eastbound SR 37 beginning at the lane drop just east of the SR 121 intersection. The mainline queue approaching this bottleneck was observed to extend east of the Petaluma River Bridge, which is approximately 4 miles west of the SR 121 intersection, forming about 2 PM and dissipating about 8 PM. On a typical weekday, the mainline bottleneck throughput for the single eastbound lane peaks at Noble Road at approximately 1,300 vph at 2:00 PM and was observed to be as low as 1,100 vph, compared to a typical capacity of 1,400 vph for a similar conventional highway. The maximum travel time between U.S. 101 and SR 29 is observed to be approximately 68 minutes during the 4 to 5 PM hour; the minimum travel time is observed to be approximately 22 minutes during the 8 to 9 PM hour. This is a 46-minute difference between the maximum and minimum travel times.

During the PM peak period, vehicles with two or more occupants accounted for 17 percent of the total vehicle composition in the eastbound direction, and 14 percent in the westbound direction. In the PM peak period, truck volumes account for 3 percent in the eastbound direction and 4 percent in the westbound direction.

Method for Forecasting Traffic Volumes

Forecast volumes for the years 2025 and 2045 for the study area were developed using the most current Travel Model One (TM1) V6 model that was developed and is maintained by MTC. The traffic demand inputs for the model were developed using traffic volume data from 2019 counts collected by AECOM. The year 2020 was approved for use as the base year (existing) model which is the closest to the existing condition. The final future traffic forecasts were generated by adding the demand growth estimated by TM1 to existing traffic data (per National Cooperative Research Program Report 255). From 2025 to 2045, the average annual growth rate in the study area is projected to be approximately 0.8 percent per year, as discussed in Section 2.2.6.

These forecasted conditions are based on traffic counts and historic growth rates developed prior to the economic and travel conditions experienced beginning in spring 2020 and are therefore representative of historic commuter demand. These traffic conditions would represent economic recovery in the future based on existing land uses that experience modest growth.

SR 37 Travel Time Calibration and Validation

The SR 37 Corridor Plan analyzed the traffic operations of the study corridor. The traffic demand inputs for the model were developed using traffic volume data from 2019 counts collected by AECOM. A traffic model called VISSIM was developed for the study limits between U.S. 101 and SR 29 and calibrated to replicate 2019 field conditions collected for the SR 37 Corridor Plan. Once calibrated, the VISSIM model was then applied to evaluate future conditions.

Peak direction travel times for 2019 are summarized in Table 1-2 and Table 1-3.

Table 1-2 SR 37 Peak Direction Travel Time Comparisons (Between U.S. 101 and SR 29) – AM Peak Period

Time Interval	Eastbound Field Travel Times	Westbound Travel Times
5 AM	21.4	38.9
6 AM	21.7	49.5
7 AM	22.1	44.4
8 AM	21.9	41.6
9 AM	21.0	28.5
10 AM	21.7	25.0
Average	**21.6**	**37.9**

Source: AECOM 2021a

Average of travel time runs collected on October 8, 2019, and October 16, 2019

Table 1-3 SR 37 Peak Direction Travel Time Comparisons (Between U.S. 101 and SR 29) – PM Peak Period

Time Interval	Eastbound Field Travel Times in Minutes	Westbound Travel Times in Minutes
2 PM	40.8	22.4
3 PM	56.9	22.7
4 PM	67.8	23.1
5 PM	62.6	22.0
6 PM	49.0	22.6
7 PM	34.4	21.7
8 PM	22.0	21.3
Average	**47.6**	**22.3**

Source: AECOM, 2021a

Average of travel time runs collected on October 8, 2019, and October 16, 2019

1.2.2.2 Legislation

The following legislation (and proposed legislation) relates to this project:

- Draft legislation was introduced in early 2020 to place SR 37 under the direction of the Bay Area Toll Authority (BATA), an agency that controls tariffs on regional bridges. The intent of this legislation, if approved, would be to raise funding that would be available for long-term improvements on SR 37.

- Assembly Bill (AB) 194 (approved in 2015), Chapter 687 (amending Section 149.7 and 149.12) of the California Streets and Highways Code allows regional transportation agencies and Caltrans to develop and operate express lanes or other tolling facilities. The legislation removes the prior limits on the number of facilities and the approval deadline. The legislation created the Highway Toll Account in the State Transportation Fund for the management of funds received for toll facilities operated by Caltrans. This legislation allows BATA/Caltrans to designate and operate a toll lane on SR 37 (if it receives other approvals).

- 23 United States Code (USC) 166 provides rules for operation of HOV facilities and HOV facilities by a public authority (such as Caltrans/BATA).

- 23 USC 166 provides a public authority the ability to define the number of occupants in a qualified HOV facility. For SR 37, this can allow or restrict users, such as qualified multi-occupant vehicles, motorcycles, and clean air vehicles, consistent with applicable rules for the State Highway System.

1.2.3 Independent Utility and Logical Termini

Federal Highway Administration (FHWA) regulations (23 Code of Federal Regulations [CFR] 771.111[f]) require that the project:

- Have rational end points for a transportation improvement and be of sufficient length for environmental issues to be adequately addressed;
- Be useable and require a reasonable expenditure even if no additional transportation improvements in the area are made; and
- Not restrict consideration of other foreseeable transportation improvements.

The following discussion clarifies how the project meets the above-listed federal regulation requirements.

Logical Termini: The existing highway between U.S. 101 and SR 121 (4.5 miles long) and between I-80 and Mare Island (7.3 miles long) is four lanes (two lanes in each direction), while the 9-mile-long segment between SR 121 and Mare Island is two

lanes (one lane in each direction). Congestion begins during peak periods, starting before the highway transitions from two lanes in each direction to one lane in each direction. The limits of the project were selected to optimize operational efficiency, and to include proposed features necessary to manage traffic:

- The western terminus of the planned pavement widening begins approximately 0.5 mile west of the SR 121 intersection. This limit was chosen to introduce or start the HOV lane going eastbound west of the SR 121 intersection. This would allow vehicles to efficiently and safely transition into the HOV lane prior to the SR 121 intersection and Tolay Creek Bridge.

- The eastern terminus where widening begins would be near the Mare Island westbound off-ramp. Currently, the on-ramp transitions quickly, requiring a merge into westbound SR 37. With the project, the merging lane entering from the on-ramp would be extended 0.2 to 0.3 mile farther west to provide a transition zone for vehicles to enter or exit the right-hand lane. The third eastbound lane would merge in this transition zone, and two lanes would continue west (one HOV lane and one general purpose lane).

The overall project limits would be from just east of Lakeville Highway to the eastern side of the Napa River Bridge. These limits of work extend beyond the proposed widening to allow for the placement of advance roadway signs notifying drivers of the upcoming HOV lane and the option of installing tolling equipment.

The proposed limits allow for consideration of design alternatives that can serve peak-period traffic, and provide a more consistent lane configuration that matches the existing four-lane facility west of SR 121 and east of Mare Island. These limits allow for consideration of alternatives that address the existing segment of SR 37, where it is limited to one lane in each direction, and would serve the most heavily congested portion of SR 37.

The rational endpoints outlined above define sufficient basis for analysis of the potential environmental impacts of the proposed project. These are thoroughly discussed in Chapter 2 of this document.

Independent Utility: The proposed project would require no other improvements to provide time-saving benefits to HOV drivers within the project limits, while meeting the purpose and need of the project. It would improve traffic flow and peak travel times, and increase vehicle occupancy in the travel corridor between Mare Island and SR 121. The proposed project considers (and does not preclude) a full range of options, including HOV designation in the peak direction only (Alternative 1), HOV lane

designation during the peak period only in both directions (Alternative 2), or a full-time lane that can also be designated for HOV use during peak periods (Alternative 3).

The proposed project does not restrict consideration of nor depend upon other foreseeable transportation improvements. These are listed in Table 1-1 and include proposed improvements for traffic operations (intersection, interchange, and lane improvements), flood protection, bridge preservation or protection, pedestrian improvements, and SLR adaptation. Those projects are not reliant on the proposed SR 37 Congestion Relief Project, and could be carried out independently. An eastbound lane extension (referred to as EA 2Q200) has been proposed. It would add an eastbound lane on the right-hand side of the highway from the SR 121/SR 37 intersection to east of the railroad tracks. This was proposed as an independent project to relieve congestion in the event that the SR 37 congestion relief project does not proceed. If the SR 37 project, which incorporates this transition lane into the proposed design, proceeds to construction, an independent eastbound transition lane segment at the SR 121 interchange would not be needed as a separate project.

This SR 37 project is being designed at the existing roadway elevation and does not address SLR. Caltrans, in cooperation with the MTC and the North Bay partner agencies of SCTA, STA, and NVTA are proposing that the urgency of the congestion and vehicle hours of delay (VHD) justifies the interim improvements. This congestion relief project would not conflict or restrict the consideration of future projects that address SLR, because those projects would likely require evaluation of alternative alignments that accommodate multi-year construction of a raised or elevated highway while maintaining access on the existing SR 37 during construction of such a project. This project would also not conflict with other SR 37 projects listed in Table 1-1 in Section 0, above, which address maintenance and non-capacity-increasing operational improvements elsewhere in the corridor.

1.3 Project Description

SR 37 extends from U.S. 101 in Novato, Marin County, to I-80 in Vallejo, Solano County (Figure 1-1). It is an important regional connection linking the north, east, and west San Francisco Bay sub-regions. Additionally, the highway is a parallel route north of the Richmond-San Rafael Bridge (Interstate 580 [I-580]) and is part of the Interregional Roads System between U.S. 101 and I-80. SR 37 connects job markets and housing in Marin, Sonoma, Napa, and Solano counties and provides access to the popular wine-growing regions of Napa and Sonoma counties, the San Pablo Bay National Wildlife Refuge (Refuge), Sonoma Raceway in Sonoma County, Six Flags Discovery Kingdom, and Mare Island in Solano County. Between U.S. 101 and I-80, SR 37 connects with Lakeville Highway, SR 121, and SR 29. The commute, freight movement, and recreational functions of SR 37 require efficient traffic management on

both weekdays and weekends. This project focuses on the portion of SR 37 that has a traffic capacity need where it transitions from four to two lanes between approximately SR 121 and the Mare Island Interchange.

1.4 Alternatives

This section describes the proposed action and project alternatives developed to meet the project's purpose and need. The proposed action includes five Alternatives, with four build alternatives and a no-build alternative. These build alternatives are proposed for SR 37 to reconfigure the existing highway facility between SR 121 and the Mare Island interchange.

1.4.1 No Build Alternative

The No Build Alternative assumes that no project improvements would be constructed. SR 37 transitions from a four-lane facility (two lanes on each side) to a two-lane facility (one lane on each side) within the project limits. The lanes are 12 feet wide and the shoulders are 8.75 feet wide. There is a 10-foot median with a concrete barrier 36 inches high. There are no bicycle or pedestrian facilities on SR 37 within the project limits. However, bicyclists are permitted on the shoulders of SR 37. The existing bottleneck conditions caused by the lane reduction (from two lanes to one lane) in the westbound direction near the Walnut Avenue Overcrossing and in the eastbound direction near the SR 121 intersection would continue to delay peak-period traffic. Traffic congestion caused by these bottlenecks would continue to deteriorate in the foreseeable future as north Bay Area traffic demand increases. The No Build Alternative provides a basis of comparison with the Build Alternatives.

1.4.2 Build Alternatives

The project is focused on traffic congestion relief by improving traffic flow, reducing peak travel times, and increasing vehicle occupancy in the travel corridor between Mare Island and SR 121 (the project limits). SR 37 narrows from two lanes in each direction to one lane in each direction of the project limits. The highway has acceleration and deceleration lanes at some local intersections and an existing median barrier along most of the route.

Each of the build alternatives would reconfigure the existing SR 37 highway lanes within the project limits, and would widen the Tolay Creek Bridge. Alternative 1 would incorporate a reversible lane and have three lanes during the peak period, two in the peak period flow direction and one in the nonpeak flow direction, using a movable center median barrier. Alternative 2 would also have three lanes but would include a fixed median barrier rather than a reversible lane. Alternatives 3A and 3B would have four lanes, with two full-time lanes in each direction.

All of the Build alternatives would also involve installation of advance signs to alert drivers approaching the proposed HOV lanes. To allow for advance signs, the overall project limits extend on SR 37 from Lakeville Highway in Sonoma County to the Sacramento Street Overcrossing in Vallejo, and on SR 121 approximately 0.2 mile north of SR 37.

1.4.2.1 Alternative 1: Three-Lane Contra-Flow with Moveable Median Barrier and HOV Lane

This alternative proposes to convert the existing two-lane highway to a three-lane highway, mostly within the existing roadway prism, with a movable median barrier separating the two directions of traffic. The movable median barrier would provide for two lanes during the peak period in the peak direction and a single lane in the nonpeak direction. The additional lane would be a HOV lane to provide an incentive for mode shift from single-occupancy vehicles (SOVs).

The movable median barrier would require daily transfer, requiring a dedicated work crew and equipment. This introduces new, relatively high operational costs, and requires storage building(s) for the equipment and a structure for crew quarters, which have not been defined or designed but would likely be located along the SR 37 corridor near SR 121 and Tolay Creek. Existing subsidence of the roadway occurs that could affect the operation of the barrier. Although the project would be designed to account for this settlement, subsidence and settlement may cause the SR 37 pavement to be unsmooth, which would affect the way that this movable barrier functions over time. Figure 1-2 shows a typical cross section of Alternative 1.

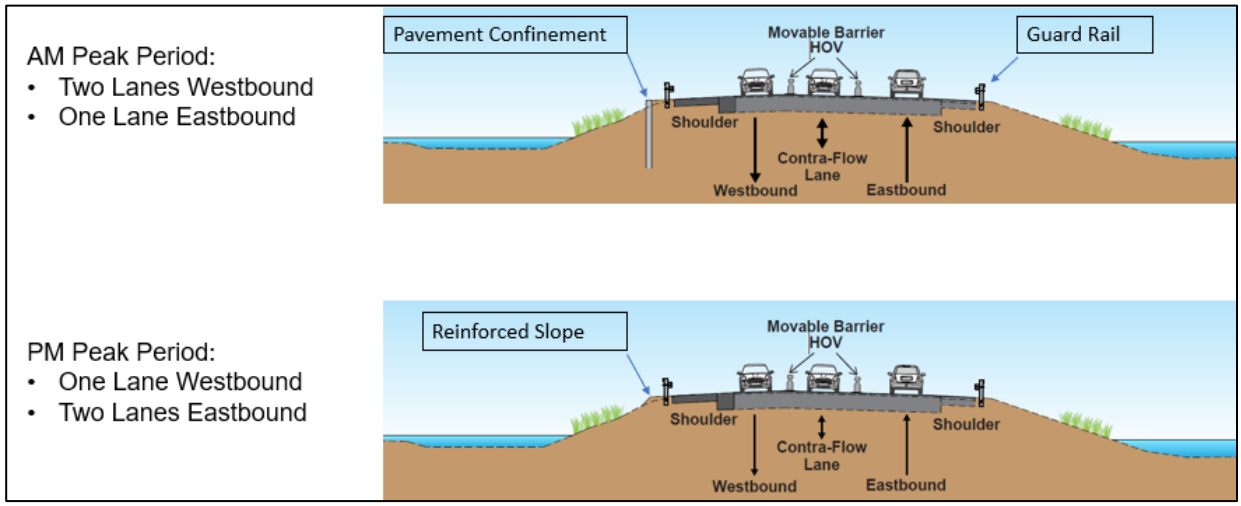


Figure 1-2 Typical Cross Section of Alternative 1

Alternative 1 includes the following:

- From just east of SR 121 and the Sonoma-Marin Area Rail Transit (SMART) at-grade crossing to Noble Road, SR 37 would be widened to create a four-lane facility. This section would have 4- to 6-foot outside shoulders with approximately 1.4 miles of fixed median barrier to separate eastbound and westbound traffic.

- The HOV lane would be on the left side of the highway (adjacent to the median) and open only during the peak period in the peak flow direction. In the eastbound direction, the HOV lane would begin east of the SR 121 intersection. The westbound lane would begin west of the Mare Island on-ramp.

- From Noble Road to approximately 0.3 mile west of the Walnut Avenue Overcrossing, approximately 7.6 miles of movable barrier would replace the existing median concrete. This section would consist of three 12-foot lanes directionally divided by the movable barrier, with no inside shoulder and 8-foot outside shoulders that would provide for shared bicycle use. When there are two lanes open in one direction during the peak period, the movable inside lane would be an HOV lane.

- Storage of a barrier transfer machine is anticipated to be immediately west of Noble Road and along the median, approximately 0.3 mile west of the Walnut Avenue Overcrossing structure.

- The median barrier would be moved at least twice per day to accommodate typical peak period directional flow traffic.

- There would be around 4 feet of widening along the corridor, for a total roadway width of 54 feet; under the No Build Conditions, the width is 50.75 feet.

- Both sides of Tolay Creek Bridge (Bridge No. 20-0090) would be widened.

- Sonoma Creek Bridge (Bridge No. 23-0063) would be widened on the westbound side by about 4 to 5 feet unless a design exception is approved. If Sonoma Creek Bridge is not widened, the bridge section would consist of three 12-foot lanes directionally divided by the movable barrier with no inside shoulder, a 4-foot outside shoulder on one side and 8-foot outside shoulders on the other side.

1.4.2.2 Alternative 2: Convert Existing Outside Shoulders to HOV during Peak Periods (Part-Time Use Lane)

This alternative proposes to use the existing highway shoulders to provide a traffic lane during the peak periods in the peak direction. During peak hours in the peak direction, the outside shoulder is proposed to act as an HOV lane for users, while in the nonpeak direction it would act as a shoulder. The outside lane would be for HOV use during peak periods to provide an incentive for mode shift from SOVs. Static signs are proposed to manage the part-time lanes. Figure 1-3 shows a typical cross section of Alternative 2.

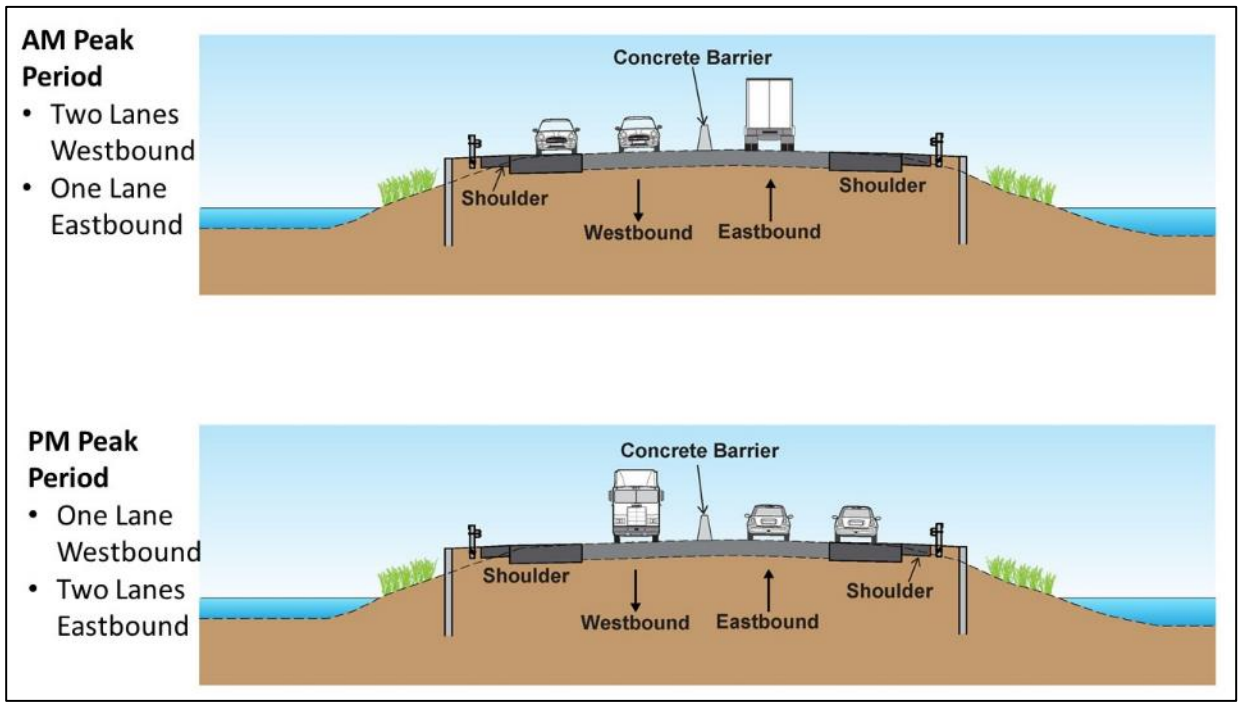


Figure 1-3 Typical Cross Section of Alternative 2

Alternative 2 includes the following:

- There would be two 11-foot inside lanes separated by a fixed median barrier with a 2-foot inside shoulder (6-foot median), two 12-foot outside lanes, and a 4-foot dedicated shoulder, for a total roadway minimum width of 60 feet.
- During the peak period, there would be two lanes in the peak direction. The inside lane would be for general purpose use only. The outside lane would be for HOV use during peak periods only. The peak time periods are 5 AM to 11 AM and PM peak time periods are 2 PM to 9 PM. During the nonpeak period, there would be only one lane in the nonpeak direction; it would be a general-purpose lane (open to all vehicles), with the outside lane reverting to a shoulder, amounting to a 16-foot shoulder.

- The eastbound HOV lane would begin east of the SR 121 intersection to the Walnut Avenue Overcrossing. The westbound lane would begin west of the Mare Island on-ramp.
- Approximately 9.09 miles of existing outside shoulder would be reconstructed and converted to a travel lane pavement section in each direction.
- The existing 32-inch-high concrete median barrier may need to be replaced with a new standard 42-inch-high concrete barrier for approximately 9.3 miles.
- Approximately 25 vehicle pullout areas would be constructed.
- Both sides of Tolay Creek Bridge would be widened.

The existing Sonoma Creek Bridge can accommodate the proposed lane configuration except for the 4-foot outside shoulder. This alternative cannot accommodate bicycles because the Sonoma Creek Bridge would be too narrow to maintain an adequate shoulder for safe passage.

1.4.2.3 Alternative 3A: Widen to Four Lanes, with Four-Foot Shoulders, No Widening at Sonoma Creek Bridge

This alternative would widen the highway to provide four lanes, two in each direction. All four lanes would be general-purpose lanes during nonpeak periods. The inside lane (left-side lane) would then be changed over for HOV use during peak periods to provide an incentive for mode shift from SOVs. Static signs are proposed to manage the lanes. Figure 1-4 shows a typical cross section of Alternatives 3A and 3B.

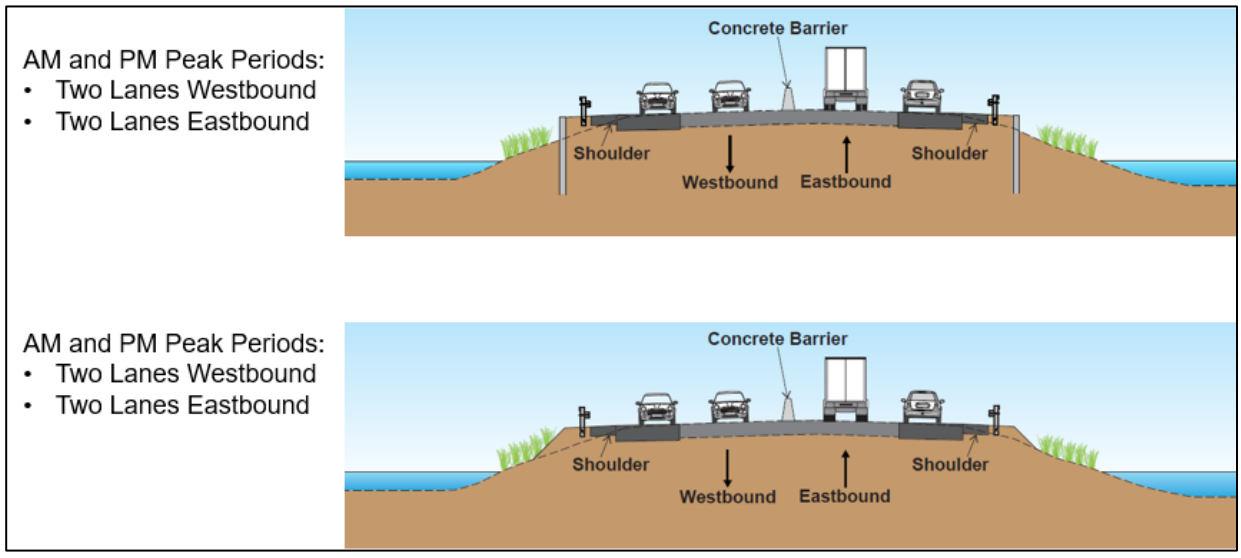


Figure 1-4 Typical Cross Section Alternatives 3A and 3B

Alternative 3A includes the following:

- In each direction, there would be a 2-foot inside shoulder, an 11-foot inside lane, a 12-foot outside lane, and a 4-foot outside shoulder, for a total roadway minimum width of 60 feet. The westbound and eastbound lanes would be separated by a 6-foot median barrier with 2-foot shoulders on either side.
- There would be two lanes in each direction during all hours; however, during the peak period, the inside lane (left-side lane) in each direction would be restricted to HOV use.
- The eastbound HOV lane would begin approximately 0.6 mile west of the SR 121 intersection. The westbound lane would begin west of the Mare Island on-ramp.
- To accommodate merging, there would be an additional short section of merging lane in the eastbound direction from SR 121 to 0.3 mile east of this intersection.
- The eastbound direction west of SR 121 for would be widened for approximately 0.8 mile) to accommodate the eastbound HOV lane and extend the left-turn lane to the west.
- Approximately 9.1 miles of existing outside shoulder would be reconstructed and converted to a travel lane pavement section and smaller shoulder in each direction. A Type 85 or Midwest Guard Rail System (MGS) would be placed at the edge of the outside shoulder in each direction.
- The existing 32-inch-high concrete median barrier would be replaced with a standard 42-inch-high concrete barrier for approximately 9.3 miles.
- Approximately 25 vehicle pullout areas would be constructed.
- Both sides of Tolay Creek Bridge would be widened.

The existing Sonoma Creek Bridge can accommodate the proposed lane configuration except for the 4-foot outside shoulder. This alternative cannot accommodate bicycles because the Sonoma Creek Bridge would be too narrow to maintain an adequate shoulder for safe passage. Because this alternative has nonstandard inside and outside shoulders, additional design measures are proposed, as described in Section 1.4.3, Comparison of Alternatives.

1.4.2.4 Alternative 3B, Widen to Four Lanes, with Eight-Foot Shoulders, and Widen Sonoma Creek Bridge

This alternative would widen the highway to provide four full-time lanes, two in each direction, the same as described for Alternative 3A (same typical cross section), with some differences. The following are the differences between Alternative 3B and Alternative 3A:

- The highway would have additional widening to create 8 foot shoulders between SR 121 and Mare Island. Similar to Alternative 3A, the lane configuration in each direction would be a 6-foot median, 11-foot inside lanes, and 12-foot outside lanes, but the shoulders would be 8 feet wide instead of 4 feet wide. The total minimum width of pavement would be 68 feet.

- The Sonoma Creek Bridge would be widened to accommodate the additional lane in each direction, with 8-foot shoulders in both directions. The bridge would be widened on the south side, and the median and lanes shifted to align with the widened structure.

- A Type 85 barrier would be installed on the Sonoma Creek Bridge in the eastbound direction as bridge railing, and a tubular railing would be added to the existing bridge barrier in the westbound direction.

- The design and construction of the widening on the southern side of Sonoma Creek Bridge would involve the following:

  – Equipment and temporary staging roads would be necessary within the project footprint at the bridge to provide worker and equipment access to install the necessary piles and bridge abutments.

  – New piles would be placed alongside Sonoma Creek, but outside of the navigable channel.

  – A temporary trestle structure would be constructed alongside the existing bridge to accommodate equipment and workers.

  – The temporary trestle would be supported by driven steel piles.

  – After installation of the temporary trestle, equipment would work from the top of the trestle adjacent to the existing bridge.

  – The temporary trestle would be removed after Sonoma Creek Bridge widening work is complete.

Alternative 3B would provide 8-foot shoulders between SR 121 and Mare Island, similar to the existing shoulder widths. This alternative would be able to accommodate bicycles across the Sonoma Creek Bridge.

1.4.2.5 Alternatives 3A and 3B, HOV Scenarios

Alternatives 3A and 3B involve introducing the eastbound HOV lane at the SR 121/SR 37 intersection vicinity. There are three options or scenarios for how the eastbound HOV lane would transition at this location. Any one of these scenarios could be constructed:

- Scenario 1 introduces the HOV lane on the right side, approximately 0.6 mile west of SR 121.
- Scenario 2 introduces the HOV lane on the left side east of SR 121, in the vicinity of the Tolay Creek Bridge.
- Scenario 3 introduces the HOV lane on the left side, about 0.6 mile west of SR 121, and extends the eastbound left-turn lane approximately 0.5 mile west.

1.4.2.6 Common Design Features of the Build Alternatives

High Occupancy Vehicle Lane

Each of the Build Alternatives would include a new HOV lane. For Alternative 1, the HOV lane would be adjacent to the center median (inside lane) and open only during the peak period in the peak direction of travel (an HOV lane and mixed-flow lane in the peak direction, and a single mixed-flow lane in the nonpeak direction). During nonpeak periods, there would be only one mixed-flow (non-HOV) lane open in each direction.

For Alternative 2, the single HOV lane would be on the right side of the highway, adjacent to the shoulder. During nonpeak periods, there would be only one mixed-flow (non-HOV) lane open in each direction.

For Alternatives 3A and 3B, there would be an HOV lane in each direction on the left side (westbound) or right side (eastbound), in addition to the existing mixed-flow lane. During nonpeak periods, HOV restrictions would not apply, similar to other California highways and freeways that have HOV lanes.

Tolling

Implementation of tolling on SR 37 between SR 121 and the Mare Island Interchange is also proposed as part of this project, contingent on legislative approval. If approved, all vehicles crossing this portion of the corridor would be tolled. Senate Bill (SB) 1408 was introduced by Senator Bill Dodd in February 2020 to authorize tolling on the

SR 37 corridor. However, the bill was put on hold due to the impacts of the COVID-19 pandemic. It is anticipated that the bill would be reintroduced for legislative approval. Tolling cannot be implemented until legislation is approved. Should this legislation be approved, the tolling facility will be managed as a publicly owned toll facility. Tolling would apply to all lanes. Tolling infrastructure, including two toll gantries, would be constructed as part of this project and would apply to all the Build Alternatives.

Two methods of toll collection are being considered. The first is westbound-only tolling in the project corridor, similar to the seven state-owned tolled bridges in the Bay Area (such as the Richmond-San Rafael Bridge). The second is eastbound and westbound tolling at half of the toll rate for each direction. To further incentivize the use of the carpool lane and address equity concerns in both cases, HOVs would receive a discount, and income or means-based toll discounts would be implemented for those that qualify. Tolls would be collected through ORT and All-Electronic Tolling; therefore, toll booths would not be required. Tolls would be collected electronically using transponders carried in the vehicles, and vehicles without transponders would be billed by identifying the owner of the vehicle through images of the license plates. The traffic analysis and forecasting for tolling was completed to a level of detail to support this environmental document, and understand and report the effects of tolling. Additional analysis would be conducted to refine the analysis before tolling is implemented on SR 37.

Two overhead gantries would be needed for tolling. An overhead gantry would be installed on SR 37, spanning both directions approximately 0.2 mile west of the Mare Island overcrossing. If final design determines that a second gantry is needed, it would span both directions just east of Tolay Creek Bridge and east of the SR 121 intersection. Locations of the gantries would be determined during final design. Overhead readers and cameras would be installed on the gantries to read vehicle transponders and photograph vehicle license plates. For more details and visual simulations of the gantries, please see Section 2.2.12.

Outside Safety Barriers

The existing highway has metal beam guardrail barriers at the approaches to local street intersections and the Sonoma Creek and Tolay Creek Bridges. With all alternatives, additional outside barriers would be needed to meet current traffic safety requirements. These barriers would be either metal beam guardrails or a Type 85 concrete see-through barrier that allows some visibility through the barrier.

Signs and Lighting

New roadside and/or overhead signs would be placed along SR 37 in each direction, in advance of the beginning of the HOV lanes, to inform drivers of the upcoming toll zone. The types of new signs would include:

- Signs along the side of the highway would notify drivers of the upcoming HOV lane. These signs would include information on the number of occupants for a qualifying HOV user, the hours of operation of the HOV lane, and penalties for SOVs using the HOV lane.
- Overhead and roadside signs would be installed to notify and inform drivers of the upcoming tolling zone and the applicable toll, and penalties for enforcement of the toll.
- Roadside signs would be place indicating the upcoming exit ramps (these already exist along SR 37).

Overhead signs would require subsurface foundations in the median or alongside the highway. Subsurface excavation for the overhead signs may be up to 60 feet in vertical depth, depending on the subsurface conditions.

Lighting would be added along the corridor in advance of the tolling gantries and at California Highway Patrol (CHP) observational areas. Lighting may also be added at local road intersections to improve safety for vehicles entering or exiting the highway.

CHP Observational Areas

Observational areas for CHP vehicles to park, monitor, and enforce compliance with the HOV lanes and tolling would be installed at the beginning of the HOV lane and toll gantries. Enforcement areas would be developed in consultation with the CHP.

Pullout Areas

Approximately 25 roadside pullout areas are proposed along the route for Alternatives 2 and 3A to accommodate disabled vehicles or for enforcement. Two additional westbound pullout areas between Cullinan Ranch Restoration Area driveway and the Mare Island interchange will be determined during the final design phase. The pullout areas would vary in length from approximately 400 feet to 700 feet, including the taper areas, and would be located within a widened shoulder. Locations would also be spaced for design requirements such as adequate deceleration and acceleration, and driver sight distance. The pullout areas would accommodate emergency use such as a disabled vehicle, roadway maintenance vehicles or equipment, and CHP enforcement. Parking by the general public in the pullout areas would not be allowed.

HOV Lane Transition

Alternatives 2, 3A, and 3B may require transition lanes where the HOV lanes begin. At the eastern end of the project, there would be three lanes in the westbound direction; two lanes from westbound SR 37 plus one lane entering from the Walnut Avenue on-ramp. Currently, the on-ramp transitions quickly require a merge into westbound SR 37. With the project, the merging lane entering Walnut Avenue would be extended approximately 0.2 to 0.3 mile farther west to provide a transition zone for vehicles to enter or exit the right-hand lane. The third eastbound lane would merge in this transition zone, and two lanes would continue west (one HOV lane and one general purpose lane).

In the eastbound direction of SR 121 approaching the SR 121 intersection, the highway has two through eastbound lanes and two left-turn lane lanes. A third SR 37 eastbound lane would be added for a short distance to allow HOV users to merge.

Slope Protection and Reinforcement

Portions of SR 37 were originally constructed on fill, and there is recurring settlement in some areas. Where settlement has occurred or minor widening of the existing cross section of the highway is needed to accommodate the proposed improvements, reinforcement of the highway section would be performed. Design measures would include driving sheet pile along the edges of the highway shoulder area to help stabilize the roadway and slopes. Sheet piles typically consist of metal sheeting and are vibrated into the earth to form a subsurface wall that would help support the roadbed and help prevent or reduce uneven settlement. Once installed, the sheet pile would not be exposed, or would be minimally exposed where it is functioning as a retaining wall. In addition to sheet piles, rock slope protection may be added or reinforced, or engineered slopes would be installed. All of these measures would be designed to help correct existing recurring deformation of the SR 37 roadway structural section, and to allow for minimal widening of the roadbed to accommodate the proposed new lanes and improvements.

Tolay Creek and Sonoma Creek Bridges

The project limits include two bridge crossings, one at Sonoma Creek and the other at Tolay Creek. The Sonoma Creek Bridge has been previously widened for seismic strengthening and placement of a concrete median barrier. As described earlier, the Sonoma Creek Bridge would require widening for Alternative 3B, involving temporary staging and equipment at the creek and construction of a temporary trestle. Sonoma Creek Bridge is a United States Coast Guard (USCG) permitted bridge, and widening it would require a Bridge Permit or amendment from the agency.

The Tolay Creek Bridge is a single-span bridge and would be widened on one or both sides to accommodate the additional lanes. The existing abutments would be widened. The existing Tolay Creek channel would remain the same width, and no work is proposed in the channel except potential temporary construction access. The replacement of the Tolay Creek Bridge was considered by the Project Development Team (PDT) in October 2021, which decided to widen but not replace the bridge, consistent with the Project Initiation Document prepared for the SON-37 Lane Drop Extension Project. This is also consistent with the project's Advance Planning Study report.

Local Road Intersections

SR 37 is a conventional highway, with connecting cross-roads and driveways. These include access to Tolay Creek Road/Sears Point Road, Skaggs Island Road, Noble Road (providing access to Vallejo Flood and Wastewater District and Wing and Barrel Ranch), unnamed access roads, vista points and trail heads, and parking areas. The local road connections are summarized as follows:

- At Noble Road, a traffic signal would be added. This is a lightly traveled road, and the signal would only activate when a vehicle approaches the SR 37 Noble Road intersection.
- At Skaggs Island Road, which is gated, and at Cullinan Ranch Road, the intersections may be converted to a right-in and right-out only (vehicles would no longer be permitted to cross opposing traffic to make a left turn).
- Cullinan Ranch Restoration Area driveway would remain right-in and right-out only.

Other existing roadway and driveway access would be maintained, including the public access driveways on each side of Sonoma Creek, the existing intersection access at SR 121/Sears Point Road/Tolay Creek Road, the driveway to the Refuge office, and other private gated driveway access points.

SMART Railroad (Northwestern Pacific Railroad)

This railroad line crosses SR 37 at grade between Tolay Creek and the SR 121 intersection. It is an active railroad, and there are crossing signals and swing arm barriers that activate when a train is approaching. The crossing signals and arms would need to be reconstructed to accommodate the additional proposed lanes.

Drainage and Culverts

Roadway widening would be minimized, and the existing drainage inlets and system would be maintained to the extent feasible. However, all four Build Alternatives propose adding impervious areas, which will increase stormwater flows going to the existing waterways. Treatment of this additional runoff would be incorporated along the highway where space permits, but because of the constrained nature of the roadway, offsite treatment options would be needed.

No changes to the existing drainage patterns are anticipated, other than the addition of pavement along the corridor. Drainage from the roadway primarily sheet flows off site or is collected by asphalt concrete dikes to roadside ditches or waterways. At superelevation locations, there are median storm drains that outlet to roadside ditches and waterways. The project will require extending or replacing existing culverts crossings, roadside ditch culvert crossings at cross-drives, median drainage system culverts, and existing treatment media filters and biofiltration trenches. Existing asphalt concrete drainage dikes will be removed, and rock slope protection will be added to side slopes in certain areas. The project will preserve existing drainage patterns to the extent feasible.

Right-of-Way

Temporary construction easements (TCEs) may be needed for the roadway work at SR 121, Tolay Creek Bridge, Noble Road, the Cullinan Ranch public access intersection, and other private access driveways to provide construction access. The duration of the TCEs is expected to be one construction season.

Permanent right-of-way acquisition would be needed at the Refuge, which is adjacent to a portion of the highway under Alternatives 3A and 3B. This would consist of acquisition of a portion of the Refuge parcels on the southern side, between approximately across the Cullinan Ranch public access driveway (PM SOL 3.88) and slightly greater than 0.9 mile (5,000 feet) east of the Mare Island Overcrossing (PM SOL R6.20), for a total length of 2.3 miles (12,200 feet). Another partial right-of-way acquisition would be required for Alternative 3B on the northern side of SR 37, immediately east of the Sonoma Creek Bridge westbound viewing area, for a total length of slightly greater than 0.1 mile (700 feet). This parcel is managed by California Department of Fish and Wildlife (CDFW).

Construction Staging

SR 37 traffic must be maintained during construction, and construction staging areas would be needed along or near the route for equipment and materials. Construction staging areas are determined during final project design, but one potential location on private land has been preliminarily identified. The private land parcel would involve

using a portion of the Wing and Barrel Ranch land adjacent to SR 37 off Noble Road; this would require agreement with the ranch and restoration of the site following completion of construction.

Other Construction Activities and Requirements

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.

Transportation Management Plan

As part of standard practices, a transportation management plan (TMP) would be prepared during the design phase of the project to address traffic disruptions from project construction. The TMP would include outreach to inform the agencies and the public of the times and locations of upcoming construction, construction signs in and approaching the project area, and incident management for traffic control in the vicinity of construction activities. Access would be maintained for emergency response vehicles.

Executive Order 13112

Executive Order (EO) on Invasive Species, EO 13112, is a standard practice that Caltrans adheres to for 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.

Erosion Control and Construction Discharges

The following standard practices would be part of the project for erosion control and construction discharges:

- As part of construction, no debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the United States or drainages. No discharges of excessively turbid water would be allowed, and all equipment would be well-maintained and free of leaks.

- A water pollution control program (WPCP) and erosion control best management practices (BMPs) would be developed and implemented to minimize any wind or water-related material discharges, in compliance with the requirements of the Regional Water Quality Control Board (RWQCB) as well as the 2018 Caltrans Standard Specifications, Section 13-2. The WPCP would provide water pollution control practices to limit stormwater and nonstormwater discharges; temporary construction BMPs would be used to the maximum extent necessary.

- Erosion control methods may include silt fencing, straw wattles, straw bales, coir blankets, sediment traps, and other protective methods to limit the potential for erosion of sediment beyond the work area.

Estimated Cost and Schedule

The project is currently funded through the project approval and environmental document phase. The estimated total cost of the project is between $250 and 400 million. The proposed schedule includes completion of preliminary design and environmental review in mid-year 2022, detailed design from 2022 to 2024, the start of construction in 2024 and completion of construction (open to use) in 2025.

1.4.2.7 Transportation System Management and Transportation Demand Management Alternatives

Traffic Systems Management (TSM) strategies increase the efficiency of existing facilities by accommodating a greater number of vehicle trips on a facility without increasing the number of through lanes. Traffic Demand Management focuses on regional means of reducing the number of vehicle trips and VMT as well as increasing vehicle occupancy. TSM encourages transit use and ridesharing, which the proposed project would encourage through the installation of HOV lanes. Although TSM measures alone could not satisfy the purpose and need of the project, the following TSM measures have been incorporated into the Build Alternatives evaluated for this project: vehicle detection systems to monitor traffic speed and density, enforcement, incident management, and other subsystems to maintain acceptable traffic flow, which would benefit transit and other HOVs using the SR 37 corridor.

1.4.2.8 Reversible Lanes

In 2016, California's Governor signed AB 2542 into law, requiring Caltrans to demonstrate that reversible lanes have been considered for any project that would increase capacity or realign a highway. Reversible lanes are lanes that can be used in either direction, depending on the flow of traffic and congestion patterns. The movable barrier considered under Alternative 1 would meet the requirement for considering reversible lanes, consistent with AB 2542.

1.4.2.9 Access to Navigable Rivers

The proposed alternatives would not construct a new bridge across a navigable water. The project is not subject to California Streets and Highway Code Section 84.5.

1.4.3 Comparison of Alternatives

The effects of the Build Alternatives in comparison with the No Build Alternative are summarized in Table S-1 in the Executive Summary. The complete evaluation of alternatives is provided in Chapter 2. The following summarizes the comparison of the alternatives.

1.4.3.1 No Build Alternative

SR 37 would retain the existing lane and shoulder configuration under the No Build Alternative scenario. This section of highway would provide one lane in each direction at all times, and the road shoulders would remain at their existing widths. The substantial traffic backups and queuing that currently occur where the lanes merge from two to one in each direction would continue to form during the morning and afternoon/evening peak periods, and would lengthen in distance and duration as traffic demand is expected to increase in future years. These backups occur during peak travel periods in the westbound direction starting from Mare Island and extend east toward Vallejo, and in the eastbound direction from the SR 121 intersection toward Lakeville Highway.

The No Build Alternative would avoid construction costs (no capital expenditure). It would avoid impacts from construction activities on environmental resources that are anticipated under the build alternatives related to widening the highway, and temporary impacts. However, the No Build Alternative would not meet the project purpose and need. The existing substantial traffic backups would worsen over time, leading to longer vehicle delays and travel times.

1.4.3.2 Alternative 1 – Three-Lane Contra-Flow with Moveable Median Barrier and HOV Lane during Peak Periods

Alternative 1 would replace the existing fixed (concrete) median barrier with a movable barrier, providing one additional reversible lane for HOV use during peak periods and peak direction only. The intent is to minimize widening by providing additional capacity for the HOV lane, and use the widened pavement for only the peak travel period in each direction during the peak morning and evening travel periods. SR 37 would remain as one lane in each direction during non-peak travel periods. This alternative meets the requirement of AB 2542 for consideration of reversible lanes.

This alternative would consist of two 12-foot lanes, with space for one additional 12-foot wide lane at peak periods. The reversible lane would be managed by a movable barrier approximately 7.6-miles long, between Noble Road and just west of the Walnut Avenue overhead. The additional lane created by the movable barrier would be on the north side of SR 37 (adjacent to the center median movable barrier). SR 37 would be widened to four full-time lanes (two lanes in each direction) between Noble Road and SR 121 (approximately 1.5 miles) with no movable barrier in this section.

Alternative 1 would serve HOV vehicles in the peak period, peak flow direction only. During non-peak periods the highway between Noble Road and the Walnut Avenue overhead would remain as two lanes (one lane in each direction). Alternative 1 would require buildings for the barrier transfer machine and its backup equipment, maintenance/operator crew facilities, and equipment storage facilities. Employee parking and access driveways for the barrier operation and maintenance crew would also be necessary. These facilities have not been defined to date. The total project construction cost is approximately $256M (this does not include operations and maintenance of the movable barrier, estimated at just over $2M/year).

Alternative 1 would maintain 6 to 8 foot shoulders. These shoulders would be narrower than existing but accessible to bikes and disabled vehicles, including over Sonoma Creek Bridge. The reduced shoulders may require a design exception, otherwise widening of Sonoma Creek Bridge would be necessary.

The traffic benefits, which are the purpose of the project, are limited to peak hour periods only, in the peak travel direction only. This alternative would not benefit non-peak periods or in the non-peak travel direction (during non-peak periods SR 37 would have one lane in each direction and during peak periods would have only one lane within the project limits in the non-peak travel direction). When the barrier transfer machine is in operation, there would also be only one lane open in each direction. Changes in travel patterns such as during holidays or special events at the Sonoma

Raceway (located near the SR 37/SR 121 intersection) may not be served by the movable barrier if traffic demands are high in both directions of travel at the same time.

Widening would be necessary to accommodate the movable median barrier and the reversible lane, and the addition of one lane in each direction between Noble Road and SR 121. Widening of 4 to 5 feet of Sonoma Creek Bridge would be necessary on the westbound side to meet design requirements for shoulder and median widths unless a design exception is approved. If the Sonoma Creek Bridge is not widened, the highway would have three 12-foot wide lanes, no inside shoulder, and 4- to 8-feet wide outside shoulders.

Alternative 1 represents the narrowest or least amount of widening of the Build Alternatives. However the movable barrier does not avoid the need for roadway widening and impacts to habitat and wetlands. Additional width is required to accommodate the additional lane and transfer operations, and for widening to two lanes in each direction between Noble Road and SR 121. Approximately 2 acres of wetlands would be permanently impacted, requiring mitigation, with additional impacts to sensitive habitat.

The operation and maintenance of the movable barrier is a major consideration for this alternative that is not required with the other build alternatives. These considerations include:

- Slight deformations of the roadway sections can cause issues over time with the barrier transfer operation. The barrier has to be slightly lifted and moved across the pavement during the transfer operation, and settlement or uneven pavement conditions has the potential to interfere with effective transfer movement of the barrier. Failure to be able to move the barrier would cause adverse traffic congestion as only one lane in each direction would be operable until the pavement condition can be corrected.

- The movable barrier would require approximately two hours to change travel direction in the center lane. This transfer operation would occur at least twice daily.

- Multiple barrier transfer machines and redundancy of crew are needed to ensure ability to move the barrier 7 days a week, or at special events or changes in traffic flow. The crew necessary to operate and maintain the movable barrier represents a long-term financial commitment over the life of the project (twenty of more years) to fund the required workforce, training, and all costs associated with staffing for this operation.

- Maintenance and storage of the barrier transfer machine is necessary on-site. Storage of the barrier transfer machine is anticipated at two locations, in the median immediately east of Noble Road and approximately 1,500 feet west of the Walnut Avenue overcrossing. At least one maintenance building would be required for storage of equipment. Crew quarters would also be necessary on or near site. There are no similar structures along SR 37 between the Napa River and SR 121, and these modern buildings would be highly visible and contrast with the existing rural nature of the route.

1.4.3.3 Alternative 2 – Convert Existing Outside Shoulders to HOV Use during Peak Periods (Part-Time Use Lane)

Similar to Alternative 1, this alternative would provide an additional lane in the peak travel direction during the peak travel periods. This would be achieved by allowing vehicles to use one of the roadway shoulders during the peak travel periods, while during non-peak periods no through traffic would be allowed on the shoulders. The center median would have a fixed concrete barrier similar to existing, but 42 inches tall (existing barrier is 32 inches high). During the non-peak periods there would be two 11-foot inside lanes separated by a fixed median barrier with a 2-foot inside shoulder (6-foot median), two 12-foot outside lanes, and a 4-foot dedicated shoulder, for a total roadway minimum width of 60 feet. During the peak periods, peak direction of travel the 16-foot wide shoulder would be open to through traffic (one 12 foot lane plus a 4 foot shoulder). Approximately 96,000 feet (18 miles) of Type 85 or MGS Guardrail would be installed on the edge of the outside shoulders.

Between SR 121 and Mare Island during the peak period, there would be three 11-foot lanes, with the outside lane using the shoulder during peak periods in the peak direction. The new, additional lane (HOV, open during peak period only) would be on outside lane of SR 37 (right side HOV lane). The HOV lane has to be on the outside of the highway because it is only open during peak periods, and during non-peak periods it returns to being limited to a roadway shoulder. Thus, the HOV lane on the right side is relatively unconventional compared to typical highways that have the HOV lane next to the center median.

The shoulders would be available to disabled vehicles and for bicycle use during non-peak periods, but would not be available during peak periods in the peak direction. During non-peak periods, the highway remains as two lanes (one lane in each direction), and similar to existing conditions there would be a lane drop in each direction at SR 121 and at Mare Island where the two lanes merge to one lane and the highway would remain one lane in each direction between SR 121 and Mare Island. Pullouts would be added at periodic locations for disabled vehicles and enforcement.

Additional signs would be installed to notify and inform motorists of when the HOV lane is available or closed.

This alternative has been identified as having the potential for driver and enforcement confusion with respect to when the shoulders are available for use as a through lane, versus when the shoulder is restricted to disabled vehicle use only. Because the shoulder is open to use only during certain time periods, drivers have to pay attention to and understand the times when the shoulder is open to through traffic in the peak period, peak direction only. There is a potential for a driver to use the shoulder as if it was open for use (when it is not), and result in a collision with a disabled vehicle that is stationary in the shoulder.

Bicyclists using the shoulders during non-peak periods would have to be aware that a return trip may not be possible during the peak period, peak direction when the shoulder is open to through traffic only (no bikes allowed in the peak direction, peak period of travel). Because of the lack of shoulders during the peak travel period, legislation to prohibit bicycle and pedestrian use along this corridor will be proposed.

The total pavement width and widening required would be about 4 to 6 feet more than Alternative 1, and would be similar to Alternative 3A. Construction of this alternative would be generally similar to Alternative 3A. Widening and reconstruction of the shoulders would be necessary to provide a road foundation and width adequate to support traffic using the shoulders during the peak periods.

A total of 3.5 acres of wetlands would be permanently impacted, requiring mitigation, with additional impacts to sensitive habitat. Total project cost is estimated at about $306M.

The cost of constructing this alternative, with the required widening, is relatively similar to Alternative 3A but this alternative does not provide the benefit of an additional full time HOV lane in each direction that is gained with Alternative 3A and 3B. The travel benefits of Alternative 2 are considered limited with respect to the investment necessary to add this part-time lane.

1.4.3.4 Alternative 3A – Convert Existing Outside Shoulders to HOV in Each Direction (Four-Lane Facility)

Alternative 3A would provide a new through lane, designated for HOV use, in each direction between Mare Island and SR 121. Like other HOV lanes in the State Highway System, the HOV lanes would be available to qualified vehicles during the peak periods, and open to all vehicles during non-peak periods. Alternative 3A (and 3B) differ from Alternatives 1 and 2 in that Alternatives 3A and 3B would be available to qualified vehicles at all times, where Alternatives 1 and 2 would have part-time

availability during the peak period, peak direction only. In each direction, Alternative 3A would have a 2-foot inside shoulder, an 11-foot inside lane, a 12-foot outside lane, and a 4-foot shoulder for a total roadway width of 60 feet. The westbound and eastbound lanes would be separated by a solid median barrier with 2 foot shoulders on each side of the median barrier.

Similar to Alternative 2, the center median would have a fixed concrete barrier similar to existing, but 42 inches tall (existing barrier is 32 inches high). The left lanes would be for HOV use during peak periods. Approximately 96,000 feet (18 miles) of Type 85 barrier would be installed on the edge of the outside shoulders. Total project cost is estimated at about $325M.

This alternative (and Alternative 3B) eliminates the existing lane reductions in both directions that cause the bottlenecks and congestion points starting near the SR 121 interchange in the eastbound direction, and starting at Mare Island in the westbound direction. With this alternative, SR 37 would have at least two continuous full-time lanes in both directions at all times between Vallejo and U.S. 101. For drivers it provides predictability that the lanes are available and continuous at all times, limited to the HOV restrictions during peak periods. Alternative 3A (and 3B) provide the maximum time savings advantage for HOVs of all alternatives considered, which is one of the primary elements of the project's purpose and need.

Compared to the existing highway, the shoulders would be reduced from approximately 8 feet wide to 4 feet wide in most locations. At the Sonoma Creek Bridge, the structure is wide enough to accommodate the additional full time travel lanes in each direction but would require design exceptions for lane width, inside shoulder, and no outside shoulder. With the lack of an outside shoulder bicycles would not be able to cross over the Sonoma Creek Bridge. The shoulders would be 4 feet or wider in all other portions of the project, with periodic pullouts installed to accommodate disabled vehicles. Because of the changes in shoulder widths, legislation to prohibit bicycle and pedestrian use along this corridor will be proposed.

Alternative 3A would require permanent acquisition of approximately 1.65 acres of right-of-way from the USFWS Refuge south of Cullinan Ranch (this is a Section 4(f) impact). Permanent wetland impacts are estimated at 4.3 acres.

Alternative 3A (and 3B) include three possible design variations for the eastbound HOV lane at the SR 37/121 intersection. Scenario 1 introduces the HOV lane on the right side of SR 37, west of SR 121. Scenario 2 introduces the HOV lane on the left side of SR 37, in the vicinity of the Tolay Creek Bridge. Scenario 3 introduces the HOV lane on the left side of SR 37 about 3,000 feet west of SR 121, extends the eastbound

left turn lanes leading to SR 121, and widens the left turn lanes to two approximately 500 feet west of the intersection.

Because Alternative 3A has non-standard outside shoulder widths, it has additional design requirements that are under consideration. These include the implementation of an Incident Management Plan, introduction of legislation for prohibiting bicycle and pedestrian access along the corridor (along the highway), providing low-cost or free bicycle shuttle service with intermediate stops, accommodating future bus/transit service that can carry bicycles, placement of approximately 25 vehicle pullout areas, median barrier emergency gates, additional lighting at four curve locations to enhance visibility, and outside concrete barrier railings.

1.4.3.5 Alternative 3B – Widen Highway to Add a Full-time HOV lane in each Direction (Four-Lane Facility), 8-Foot Outside Shoulders, Widen Sonoma Creek Bridge.

Alternative 3B is the same as Alternative 3A in that it would provide a new full time lane in each direction for HOV use during peak travel periods and would be open to all vehicles during non-peak periods. However, Alternative 3B would maintain 8-foot wide outside shoulders between Mare Island and SR 121 instead of the 4-foot road shoulders considered in Alternative 3A.

Similar to Alternative 3A, the lane configuration in each direction would be 11-foot-wide inside lanes, and 12-foot outside lanes, a 6-foot-wide median, and the outside shoulders would be 8 feet wide (Alternative 3A outside shoulders would be 4-foot wide, with no shoulders over the Sonoma Creek Bridge). The total minimum width of pavement would be 68 feet. Similar to Alternatives 2 and 3A, the center median would have a fixed concrete barrier similar to existing, but 42 inches tall (existing barrier is 32 inches high). The left lanes would be for HOV use during peak periods. 96,000 feet (18 miles) of Type 85 or MGS Guardrail would be installed on the edge of the outside shoulders.

Total project cost is estimated at about $415M, and is the highest of all build alternatives, adding approximately $90 to $160M to the cost of the project compared to the other build alternatives due to the wider highway width and the widening of Sonoma Creek Bridge.

The 8-foot-wide shoulders would maintain access for bikes over the Sonoma Creek Bridge. Disabled vehicles would also be able to use the shoulders anywhere along the route, compared to the pullout areas proposed for Alternative 3A.

Alternative 3B would widen the Sonoma Creek Bridge by 21 feet on its southern side. The median and lanes on the bridge would be shifted to align with the widened

structure. The bridge widening adds additional cost, time, and complexity to the project. It would contribute to a greater amount of potential impacts to natural resources associated with both bridge and road shoulder widening, and is anticipated to require a substantially greater amount of mitigation to offset impacts relative to other build alternatives. Temporary falsework would have to be constructed at Sonoma Creek, consisting of a temporary platform adjacent to the bridge that provides for construction equipment and contractor access over a 1 to 3 year construction time period. New permanent support piles would have to be installed similar to the existing piles that support the Sonoma Creek Bridge, and temporary impacts would be necessary along the shoreline of the creek to install these features. The navigational channel of Sonoma Creek would have to remain open during construction consistent with the existing USCG permit for this bridge.

Alternative 3B includes the same eastbound HOV lane extensions on SR 37 as described for Alternative 3A.

Alternative 3B would require permanent acquisition of approximately 3.9 acres of right-of-way from the USFWS Refuge south of Cullinan Ranch (this is a Section 4(f) impact). Permanent wetland impacts are estimated at 9.0 acres.

1.4.4 Alternative Selection Process

After the public circulation period, all comments would be considered; Caltrans would identify a preferred alternative and make the final determination of the project's effect on the environment. Under the California Environmental Quality Act (CEQA), Caltrans would certify that the project complies with CEQA; prepare findings for any significant impacts identified; prepare a Statement of Overriding Considerations, if needed, for impacts that would not be mitigated below a level of significance; and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. Caltrans would then file a Notice of Determination with the State Clearinghouse that would indicate whether the project would have significant impacts; if mitigation measures were included as conditions of project approval; that findings were made; and that a Statement of Overriding Considerations was adopted, as needed. Similarly, if Caltrans, as assigned by the FHWA, determines that the National Environmental Policy Act (NEPA) action does not adversely impact the environment, Caltrans would issue a Finding of No Significant Impact (FONSI).

1.4.5 Alternatives Considered but Eliminated from Further Discussion

Additional alternatives were considered during the early stages of project development but were eliminated because they did not meet the project's purpose and need and would have had greater environmental effects compared to other alternatives. The

following describe these alternatives and why they were not advanced for further evaluation.

1.4.5.1 Four-Lane Standard Section

This alternative proposes widening the current two-lane SR 37 to a full standard four-lane facility at the existing elevation. The proposed addition of one lane in each direction would provide sufficient capacity to prevent the existing bottle necks between within the project limits from developing and would relieve traffic congestion experienced in this corridor. Per Caltrans conventional highway standards, the proposed lane configuration includes two 12-foot lanes, a 5- foot left shoulder, and a 10-foot right shoulder. This alternative proposes to widen the existing 50-foot roadway section to a 74-foot section. This alternative also proposes to widen both the Sonoma Creek and Tolay Creek Bridges. The area of environmental disturbance would mean a greater commitment of mitigation and necessary approvals from various regulatory agencies. This alternative was not considered further for the following reasons:

- The Four-Lane Standard Section would have one of the highest environmental impacts and widening costs of all alternatives, to achieve 12-foot wide lanes and wider inside shoulders (adjacent to the median). The total roadway width would be 76 feet, compared to next widest alternative (Alternative 3B at 68 feet wide).

- The relatively wider widening requirement could be avoided by Alternatives 3A or 3B, which also achieve two-through full-time lanes in each direction with less environmental impact.

1.4.5.2 Fixed Barrier and Three-Lane Reversible Lane Section

This alternative proposes a fixed barrier and a separated reversible lane section consisting of a 12-foot reversible lane for peak directional traffic, 2-foot left shoulders, two fixed permanent barriers on each side of the reversible lane, and 8-foot right shoulders for the general-purpose lanes and reversible lane. Thus, the outside lanes would serve east and west bound traffic, while the center lane could be reversed to serve the peak flow direction during the peak hour. This operation would be similar to Alternative 1, except there would be two solid non-movable barriers with a reversible lane between them. It proposes widening into environmentally sensitive areas that are along the existing corridor (this alternative would have the widest footprints and environmental impact of the alternatives considered, greater than Alternative 3B). In addition to the widening, this alternative would have ongoing operational and maintenance costs for the reversible lane operations.

This alternative was not carried forward past the PSR-PDS for the following reasons:

- The solid barriers would require at least one wide (8-foot) shoulder to allow for emergency vehicles and for disabled vehicles to pull out of the traveled lane. This increases the overall width of the highway.
- Reversing the center lane would require a commitment to substantial maintenance and operation costs, similar to Alternative 1. This would include a dedicated maintenance and operation crew available to operate the reversible lane, with redundancy of crew and equipment to ensure at least twice daily operation of the lane.
- Each end of the barrier where vehicles enter or exit would require movable gates to allow closure of the lane. A maintenance crew and possibly a patrol vehicle would have to check that the lane is cleared of all vehicles before the lane could be opened in the reverse direction.
- The lane has the potential for driver confusion because lane operation reverses at least twice a day. There would be the potential for an inattentive or confused driver to mistakenly attempt to enter the lane in the wrong direction.

This alternative was not further advanced because it did not offer any advantages beyond those of the other alternatives considered. It would mandate a commitment to a high operation and maintenance commitment over the lifetime of the project. The creation of a walled-in lane in the center of SR 37 would have a high adverse visual impact.

1.5 Other Project Features

This project contains a number of standardized project features that are employed on most, if not all, Caltrans projects in accordance with standard specifications, state and federal laws, and anticipated standard environmental permit conditions, and were not developed in response to any specific environmental impact resulting from the proposed project. Project features are separated out from avoidance, minimization, and minimization measures (AMMs), which directly relate to the impacts resulting from the proposed project. AMMs and other measures are discussed separately in each environmental section.

A summary of these project features is presented in Table 1-4.

Table 1-4 Other Project Features

Resource	Feature Number	Description
Air Quality	PF-AIR-01	**Construction Best Practices for Dust** The following are BMPs from Mitigation Measure 2.2 2 in the Addendum to Final Environmental Impact Report Plan Bay Area 2050 (ABAG and MTC 2021a). These measures control dust during any construction period that involves ground disturbance. • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. For projects more than 5 acres in size, soil moisture should be maintained at a minimum of 12 percent. Moisture content can be verified by laboratory samples or a moisture probe. • All haul trucks transporting soil, sand, or other loose material offsite shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. Dry power sweeping should only be performed in conjunction with thorough watering of the subject roads. • All vehicle speeds on unpaved roads and surfaces shall be limited to 15 miles per hour (mph). • All roadway, driveway, and sidewalk paving shall be completed as soon as possible. Building pads shall be paved as soon as possible after grading. • All construction sites shall provide a posted sign visible to the public, with the telephone number and person to contact at the Lead Agency regarding dust complaints. The recommended response time for corrective action shall be within 48 hours. The Bay Area Air Quality Management District's complaint line (1 800 334 6367) shall also be included on posted signs to ensure compliance with applicable regulations. • All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph. • Wind breaks (e.g., trees or fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity. • Vegetative ground cover (e.g., fast-germinating native grass seed) shall be planted in disturbed areas as soon as possible and watered appropriately until vegetation is established. • The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. • All trucks and equipment, including their tires, shall be washed off before leaving the site. • Site access from the paved road to a distance of 100 feet shall be treated with a 6- to 12-inch compacted layer of wood chips, mulch, or gravel.

Resource	Feature Number	Description
Air Quality	PF-AIR-02	**Construction Best Practices for Exhaust.** The following are BMPs from Mitigation Measure 2.2 2 in the Addendum to Final Environmental Impact Report Plan Bay Area 2050 (ABAG and MTC 2021b). These measures control exhaust during any construction period that involves ground disturbance. • Road equipment greater than 25 horsepower that would be operated for more than 20 hours over the entire duration of construction will include the following requirements: (1) be zero emissions; OR (2) have engines that meet or exceed either United States Environmental Protection Agency (U.S. EPA) or California Air Resources Board (CARB) Tier 2 off-road emission standards; AND (3) have engines that are retrofitted with an CARB Level 3 Verified Diesel Emissions Control Strategy (VDECS), if one is available for the equipment being used. Equipment with engines that meet Tier 4 Interim or Tier 4 Final emission standards automatically meet this requirement; therefore, a VDECS would not be required. • Idling time of diesel-powered construction equipment and trucks shall be limited to no more than 2 minutes. Clear signage of this idling restriction shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with the manufacturers' specifications. • Portable diesel generators shall be prohibited. Grid power electricity should be used to provide power at construction sites; propane and natural gas generators may be used when grid power electricity is not feasible.
Biological	PF-BIO-01	**Environmentally Sensitive Area Delineation.** Before the start of construction, environmentally sensitive areas, including wetlands and habitats suitable for sensitive species, will be shown on the project plans. The bid solicitation package special provisions will specify acceptable fencing material and prohibited construction-related activities in these areas. Prior to construction in or near environmentally sensitive areas, a project biologist will delineate them in the field using signage, flagging, wildlife exclusion fencing (WEF), or other site markers as appropriate.
Biological	PF-BIO-02	**Wildlife Exclusion Fencing.** Before ground-disturbing activities commence, high-visibility WEF (suitable for amphibian and small mammal exclusion) will be installed along environmentally sensitive area boundaries to protect special-status animal species and to keep them from entering the project footprint. Maintenance of the WEF shall happen regularly and as requested by the project biologist in coordination with the Resident Engineer. Repair and maintenance costs for the fence shall be a bid item in the project contract.
Biological	PF-BIO-04	**Site Restoration.** All temporarily disturbed areas and staging areas will be cleaned up and recontoured to original grade or designed contours. All construction-related materials will be removed after construction, site clean-up, and restoration activities are complete. Temporarily impacted areas where vegetation was removed will be revegetated within one growing season of completion of project activities.

Resource	Feature Number	Description
Biological	PF-BIO-05	**Landscaping and Revegetation Plan.** Vegetation and trees removed by construction operations within the project limits will be replaced according to Caltrans policy. Appropriate native species will be used to the maximum extent possible, and trees, shrubs, and groundcover will be selected for drought tolerance and disease resistance. Mulch will be applied to planted areas to reduce weed growth, conserve moisture, and minimize maintenance operations. A 3-year plant establishment period will be included in the final revegetation plan. Caltrans will develop and implement a 5- to 10-year post-construction vegetation monitoring plan for planted areas.
Biological	PF-BIO-07	**Approved Project Biologist.** Prior to initiation of the construction, the qualifications of the biological monitor(s) will be submitted to the United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and CDFW, as appropriate for the respective jurisdictions, for approval. Such approved biologists are hereafter referred to as the project biologist(s).
Biological	PF-BIO-08	**Biological Monitoring.** The project biologist(s) will be on site during initial ground-disturbing activities in previously undisturbed areas, during work that occurs in wetlands or in waters below mean higher high water (MHHW) elevation, and thereafter as needed to fulfill the role of the project biologist as specified in project permits. The project biologist(s) will keep copies of applicable permits in their possession when on site. Prior to any initial ground-disturbing activity, the project biologist(s) will conduct work site surveys for the presence of special-status plant and animal species no less than 48 hours before work. The project biologist(s) will implement appropriate avoidance measures in the field and in coordination with the Resident Engineer to ensure that any identified special-status species or environmentally sensitive areas are clearly marked for avoidance.
Biological	PF-BIO-09	**Staging Areas.** Vehicle, barge, and equipment staging will be restricted to the areas reviewed, analyzed, and considered during the environmental review process. If new staging areas are required, they will require their own environmental review for potential impacts and may require additional regulatory action.
Biological	PF-BIO-10	**Construction Site Best Management.** The following site restrictions will be implemented to avoid or minimize potential effects on listed species and their habitats, pursuant to Caltrans Standard Specifications and Special Provisions. • Speed Limit. Vehicles will not exceed 15 mph in the project footprint, to reduce dust and excessive soil disturbance. • Trash Control. Food and food-related trash items will be secured in sealed trash containers and removed from the site at the end of each day. • Pets. Pets will be prohibited from entering the project limits during construction. • Firearms. Firearms will be prohibited within the project limits, except for those carried by authorized security personnel or local, state, or federal law enforcement officials.
Biological	PF-BIO-11	**Vegetation Removal.** Native vegetation will be cleared only when necessary and will be cut above soil level, except in areas that will be excavated. A truck with a chipper will be used for chipping the removed trees. All vegetation will be conducted within appropriate species protection work windows.

Resource	Feature Number	Description
Biological	PF-BIO-12	**Tree Protection.** Only trees that require removal will be removed. Whenever possible, trees will be trimmed rather than removed. Retained trees will be safeguarded during construction through the following measures: • Protected trees will be fenced around the drip line to limit construction impacts to the root zone. • No construction equipment, vehicles, or materials will be stored, parked, or staged within the tree dripline. • Work will not be performed within the dripline of the remaining trees without consultation with the project biologist. If trees are damaged during construction and become unhealthy or die, the damaged tree(s) will be removed and replaced.
Biological	PF-BIO-13	**Invasive Plant Control.** Noxious weeds will be controlled in the project construction site in accordance with Caltrans' Highway Design Manual Topic 110.5, "Control of Noxious Weeds – Exotic and Invasive Species," and EO 13112 (Invasive Species), and by methods approved by a Caltrans' landscape architect or vegetation control specialist. To minimize the spread of nonnative invasive plant (NNIP), any borrow material, erosion-control material (i.e., fiber rolls), and seed mixtures for erosion control will meet the following Caltrans (2018) specifications as they relate to NNIP species, including: • Fiber roll must be a premanufactured and roll-filled with rice or wheat straw, wood excelsior, or coconut fiber. Fiber roll must be covered with biodegradable jute, sisal, or coir fiber netting secured tightly at each end. Fiber rolls must be certified to be free of prohibited noxious weeds (those Rated "A" by California Department of Food and Agriculture [CDFA]). • Imported topsoil must be free from deleterious substances such as litter, refuse, toxic waste, stones larger than 1 inch in size, coarse sand, heavy or stiff clay, brush, sticks, grasses, roots, noxious weed seed, weeds, and other substances detrimental to plant, animal, and human health. • Seed must not contain any prohibited noxious weed seed, or more than 1.0 percent total weed seed by weight. • All equipment brought into work areas will be free of soil and plant matter. • In work areas where CDFA-listed noxious weeds or California Invasive Plant Council Moderate- or High-Rated NNIP species occur in fruit or flower and may spread seed as a result of the project, these NNIP species will be removed to an approved offsite disposal location.
Biological	PF-BIO-14	**Erosion Control Matting.** Plastic monofilament netting or similar material will not be used. Acceptable substitutes would include coconut coir matting or tackifying hydroseeding compounds.
Biological	PF-BIO-15	**Construction Lighting and Signage.** Construction area lighting will be used only where necessary for safety and signage. Downcast lighting and shielding to minimize lighting of natural areas will be used throughout the project footprint.

Resource	Feature Number	Description
Biological	PF-BIO-16	**Prevent Wildlife Entrapment.** To prevent inadvertent entrapment of special status animal species during construction, excavated holes or trenches more than 1 foot deep with walls steeper than 30 degrees will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional 4-foot-high vertical barrier, independent of exclusionary fences, will be used to further prevent the inadvertent animal entrapment. If it is not feasible to cover an excavation or provide an additional 4-foot-high vertical barrier, independent of exclusionary fences, one or more escape ramps constructed of earthen fill or wooden planks will be installed. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped animal is discovered, the project biologist will be contacted, and they or their designee will immediately place escape ramps or other appropriate structures to allow the animal to escape, or USFWS and/or CDFW will be contacted by telephone for guidance as appropriate. All construction pipes, culverts, or similar structures that are stored at the project site for one or more overnight periods shall be securely capped before storage, or inspected by the project biologist before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a special-status species is discovered inside a pipe, the individual shall be allowed to leave its own volition.
Cultural Resources	PF-CULT-01	**Discovery of Human Remains.** If human remains are discovered, California Health and Safety Code (H&SC) Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. If the remains are thought by the coroner to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), who, pursuant to PRC Section 5097.98, will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the District Environmental Branch 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.
Cultural Resources	PF-CULT-02	**Discovery of Archeological Materials.** If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.
Geology/ Soils/ Seismic/ Topography	PF-GEO-01	**Geotech Investigations.** A geotechnical investigation will be performed during final design for any proposed new earthwork or new structure within the project limits, including retaining walls, overhead signs, embankments, bridges, and sound walls; it will address geologic hazards, including liquefaction, cracking, differential compaction, ground shaking, and shrink swell.
Geology/ Soils/ Seismic/ Topography	PF-GEO-02	**Seismic Standards.** Caltrans' design and construction guidelines incorporate engineering standards that address seismic risks. project elements will be designed and constructed to meet seismic design requirements for ground shaking and ground motions, as determined for the project vicinity and site conditions.

Resource	Feature Number	Description
Hazardous Materials	PF-HAZ-01	**Site Investigations.** A preliminary site investigation (PSI) for aerially deposited lead, agricultural chemicals, and unexploded ordnance (UXO) would be conducted during the project design phase. A PSI will be performed to investigate hazardous materials concerns related to soil, groundwater, and building materials within the project limits. Caltrans will prepare a work plan for the PSI. The findings of the PSI will be used to evaluate soil and groundwater handling practices, construction worker health and safety concerns, and soil and groundwater reuse and disposal options. If hazardous materials are identified during the PSI, additional investigation would be required to their full evaluation. All environmental investigations for the project will be provided to project contractors so the findings can be incorporated into their Health and Safety and Hazard Communication Programs.
Hazardous Materials	PF-HAZ-02	**Health and Safety Management Plan.** A Health and Safety Management Plan would be prepared to outline procedures if UXO, mustard gas, or similar military hazards are encountered within the project limits.
Hazardous Materials	PF-HAZ-03	**Soil and Groundwater Management Plan.** A Soil and Groundwater Management Plan would be prepared to properly manage any impacted soil or groundwater discovered during ground-disturbing activities within the project limits.
Hazardous Materials	PF-HAZ-04	**Hazardous Structure Material Surveys.** Hazardous Structure Material Surveys would be conducted for asbestos-containing material, lead-based paint, treated-wood waste, and polychlorinated biphenyls (PCBs).
Noise	PF-NOI-01	**Construction Noise.** The Caltrans 2018 Standard Specifications, Section 14 8.02, requires that the Maximum Sound Level not exceed 86 A-weighted decibels at 50 feet from the job site, from 9:00 p.m. to 6:00 a.m. Construction noise would not exceed thresholds or Caltrans' standards. Construction noise control measures would be required of the contractor. These include control measures for equipment and operating hours such as: • All construction equipment shall conform to Section 14 8.02, Noise Control, of the latest Standard Specifications. • Noise-generating construction activities shall be restricted to between 7:00 a.m. and 7:00 p.m. on weekdays, with no construction occurring on weekends or holidays. If work is necessary outside of these hours, Caltrans shall require the contractor to implement a construction noise monitoring program and provide additional noise controls where practical and feasible. • All internal-combustion-engine-driven equipment shall be equipped with manufacturer-recommended intake and exhaust mufflers that are in good condition and appropriate for the equipment. • Unnecessary idling of internal combustion engines within 100 feet of residences shall be strictly prohibited. • Noise-generating equipment shall be kept as far as practical from sensitive receptors when sensitive receptors adjoin or are near the construction project area. • "Quiet" air compressors and other "quiet" equipment shall be used where such technology exists.
Paleontology	PF-PAL-01	**Discovery of Paleontological Resources**. If paleontological resources are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified paleontologist can assess the nature and significance of the find.

Resource	Feature Number	Description
Paleontology	PF-PAL-02	**Paleontological Mitigation Plan**. During the project design phase, Caltrans will determine whether or not a Paleontological Mitigation Plan (PMP) is needed.
Water Quality	PF-WQ-01	**Water Quality Best Management Practices.** The contractor will adhere to the instructions, protocols, and specifications outlined in the most current Caltrans Construction Site Best Management Practices Manual and Caltrans Standard Specifications. At a minimum, protective measures will include the following: • The discharging of pollutants from vehicle and equipment cleaning into storm drains or watercourses will be disallowed. • Storing or servicing vehicles and construction equipment including fueling, cleaning and maintenance, will be performed at least 50 feet from aquatic habitat unless separated by a topographic or drainage barrier. • Equipment will be maintained to prevent the leakage of vehicle fluids such as gasoline, oils, or solvents, and a spill response plan will be developed. Hazardous materials such as fuels, oils, or solvents, will be stored in sealable containers in a designated location that is at least 50 feet from aquatic habitats. • Concrete wastes and water from curing operations will be collected and disposed of in appropriate washouts at least 50 feet from watercourses. • Temporary stockpiles will be covered. • Coir rolls or straw wattles will be installed along or at the base of slopes during construction to capture sediment. • Graded areas will be protected from erosion using a combination of silt fences, fiber rolls, and erosion control netting (jute or coir), as appropriate.
Water Quality	PF-WQ-02	**Temporary Dewatering Activities.** Groundwater extracted from temporary dewatering activities will be managed based on the groundwater quality in the project area. Clean groundwater could be used for dust control, collected on site using desilting basins and/or tanks prior to discharging to receiving waters, and transported to a publicly owned treatment works.
Water Quality	PF-WQ-03	**Groundwater Treatment.** If the project area contains contaminated groundwater or groundwater that may release contaminated plumes when disturbed, applicable permits and authorizations from the RWQCB would be obtained during the project's final design phase. An active treatment system will be implemented, as necessary and appropriate to treat contaminated groundwater exposed during excavation activities. Dewatering requirements and design of any necessary active treatment system would be determined during the project's final design or during construction.
Water Quality	PF-WQ-04	**Inclement Weather Restriction.** No new ground-disturbing work will occur during or within 24 hours of a rain event exceeding 0.2 inch, as measured by the National Oceanic and Atmospheric Administration Weather Service for Novato/ Gnoss Field, California KDVO (NWS/FAA-MTR) base station available at: https://www.wrh.noaa.gov/mesowest/getobext.php?wfo=mtr&sid=KDVO&num=72&raw=0. Approval from the state and/or federal agencies, as required in project permits to continue work during or within 24 hours of a rain event, will be considered on a case-by-case basis.
Wildfire	PR-WF-01	**Project Features for Minimizing Fire Risks.** BMPs would be incorporated, such as clearing vegetation from the work area, prohibiting the use of highly flammable chemicals, following locally changing meteorological conditions, and maintaining awareness of the possibility of increased fire danger during the time work is in progress.

1.6 Permits and Approvals Needed

Table 1-5 summarizes the permits, reviews, and approvals that would be required for project construction. Most permit applications would be submitted during the design phase.

Table 1-5 Project Permits and Approvals

Agency	Permit/Approval	Status
FHWA	• Concurrence with project's conformity to Clean Air Act and other requirements	• Air quality studies would be submitted for FHWA concurrence after the environmental document's circulation period has closed. • The Interagency Committee determined that the project is not a Project of Air Quality Concern (POAQC) on (date).
USFWS	• Endangered Species Act Section 7 consultation for threatened and endangered species (terrestrial)	• Caltrans would initiate Section 7 consultation with submittal of a biological assessment to USFWS after selection of the preferred alternative. • USFWS would issue either a letter of concurrence with the findings of effect in the biological assessment, or a biological opinion which may authorize take of federally listed species to Caltrans.
NMFS	• Endangered Species Act Section 7 consultation for threatened and endangered species (fish) • Magnuson-Stevens Fishery Conservation Management Act consultation for Essential Fish Habitat	• Caltrans would initiate consultation with submittal of a biological assessment to NMFS after selection of the preferred alternative. The biological assessment would include analysis of and request for consultation for Essential Fish Habitat impacts, as appropriate. • NMFS would issue either a letter of concurrence with the findings of effect in the biological assessment, or a biological opinion allowing take of federally listed species to Caltrans.

Agency	Permit/Approval	Status
State Historic Preservation Officer (SHPO)	National Historic Preservation Act (NHPA) Section 106 consultation	• Caltrans' consultation on identification was completed on December 23, 2016. • Results of studies were submitted to SHPO. No comments were received, and consultation was completed.
United States Army Corps of Engineers (USACE)	• Preliminary Jurisdictional Determination for jurisdictional wetlands and waters of the United States • Clean Water Act Section 404 and Rivers and Harbors Act Section 10 permit for placement of fill in waters of the United States	• A wetland delineation would be submitted to USACE for concurrence after the environmental document's circulation period has closed. • A permit application would be submitted during the project design phase.
USFWS	• United States Department of Transportation (USDOT) Section 4(f) Use Agreement	• Consultation/agreement with USFWS would take place regarding use of refuge lands.
USCG	• USCG Bridge Permit Amendment	• Under Alternative 3B only, a review of bridge plans and potentially an amendment to the existing Bridge Permit for the Sonoma Creek Bridge would be submitted prior to construction.
Interagency Air Quality Conformity Task Force	• Concurrence that the project is not a POAQC	• MTC's Air Quality Control Task Force determined the project is not a POAQC on May 27, 2021.
San Francisco Bay RWQCB	• Section 401 Water Quality Certification or waiver and or/Porter Cologne Act Waste Discharge Requirements • Compliance with the NPDES Construction General Permit	• A joint "Application for 401 Water Quality Certification" and/or "Report of Waste Discharge" would be submitted during the project design phase. • A statewide NPDES permit for construction and operations would be in effect for the project. Compliance review would take place during the design phase.

Agency	Permit/Approval	Status
CDFW	• California Fish and Game Code (CFGC) Section 1602 Lake and Streambed Alteration Notification for affects to nontidal channels and water bodies • CFGC Section Incidental Take Permit if take of state-listed species is anticipated	• An application for a CFGC Section 1602 Lake and Streambed Alteration Agreement would be submitted during the project design phase. • An application for a CFGC Section 2081 Incidental Take Permit would be submitted during the project design phase, if required.
San Francisco Bay Conservation and Development Commission (BCDC)	• A BCDC permit for development within BCDC jurisdictions.	• The BCDC permit application would be submitted during the design phase.
SMART (Northwestern Pacific Railroad line)	• A railroad agreement may be required for work at the crossing near Tolay Creek Bridge.	• An application would be submitted during the design phase.
California Transportation Commission (CTC)	• Approval to implement tolling	• This would be requested after the environmental review phase is completed.

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

2.1 Topics 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 impacts were identified. These include Timberlands, Mineral Resources, and Wild and Scenic Rivers. These topics were eliminated because these resources are not present within or near the project area. As a result, there is no further discussion about these issues in this document.

2.2 Human Environment

2.2.1 Existing and Future Land Use

2.2.1.1 Affected Environment

The following section is based on the *Community Impact Assessment* prepared for the project (AECOM 2021f).

The project would occur within Caltrans' right-of-way along SR 37. This corridor crosses through the City of Vallejo and the counties of Solano, Napa, and Sonoma. This section describes existing land uses within the project limits and general vicinity, and designated land uses as shown in each local or regional land use plan. In general, existing land uses adjacent to SR 37 consist primarily of natural resource and open space areas.

In Vallejo, existing land uses adjacent to SR 37 include public facilities and parks, recreation and open space. In Solano County, adjacent land uses mainly consist of marsh designated areas (County of Solano 2008). In Napa County, adjacent land uses consist of agriculture, watershed, and open space. In Sonoma County, adjacent land uses consist of agriculture and recreation/visitor-serving commercial. SR 37 is also next to the Refuge and the Napa-Sonoma Marshes Wildlife Area (NSMWA). Parks and community uses are discussed further in Section 2.2.4, Parks and Recreation Facilities.

Future planned developments within 1 mile of the project area are described below in Table 2-1. The information in Table 2-1 was obtained from CEQAnet (2020) and the planning departments for the counties of Solano, Napa, and Sonoma and the City of Vallejo. The land uses in Solano, Napa, and Sonoma counties adjacent to SR 37 are generally not designated for development, so development proposals are limited to the City of Vallejo and Mare Island at the eastern extent of the project corridor. For this reason, only current and planned development in City of Vallejo and Mare Island are presented in Table 2-1.

Table 2-1 Current and Proposed Planned Developments within One Mile of the Project Area

Name	Proposed Uses	Location (Approximate Distance from Project Area)
City of Vallejo/Waterfront Project	175 single-family detached residences, commercial areas, and two parks. Environmental Impact Report (EIR) certified in 2005.	Between Mare Island Way and Mare Island Causeway (1 mile southeast)
City of Vallejo/North Mare Island	Film production, wine and beverage manufacturing, office, and retail use.	Adjacent to the south side of SR 37
City of Vallejo/Mare Island	Mixed-use development.	South of G Street (1 mile south)

Sources: City of Vallejo 2019, 2020

2.2.1.2 Environmental Consequences

No Build Alternative

Because the No Build Alternative would not result in changes to SR 37, it would not conflict with any existing land use designations or preclude the development of any proposed projects.

Build Alternatives

The project would require both temporary use and partial acquisition of areas along SR 37, including portions of parcels in the Refuge and NSMWA. Potential property acquisitions are described in Section 2.2.8. No full parcel acquisition would be required, and the partial acquisitions would not affect existing land uses in the project area.

Each of the Build Alternatives would require TCEs for construction of the project. TCEs may be needed for construction at SR 121, Tolay Creek Bridge, Noble Road, the Cullinan Ranch public access intersection, and other private access driveways, including areas in the NSMWA and/or the Refuge, to provide construction access. The TCEs required construction of the Build Alternatives would not result in changes to existing land uses on any of the affected parcels, because only a limited work area would be required for a limited period of time (one construction season). Following completion of construction, the affected TCE parcels would be restored to pre-project conditions. Construction would have no effect on the zoning and land use designations of the TCE parcels. Because the affected parcels would be restored, no permanent change to any land use would result.

As described in Section 2.2.8, Build Alternatives 3A and 3B would also require permanent right-of-way acquisition at the Refuge to facilitate widening of the existing roadway. The partial acquisitions would occur along the edge of the Refuge where it is bisected by the existing roadway and provides limited recreational value. Implementation of Build Alternatives 3A or 3B would not affect the existing land uses of the rest of the Refuge area. Therefore, project construction and operation would not result in major changes to the land use or zoning of any parcels in the project area.

The Build Alternatives may provide modified access along the SR 37 corridor but would not provide additional access points. As a result, the project would not open new areas to development. The project would not conflict with any existing or planned land use, or preclude the development of the proposed development projects listed above in Table 2-1.

2.2.1.3 Avoidance, Minimization, and/or Mitigation Measures

Acquisitions and TCEs would require compensation. Because the TCEs are on public lands, the temporary use of these lands and any compensation would be defined in coordination with the Refuge.

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

2.2.2.1 Affected Environment

There are several community, regional, and transportation plans that apply to the project study area. The following types of plans were considered and are discussed below:

- Transportation plans/programs
- Regional growth plans
- General plans and related plans
- Habitat conservation plans (HCPs)
- Other planning influences

Transportation Plans/Programs

Plan Bay Area 2050 is the RTP for the nine-county San Francisco Bay Area (ABAG and MTC 2021a; RTP ID 21-T06-035). The RTP lists projects of local and regional importance based on factors such as local support and need, ridership, and potential cost and funding. These factors provide direction on how anticipated federal, state, and local transportation funds would be spent in the Bay Area during the next 20 years. The project is included in the Plan Bay Area 2050.

Caltrans' statewide *Toward an Active California, State Bicycle and Pedestrian Plan* supports travel by bicyclists and pedestrians through objectives, strategies, and actions to facilitate the provision of robust multimodal transportation options in the state (Caltrans 2017c). The plan aims to achieve the goals in the Caltrans Strategic Management Plan—specifically related to increasing pedestrian and bicycle trips and safety, and the promotion of complete streets—through four plan objectives related to safety, mobility, preservation, and social equity. These four plan objectives are supported by fifteen strategies and sixty actions specific to the active transportation modes of walking and biking.

The Caltrans Complete Streets Program was implemented pursuant to Caltrans Deputy Directive 64-R2 (Caltrans 2014b). As provided for in that directive, "The Department provides for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products on the State Highway System." The Caltrans Complete Streets Program describes a complete street as a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility. A complete street is designed according to its context, community preferences, the types of road users, and their needs.

The Contextual Guidance for Bike Facilities memorandum dated March 11, 2020, provides guidance for the design and selection of bicycle facilities based on place-type, speed, and volume (Caltrans 2020d). In accordance with that memorandum, routes traversing rural areas with posted speeds of greater than 45 mph warrant development of a Class III bikeway (a right-of-way on-street or off-street, designated by signs or permanent markings and shared with pedestrians and motorists), and routes in urban or suburban areas warrant a Class I bikeway (a completely separated right-of-way designated for the exclusive use of bicycles and pedestrians with crossflows by motorists minimized) or Class IV bikeway (separated bikeways which promote active transportation and provides a right-of-way designated exclusively for bicycle travel adjacent to a roadway and which are separated from vehicular traffic) (SHC Section 890.4).

The *Sonoma County Comprehensive Transportation Plan* identifies SR 37 as the fourth worst congested area in Sonoma County in 2007 (SCTA 2016). This plan recognizes the need for highway widening as well as addressing the threat of long-term SLR. The *Napa Countywide Transportation Plan* recognizes SR 37 as a principal thoroughfare that is not adequate for current traffic volumes, causes drivers to use alternative more circuitous routes, and increases vehicle miles traveled (VMT) (NVTA 2015). The *Solano County Comprehensive Transportation Plan* includes similar

mention of the conditions on SR 37, and the need for regional funding of improvements (STA 2020).

Regional Growth Plans

Plan Bay Area 2050 (ABAG and MTC 2021a) also functions as a regional growth plan for the nine-county San Francisco Bay Area. Plan Bay Area 2050 designates priority development areas (PDAs), which are areas in 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 in PDAs is intended to take development pressure off the region's open space and agricultural lands (ABAG and MTC 2021a).

There are two PDAs within 1 mile of the project area (ABAG 2020). The Mare Island PDA is adjacent to the project area, and the Waterfront and Downtown PDA is approximately 0.85 mile from the project area.

- The Mare Island PDA is an 811-acre area adjacent to the project area south of the Mare Island Interchange. It contains mainly industrial and residential uses, and limited office uses. The Mare Island PDA is not currently served by any public transportation except for one ferry terminal.

- The Waterfront and Downtown PDA is a 196-acre area south of SR 37 and west of Mare Island Way in Vallejo. The PDA includes retail, restaurants, office, and residential uses. A portion of the PDA is included in the Waterfront Project that would develop the area as a mixed-use community on the city's waterfront. The PDA is served by the SolTrans bus service.

General and Local Plans

General and local plans were reviewed for the jurisdictions in the project area, including Solano, Napa, and Sonoma counties and the City of Vallejo. The planning documents listed below were also considered. However, these plans do not include any objectives, goals, or policies that are applicable to the proposed project and the proposed project does not include any features that are within the jurisdiction of these plans. Therefore, the following documents were reviewed, but they were not further evaluated in this EIR/EA:

- *Mare Island Specific Plan* (City of Vallejo 2013)
- *Napa-Sonoma Marshes Wildlife Area Land Management Plan* (CDFW 2011)
- *Napa County General Plan* (County of Napa 2008)

Solano County General Plan

The Solano County General Plan (adopted in 2008) covers 910 square miles, including 830 square miles of land and 80 square miles of water. The Solano County General Plan extends from Yolo County to the north, Sacramento metropolitan regions to the east, San Francisco metropolitan regions to the south, and San Pablo Bay and Napa County to the west. The Solano County General Plan contains the following goal that relates to the project (County of Solano 2008):

- Goal: TC.G-2: Promote coordinated approaches to creating, maintaining, and improving transportation corridors and facilities by working with other jurisdictions and transportation agencies in funding and implementing projects.

City of Vallejo General Plan

The *City of Vallejo General Plan* (adopted in 2017) covers 50 square miles of western Solano County, from unincorporated Solano County to the northeast, Carquinez Strait to the south, and Napa/Sonoma Marshes to the west.

The City of Vallejo General Plan contains the following policy that relates to the project (City of Vallejo 2017):

- Action MTC-3.1A: Work with Caltrans, Solano County, Soltrans, and STA to identify and seek funding for improvements that make intra-city travel easier, including for transit, bicycles, and pedestrians.

Sonoma County General Plan

The *Sonoma County General Plan 2020* (adopted in 2008) covers 1,500 square miles, bordered by the Solano, Napa, and Lake Counties to the east, Marin County and San Pablo Bay to the south, the Pacific Ocean to the west, and Mendocino County to the north.

The Sonoma County General Plan contains goals and policies that relate to the project (County of Sonoma 2020) such as ones that encourage:

- ridesharing;
- HOV Lanes;
- bikeway network linkages among cities, communities, and major activity centers;
- development and enhancement of new and existing bikeways consistent with appropriate standards;

- coordination with Caltrans on traffic management improvements along Highway 37 to reduce congestion consistent with the designated road classifications; and

- expansion of the County's zero net fill requirements within the 100-year Federal Emergency Management Act (FEMA) special flood hazard area (SFHA).

San Francisco Bay Conservation and Development Commission

Most of the project is within BCDC jurisdiction, excepting the project area east of Tolay Creek, and on Tubb's Island between Sonoma Creek Bridge and the Tolay Creek wetlands/Tubbs Island Trailhead parking area south of SR 37. Project alternatives may potentially intersect with the BCDC's Bay, shoreline band, salt ponds, managed wetlands, and certain waterways (i.e., Tolay Creek and Sonoma Creek) jurisdictions. Fill within BCDC jurisdiction would require that the project demonstrate its consistency with BCDC's laws, regulations, and policies for fill in the Bay to obtain a BCDC permit. Any development project in the shoreline band is required to provide "maximum feasible public access consistent with the proposed project" to obtain a BCDC permit.

The BCDC San Francisco Bay Plan (referred to hereafter as Bay Plan) is a comprehensive and enforceable plan for the conservation of the water of the Bay and the development of its shoreline. BCDC developed Bay Plan policies and maps for the Bay. SR 37 is defined as a scenic drive and is adjacent to areas of priority use as wildlife refuge, tidal marsh, and salt pond or managed wetlands in BCDC's Bay Plan Map 1 – San Pablo Bay, and Bay Plan Map 2 – Carquinez Strait.

Habitat Conservation Plans

Solano County is in the process of finalizing the *Solano County Multispecies HCP*, which overlaps with a portion of the project area in Solano County. The draft *Solano County Multispecies HCP* proposes the conservation of 36 special status species across approximately 585,000 acres in Solano County and Yolo County (LSA Associates, Inc. 2012). The proposed project would require TCEs in areas that are expected to be subject to the HCP once it is finalized. However, the proposed project would not preclude implementation of the proposed HCP or its conservation goals.

The *Pacific Gas and Electric Company (PG&E) Bay Area Operations and Maintenance HCP* also overlaps with a portion of the project area. However, because the plan is specific to PG&E operation and maintenance activities, it does not contain policies or goals related to the proposed project (USFWS 2017a).

State Scenic Highway Program

Though SR 37 is an Eligible State Scenic Highway in Solano and Sonoma counties, it is not an Officially Designated State Scenic Highway. The visual impacts of the project are addressed in Section 2.2.12.

Bicycle Plans

The proposed improvements along the SR 37 corridor project coincide with the planned alignment of the San Francisco Bay Trail. The Association of Bay Area Governments (ABAG) adopted the Bay Trail Plan in 1989 to provide a 500-mile walking and bicycling path around the Bay. Since adoption of the plan, substantial portions of the planned Bay Trail alignment have been implemented, including in the vicinity of the proposed project. Various policies in the plan guide the design and construction of the trail promote: access to various modes of travel (Policy 12), physical separation of new trails from streets (Policy 13), and trail alignments sufficiently wide to reduce conflicts among trail users (Policy 14).

A portion of SR 37 in Solano County is included in the *Solano Countywide Bicycle Transportation Plan* (STA 2011). The portion of SR 37 from just east of the Mare Island Interchange to the Solano County/Sonoma County line is identified as a Class III bicycle route, which overlaps with the project area.

A portion of SR 37 in Sonoma County is also included in the *2010 Sonoma County Bicycle and Pedestrian Plan* (County of Sonoma 2010). The portion of SR 37 from the Solano County/Sonoma County line to just west of the SR 121 intersection is identified as a proposed Class II bicycle route, which overlaps with the project area.

Although the two above-mentioned Sonoma County plans include SR 37, the route is a State highway. Design of the highway and designation of uses are ultimately the responsibility of Caltrans.

2.2.2.2 Environmental Consequences

The project is almost entirely within Caltrans' right-of-way (a small amount of federal lands would be acquired for construction). The project is not within local jurisdictions and is not subject to city or county general plan policies. The proposed project is not included in Sonoma County's transportation plan, Napa County's transportation plan, or Solano County's transportation plan. However, the project was included in the RTP Plan Bay Area 2040 for a multi-county evaluation of feasibility options to address congestion and future SLR, and these regional counties participated in the development of the project alternatives. The project is also included in the current Plan Bay Area 2050. City and county general plan policies have been included in this

section to show that Caltrans has reviewed and considered these policies, and that Caltrans is partnering with local agencies to best satisfy their policies.

Table 2-2 summarizes the consistency of the No Build and Build Alternatives with applicable local plan policies. The Build Alternatives would support local policies promoting ride sharing and transit. Related to Sonoma County's General Plan policies on flooding, the project adds fill to a 100-year flood hazard area; however, the project would add fill outside of Sonoma County's jurisdiction and would not exacerbate existing conditions related to flooding in or outside of Caltrans' right-of-way, as discussed in the *Location Hydrology Report* for this project.

Build Alternatives 1 and 3B would continue to allow passage of bicycles along the shoulder. The No Build Alternative would also continue to allow bicycle access along the shoulder of the highway. Alternatives 2 and 3A would have narrower shoulders, including at the segment of the highway at Sonoma Creek Bridge, where shoulders would not be available. Legislation to prohibit bicycle use along the corridor would be proposed. Neither the No Build nor Build Alternatives propose new bicycle lanes.

2.2.2.3 Avoidance, Minimization, and/or Mitigation Measures

The existing SR 37 shoulders can accommodate bicycle use, consistent with a conventional highway that has shoulders. The No Build and Build Alternatives 1 and 3B would not substantially change this situation. Alternatives 2 and 3A are partially inconsistent, with narrowing of shoulders, specifically at the Sonoma Creek Bridge, due to a lack of width that can accommodate a shoulder. Measures are not available for Alternatives 2 and 3A that can change the availability of shoulder space at the Sonoma Creek Bridge.

2.2.3 Coastal Zone

2.2.3.1 Regulatory Setting

BCDC, created prior to the California Coastal Act, retains oversight and planning responsibilities for development and conservation of coastal resources in the San Francisco Bay Area. The regulatory authority for BCDC is the McAteer-Petris Act and the Suisun Marsh Protection Act. BCDC uses its federally approved Management Program for the San Francisco Bay Segment of the California Coastal Zone (Management Program) to exercise its federal consistency authority under the Coastal Zone Management Act (CZMA). The BCDC exercises authority under Section 307 CZMA (16 USC section 1456) over federal activities and development projects and nonfederal projects that require a federal permit or license or are

Table 2-2 Consistency of No Build and Build Alternatives with General Plans, Regional Plans, and Transportation Plans

Plan	Policy/Goal/Objective/Action	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
Solano County General Plan	Goal: TC.G-2: Promote coordinated approaches to creating, maintaining and improving transportation corridors and facilities by working with other jurisdictions and transportation agencies in funding and implementing projects.	This alternative would not involve transportation improvements.	The transportation improvements associated with this alternative would be coordinated between Solano County and MTC.	The transportation improvements associated with this alternative would be coordinated between Solano County and MTC.	The transportation improvements associated with this alternative would be coordinated between Solano County and MTC.	The transportation improvements associated with this alternative would be coordinated between Solano County and MTC.
Solano County General Plan	Action MTC-3.1A: Work with Caltrans and local transportation sponsors to identify and seek funding for improvements that make intra-city travel easier, including for transit, bicycles, and pedestrians.	This alternative would not involve transportation improvements.	This alternative would improve travel time on SR 37 between cities.	This alternative would improve travel time on SR 37 between cities. Shoulders on Sonoma Creek Bridge would not be available at peak periods in the peak direction.	This alternative would improve travel time on SR 37 between cities. Shoulders on Sonoma Creek Bridge would not be available in either direction.	This alternative would improve travel time on SR 37 between cities.

Plan	Policy/Goal/Objective/Action	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
Sonoma County General Plan	Policy CT-2t: Encourage measures that increase the average occupancy of vehicles, including: (1) Vanpools or carpools, ridesharing programs for employees, preferential parking, parking subsidies for rideshare vehicles, and transportation coordinator positions, and Circulation and Transit Element Footnote* Mitigating Policy Page CT-21 (2) Preferential parking space and fees for rideshare vehicles, flexibility in parking requirements, HOV lanes on freeways, and residential parking permit restrictions around major traffic generators.	This alternative would not modify SR 37 in such a way that average vehicle occupancy would increase.	This alternative would add an additional peak hour HOV lane to SR 37 to provide an incentive for a shift from SOVs.	This alternative would convert the existing shoulders to HOV lanes during peak periods to provide an incentive for a shift from SOVs.	This alternative would use the existing outside shoulders as traffic lanes and convert the existing shoulders to full-time HOV lanes to provide an incentive for a shift from SOVs.	This alternative would widen the highway and have a full-time HOV lane in each direction to provide an incentive for a shift from SOVs.
Sonoma County General Plan	Objective CT-3.1: Design, construct and maintain a comprehensive Bikeways Network that links the County's cities, unincorporated communities, and other major activity centers including, but not limited to, schools, public facilities, commercial centers, recreational areas and employment centers.	This alternative would not alter existing accommodations for bicyclists.	This alternative could accommodate bicyclists in the shoulder in both directions.	This alternative would not accommodate bicyclists at Sonoma Creek Bridge when during peak travel times in the peak flow direction.	This alternative would not accommodate bicyclists at Sonoma Creek Bridge in the shoulders at Sonoma Creek Bridge.	This alternative would accommodate bicyclists in the shoulder.

Plan	Policy/Goal/Objective/Action	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
Sonoma County General Plan	Policy CT-3n: Use the following criteria to determine consistency of public and private projects with the Bikeways Plan: (1) Development of lands traversed or adjoined by an existing or future Class I bikeway shall not preclude establishment of the bikeway, nor conflict with use and operation of the bikeway or adversely affect long-term maintenance and safety of the facility. (2) Construction, widening, or maintenance of roads with designated bikeways meets the design and maintenance standards for the appropriate class of bikeway as specified by the Bikeways Plan.	This alternative would not alter existing accommodations for bicyclists. The existing roadway has 8-foot-shoulders along most of the route but is not designated as a Class II bikeway except for a short westbound portion at the Cullinan Ranch Road intersection.	This alternative would not accommodate a Class II bicycle lane because the roadway shoulder would continue to be shared with motorists, including emergency vehicles.	This alternative would not accommodate a Class II bicycle lane because the roadway shoulder would continue to be shared with motorists, including emergency vehicles. The shoulder would not be available to bicycles at Sonoma Creek Bridge.	This alternative would not accommodate a Class II bicycle lane because the roadway shoulder would continue to be shared with motorists, including emergency vehicles. The shoulder would not be available to bicycles at Sonoma Creek Bridge.	This alternative would accommodate 8-foot-shoulders along most of the corridor, similar to the existing condition.
Sonoma County General Plan	Policy CT-7ii/ss: Work with Caltrans in considering turning lanes, access controls, and other traffic management improvements along Highway 37 to reduce congestion, provided that the improvements are consistent with the designated road classifications.	This alternative would not provide transportation improvements.	This alternative would increase the efficiency of the transportation system, with a goal of reducing traffic congestion and increasing person throughput on the corridor.	This alternative would increase the efficiency of the transportation system, with a goal of reducing traffic congestion and increasing person throughput on the corridor.	This alternative would increase the efficiency of the transportation system, with a goal of reducing traffic congestion and increasing person throughput on the corridor.	This alternative would increase the efficiency of the transportation system, with a goal of reducing traffic congestion and increasing person throughput on the corridor.

Plan	Policy/Goal/Objective/Action	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
Sonoma County General Plan	Policy PS-2e: Expand the County's zero net fill requirements to address all areas of the unincorporated County that are located within the 100-year FEMA SFHA.	SR 37 is entirely in Caltrans' right-of-way and would not increase fill within Sonoma County's jurisdiction.	Alternative 1 is in Caltrans' right-of-way and would not add fill to Sonoma County's jurisdiction. Furthermore, the project would not create a flooding issue within the County's jurisdiction.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Sonoma County General Plan	Policy PS-2i: Each discretionary project located in watersheds with major flood problems shall analyze drainage and flooding impacts and include feasible and appropriate mitigation measures to reduce flood hazards.	The No Build Alternative is existing, and is not a discretionary project.	This alternative is not a discretionary project subject to oversight of the County. However, flooding issues have been reviewed and would be addressed during the design phase of the project.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Sonoma County General Plan	Policy PS-2l: On-site and off-site flood related hazards shall be reviewed for all projects located within areas subject to known flood hazards.	The No Build Alternative would not involve any changes subject to review.	Flood hazards have been reviewed and are discussed in this document.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

Plan	Policy/Goal/Objective/Action	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
Bicycle Plans and Programs	Caltrans State Bicycle and Pedestrian Plan	The No Build Alternative would continue to allow for bicycle passage through the SR 37 corridor in the study area. However, this alternative would not promote or support the plan strategies and actions intended to achieve the goals related to safety and mobility.	This alternative would allow for continued bicycle passage through the SR 37 corridor in the study area, but would not fully support the relevant strategies and actions to promote safety and mobility.	This alternative would preclude bicyclists during peak travel periods in the peak direction. It would not provide adequate space for bicyclists on the Sonoma Creek Bridge in one direction at the peak period. It would conflict with the relevant strategies and actions intended to support safety and mobility goals.	This alternative would accommodate bicyclists in both directions except at the Sonoma Creek Bridge. It would conflict with the relevant plan policies intended to support safety and mobility.	This alternative would provide a continuous shoulder along the corridor in both directions, similar to existing conditions. It would not promote or support the plan strategies and actions intended to achieve the goals related to safety and mobility.
Bicycle Plans and Programs	Caltrans Complete Streets Program	This alternative would continue to provide shoulders that are generally accessible by bicycles and would not conflict with the guidance provided in the complete streets programs.	This alternative would continue to provide shoulders that are generally accessible by bicycles and would not conflict with the guidance provided in the complete streets programs.	This alternative would preclude bicycles during the peak hour in the peak direction and would not provide an accessible shoulder over the Sonoma Creek Bridge during peak travel periods. Legislation to prohibit bicycle use along the corridor would be proposed.	This alternative would narrow the existing shoulders to 4 feet wide and eliminate shoulders at the Sonoma Creek Bridge. Legislation to prohibit bicycle use along the corridor would be proposed.	This alternative would continue to provide shoulders that are generally accessible by bicycles and would not conflict with the guidance provided in the complete streets programs.

Plan	Policy/Goal/Objective/Action	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
Bicycle Plans and Programs	San Francisco Bay Trail	Although this alternative would not conflict with the Bay Trail plan, it would not support implementation of a Bay Trail segment in the study area.	Improved bay shoreline access is being considered as part of the project. Final options would be defined in consultation with BCDC.	Improved bay shoreline access is being considered as part of the project. Final options would be defined in consultation with BCDC.	Improved bay shoreline access is being considered as part of the project. Final options would be defined in consultation with BCDC.	Improved bay shoreline access is being considered as part of the project. Final options would be defined in consultation with BCDC.
Bicycle Plans and Programs	Solano Countywide Bicycle Transportation Plan and Sonoma County Bicycle and Pedestrian Plan	This alternative would not alter existing accommodations for bicyclists.	This alternative could accommodate bicyclists in the shoulder, consistent with existing conditions.	This alternative would preclude bicycles during the peak hour in the peak direction and would not provide an accessible shoulder over the Sonoma Creek Bridge during peak travel periods. Legislation to prohibit bicycle use along the corridor would be proposed.	This alternative would narrow the existing shoulders to 4 feet wide and eliminate shoulders at the Sonoma Creek Bridge. Legislation to prohibit bicycle use along the corridor would be proposed.	This alternative would continue to provide shoulders that are generally accessible by bicycles.

Source: County of Solano 2008; City of Vallejo 2017; County of Napa 2008; Sonoma County 2020

supported by federal funding. The consistency provisions of section 307 of the CZMA provide that any federal activity, including a federal development project, that affects any land or water use or natural resource of the BCDC's coastal zone, must be conducted in a manner that is "consistent to the maximum extent practicable" with the enforceable policies of the BCDC's federally approved coastal management program. Similarly, any nonfederal activity that requires either a federal permit or license or is supported by federal financial assistance that affects the BCDC's coastal zone must be conducted in a manner that is fully consistent with the enforceable policies of the BCDC's federally approved coastal management program.

The management program also provides that BCDC would generally follow its procedures for processing a permit application when it reviews a consistency determination for a federal project or activity, or a consistency certification for a nonfederal project subject to consistency review. Since the Bay is subject to BCDC jurisdiction a BCDC permit would be required. BCDC is also the federal delegate for the CZMA and would issue that consistency determination as part of their permit. The Bay is outside of the California Coastal Commission jurisdictional area and no Coastal Development Permit is required.

2.2.3.2 Affected Environment

McAteer Petris Act Jurisdictional Areas

Caltrans has completed a preliminary delineation of BCDC's jurisdictional areas as defined in the McAteer Petris Act Section 66610. In accordance with these definitions, Caltrans understands that the project alternatives would intersect with the BCDC bay, shoreline band, salt ponds, managed wetlands, and certain waterways (i.e., Tolay Creek and Sonoma Creek). The definitions of BCDC's jurisdictions are available at https://www.bcdc.ca.gov/plans/mcateer_petris.html#ch2 and are summarized here.

BCDC Jurisdictional Areas include:

- **Bay Jurisdiction:** San Francisco Bay, being all areas that are subject to tidal action from the southern end of the Bay to the Golden Gate (Point Bonita-Point Lobos) and to the Sacramento River line (a line between Stake Point and Simmons Point, extended northeasterly to the mouth of Marshall Cut), including all sloughs and, specifically, the marshlands lying between mean high tide and 5 feet above mean sea level; tidelands (land lying between mean high tide and mean low tide); and submerged lands (land lying below mean low tide).

- **Shoreline Band Jurisdiction:** A shoreline band consisting of all territory between the shoreline of San Francisco Bay and a line 100 feet landward of and parallel with that line, but excluding any portions of such territory which are within Bay, salt pond, managed wetland or certain waterway jurisdictions; provided that the commission may, by resolution, exclude from its area of jurisdiction any area within the shoreline band that it finds and declares is of no regional importance to the Bay.

- **Saltpond Jurisdiction:** Saltponds consisting of all areas which have been diked off from the Bay and have been used for the solar evaporation of Bay water in the course of salt production.

- **Managed Wetland Jurisdiction:** Managed wetlands consisting of all areas which have been diked off from the Bay as a duck hunting preserve, game refuge or for agriculture.

- **Certain Waterway Jurisdiction:** Certain waterways, consisting of all areas that are subject to tidal action, including submerged lands, tidelands, and marshlands up to 5 feet above mean sea level, on, or tributary to, the listed portions of the following waterways in the project area:

  - Tolay Creek in Sonoma County, to the northerly line of Sears Point Road (SR 37)

  - Napa River, to the northernmost point of Bull Island

  - Sonoma Creek, to its confluence with Second Napa Slough

McAteer Petris Act Section 66605 requires that any new fill in BCDC's Bay Jurisdiction be limited to "water-oriented uses" such as ports, water-related industry, airports, bridges, wildlife refuges, water-oriented recreation and public assembly, water intake and discharge lines for desalinization plants and power generating plants requiring large amounts of water for cooling purposes, or minor fill for improving shoreline appearance or public access to the Bay. Fill in the Bay jurisdiction would require that the project demonstrate that the public benefit is greater than the impact from the fill; that the fill is a water-oriented use or a small amount of fill to improve shoreline appearance; that there is no possible alternative to filling the Bay; that the fill is the minimum amount necessary, is located to minimize impacts to the greatest extent possible, is constructed to safety standards for the structure, and would establish a permanent shoreline; and that the applicant has valid title to the property.

Development in the shoreline band does not require that fill meet the definition of "water-oriented use" and may be permitted by BCDC. McAteer Petris Act

Section 66632.4 requires that any development project in the shoreline band provide "maximum feasible public access consistent with the proposed project" to obtain a BCDC permit and requires BCDC to consult with CDFW to determine whether proposed public access is compatible with wildlife protection in the Bay.

McAteer Petris Act Section 66654 allows for the continuation of existing use in the shoreline band, salt ponds, and managed wetland jurisdictions. Because the existing SR 37 and SR 121 roadways are existing uses where they intersect those jurisdictions, work in the existing developed roadway does not require a BCDC permit. However, expansion of the existing roadway into undeveloped areas would be new development and would require that a permit from BCDC be obtained prior to construction.

BCDC Bay Plan, Bay Plan Maps, and Policies

Section 66603 requires and Chapter 5 of the McAteer Petris Act (Sections 66651 through 66663.1) defines BCDC's establishment and procedures for an enforceable planning document which defines land use priorities in San Francisco Bay. The Bay Plan is a comprehensive and enforceable plan for the conservation of the water of the Bay and the development of its shoreline. BCDC developed Bay Plan policies and maps for the Bay. SR 37 is defined as a Scenic Drive and adjacent to areas of Priority Use as Wildlife Refuge, Tidal Marsh, and Salt Pond or Managed Wetlands in Bay Plan Map 1 – San Pablo Bay and Bay Plan Map 2 – Carquinez Strait. Policies found in Bay Plan Map 1 and Map 2 are summarized in Table 2-3.

Table 2-3 BCDC Bay Plan Maps 1 and 2 Policies

Bay Plan Map Number	Bay Plan Map Policy Number	Policy Statement
1	12	Route 37 – Evaluate design options if and when travel demand warrants. Provide public access in a manner protective of sensitive wildlife. Provide opportunities for wildlife compatible activities, such as wildlife observation and fishing.
2	2	Route 37 – Evaluate design options if and when travel demand warrants. Provide public access in a manner protective of sensitive wildlife. Provide opportunities for wildlife compatible activities, such as wildlife observation and fishing.

The Bay Plan developed specific policies for actions that would occur in its Bay and Shoreline jurisdictions that are applicable to the project. These policies would be considered in the final design and permitting phase as part of the project's BCDC permit application. BCDC provides Bay Plan Policies on several topics for

development within its jurisdiction. Recently, BCDC updated its Bay Plan to include specific climate change policies, with consideration of SLR incorporated into other existing Bay Plan Policies. SLR for the proposed project is discussed in detail under Section 3.4.5. Specific BCDC Bay Plan policies would be analyzed for the selected alternative during the project's permitting phase. This document focuses on the Transportation Policies in the Bay Plan (Table 2-4).

2.2.3.3 Environmental Consequences

All build alternatives would cause temporary and permanent impacts to areas within BCDC's jurisdictions. Temporary impacts for all Build Alternatives include vegetation clearing, temporary construction access, installation of piles, staging and laydown areas, and construction noise and air quality emissions. All alternatives would involve work at Tolay Creek to widen the bridge, including work in the creek channel and banks. Alternative 3B would involve additional impacts at Sonoma Creek for the widening of the bridge, involving installation of temporary trestle(s), staging areas for equipment and access to the bridge, and potential use of barges in the creek for construction.

Permanent impacts for all Build Alternatives include placement of sheet piles adjacent to the roadway, roadway expansion, in-water and upland fill (pile) and shading from the Tolay Creek Bridge expansion (suspended fill), and existing roadway reconfigurations. Alternative 3B would require installation of new permanent piles to support the widened bridge, and additional width of the bridge over Sonoma Creek (shading). Current estimates for project impacts in BCDC jurisdiction are preliminary and would be refined after selection of the preferred alternative and in the final design. Temporary and permanent impacts in BCDC jurisdictions are anticipated in each project alternative. Final areas would be determined during the project's final design and permitting phase. A summary of the project's consistency with BCDC's Bay Plan Policies on Transportation is shown in Table 2-4.

To meet BCDC's regulatory mandate to provide maximum feasible access consistent with the proposed project for development projects in their shoreline band jurisdiction, Caltrans and MTC would develop a public access proposal that is reasonable, feasible, and appropriate for the selected alternative as part of the BCDC permitting process to be carried out during the project's final design phase. Meeting this regulatory requirement is part of the BCDC permitting process.

Table 2-4 Consistency with BCDC Bay Plan Transportation Policies by Alternative

Policy Number	Policy	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
1	Because of the continuing vulnerability of the Bay to filling for transportation projects, BCDC should continue to take an active role in Bay Area regional transportation and related land use planning affecting the Bay, particularly to encourage alternative methods of transportation and land use planning efforts that support transit and that do not require fill. MTC, Caltrans, the California Transportation Commission, FHWA, county congestion management agencies, and other public and private transportation authorities should avoid planning or funding roads that would require fill in the Bay and certain waterways.	SR 37 was constructed on fill prior to the existence of BCDC. The No Build alternative would maintain SR 37 consistent with standard operations and maintenance procedures and is not anticipated to have fill impacts.	**Partially Consistent**. Caltrans began coordinating with BCDC on this project during early scoping and planning. Alternative 1 would include the unavoidable placement of fill material to widen the roadway in areas that are anticipated to be partially or entirely within BCDC Bay and shoreline band. This would include 0.03 acre in tidal waters and 1.52 acres in tidal wetlands. Site constraints provide no upland alternative to the relatively minor amount of proposed fill.	**Partially Consistent**. Caltrans began coordinating with BCDC on this project during early scoping and planning. Alternative 2 would include unavoidable filling to widen the roadway in areas that are anticipated to be partially or entirely within BCDC Bay and shoreline band. This would include 0.16 acre in tidal waters and 3.2 acres in tidal wetlands. Site constraints provide no upland alternative to the relatively minor amount of proposed fill.	**Partially Consistent**. Caltrans began coordinating with BCDC on this project during early scoping and planning. Alternative 3A would be very similar to Alternative 2 and would include unavoidable filling to widen the roadway in areas that are anticipated to be partially or entirely within BCDC Bay and shoreline band. This would include 0.24 acre in tidal waters and 3.75 acres in tidal wetlands. Site constraints provide no upland alternative to the relatively minor amount of proposed fill.	**Partially Consistent.** Caltrans began coordinating with BCDC on this project during early scoping and planning. Alternative 3B would include unavoidable filling to widen the roadway in areas that are anticipated to be partially or entirely within BCDC Bay and shoreline band. This would include 1.23 acres in tidal waters and 7.33 acres in tidal wetlands. Site constraints are the same as all alternatives. The increase in permanent fill in tidal waters is primarily from bridge widening at Sonoma Creek, which is consistent with Bay Plan Policies for fill.

Policy Number	Policy	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
2	If any additional bridge is proposed across the Bay, adequate research and testing should determine whether a feasible alternative route, transportation mode, or operational improvement could overcome the particular congestion problem without placing an additional route in the Bay and, if not, whether a tunnel beneath the Bay is a feasible alternative.	Not Applicable. Existing bridges would be maintained as built.	Not applicable. Existing bridges and route would be maintained as built. Tolay Creek Bridge would be widened at its current location.	Not applicable. Existing bridges and route would be maintained as built. Tolay Creek Bridge would be widened at its current location.	Not applicable. Existing bridges and route would be widened. No new bridges proposed. Tolay Creek Bridge would be widened at its current location.	Not applicable. Existing bridges would be widened. No new bridges proposed. Tolay Creek and Sonoma Creek Bridges would be widened at their current locations.
3a	If a route must be located across the Bay or a certain waterway, the crossing should be placed on a bridge or in a tunnel, not on solid fill.	Not Applicable. The roadway was constructed prior to BCDC existence.	Not applicable. Existing bridges would be maintained as built. Tolay Creek Bridge would be widened at its current location	Not applicable. Existing bridges would be maintained as built. Tolay Creek Bridge would be widened at its current location	Not applicable. Existing bridges would be widened. No new bridges proposed. Tolay Creek Bridge would be widened at its current location	Not applicable. Existing bridges at Tolay Creek and Sonoma Creek would be widened. No new bridges proposed.

Policy Number	Policy	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
3b	If a route must be located across the Bay or a certain waterway, bridges should provide adequate clearance for vessels that normally navigate the waterway beneath the bridge.	Not applicable. Existing bridges would be maintained as built.	Not applicable. Existing bridges would be maintained as built. Tolay Creek Bridge would be widened at its current location	Not applicable. Existing bridges would be maintained as built. Tolay Creek Bridge would be widened at its current location	Not applicable. Existing bridges would be widened. Tolay Creek Bridge would be widened at its current location	Sonoma Creek is a navigable channel. Temporary construction and permanent new piles at Sonoma Creek would be necessary, but the navigable channel would be maintained.
3c	If a route must be located across the Bay or a certain waterway, toll plazas, service yards, or similar facilities should not be constructed on new fill and should be far enough from the Bay shoreline to provide adequate space for maximum feasible public access along the shoreline.	Not applicable. No toll plaza would be placed.	Partially Consistent. Tolling is proposed as a potential project element that would include fully automated tolling facilities, if implemented, within the SR 37 corridor. Alternative 1 would require new maintenance worker facilities and storage areas along SR 37 for a movable barrier.	Consistent. Tolling is proposed as a potential project element that would include fully automated tolling facilities, if implemented, within the SR 37 corridor.	Consistent. Tolling is proposed as a potential project element that would include fully automated tolling facilities, if implemented, within the SR 37 corridor.	Consistent. Tolling is proposed as a potential project element that would include fully automated tolling facilities, if implemented, within the SR 37 corridor.

Policy Number	Policy	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
3d	If a route must be located across the Bay or a certain waterway to reduce the need for future Bay crossings, any new Bay crossing should be designed to move the largest number of travelers possible by employing technology and operations that increase the efficiency and capacity of the infrastructure, accommodating nonmotorized transportation and, where feasible, providing public transit facilities.	Not applicable. No new Bay crossing is proposed.	Not applicable. No new Bay crossing is proposed.	Not applicable. No new Bay crossing is proposed.	Not applicable. No new Bay crossing is proposed.	Not applicable. No new Bay crossing is proposed.
4	Transportation projects on the Bay shoreline and bridges over the Bay or certain waterways should include pedestrian and bicycle paths that would either be a part of the Bay Trail or connect the Bay Trail with other regional and community trails. Transportation projects should be designed to maintain and enhance visual and physical access to the Bay and along the Bay shoreline.	Consistent. Existing bicycle access would be maintained. Bay views would be retained.	Partially consistent. Existing bicycle access would be maintained. Bay views would be similar to existing views, depending on height of movable barrier. New visible maintenance and operations buildings would be necessary at one or both ends of movable barrier.	Partially consistent. Existing bicycle access would be reduced by narrower shoulders, especially at Sonoma Creek. Bay views would be reduced by the increased median barrier height. New barriers along the shoulder may be necessary.	Partially consistent. Existing bicycle access would be reduced by narrower shoulders, especially at Sonoma Creek. Bay views would be reduced by the increased median barrier height. New barriers along the shoulder would be necessary.	Consistent. Bicycle access would be maintained similar to current conditions. Bay views would be reduced by the increased median barrier height. New barriers along the shoulder may be necessary.

Policy Number	Policy	No Build Alternative	Alternative 1	Alternative 2	Alternative 3A	Alternative 3B
5	Ferry terminals should be sited at locations that are near navigable channels, would not rapidly fill with sediment, and would not significantly impact tidal marshes, tidal flats, or other valuable wildlife habitat. Wherever possible, terminals should be near higher density, mixed-use development served by public transit. Terminal parking facilities should be set back from the shoreline to allow for public access and enjoyment of the Bay.	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

Measures proposed for temporary and permanent impacts to wetlands and other waters as detailed in Section 2.4.2 would also offset any anticipated impacts within BCDC's jurisdiction. Upland development in BCDC's jurisdiction that is outside of the existing roadway would require authorization from BCDC and would be addressed as part of the permitting process.

2.2.4 Parks and Recreational Facilities

2.2.4.1 Regulatory Setting

The Park Preservation Act (California Public Resources Code [PRC] Sections 5400-5409) prohibits local and state agencies from acquiring any property which is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land.

2.2.4.2 Affected Environment

Publicly owned parks and recreation areas within 0.75 mile of the project area are listed in Table 2-5. Table 2-5 includes descriptions of the location of each park or recreation area in relation to the project area.

Table 2-5 Publicly Owned Parks and Recreation Facilities

Jurisdiction	Name	Description
City of Vallejo	River Park	City-owned park with open space and trails.
City of Vallejo	Terrace Park	City-owned park with play area, picnic areas, barbeque pits, and ball field.
Solano County/Napa County/Sonoma County	Refuge	The 19,000-acre refuge overlaps the counties of Solano, Napa, and Sonoma adjacent to SR 37. The refuge in the project area includes pedestrian/bicycle trails, boating, hunting, fishing, and wildlife viewing.
Solano County/Napa County/Sonoma County	NSMWA	The 15,200-acre wildlife area consists of baylands, tidal sloughs, and wetland habitat and overlaps the counties of Solano, Napa, and Sonoma adjacent to SR 37. The wildlife area includes pedestrian trails, boating, hunting, fishing, and wildlife viewing.
City of Vallejo/Solano County/Napa County/ Sonoma County	San Francisco Bay Trail (existing and planned)	The San Francisco Bay Trail is a planned 500-mile trail for pedestrian and cyclists that would encompass all nine Bay Area counties, 47 cities, and cross seven toll bridges.
Sonoma County	Vista Point (5000 Sears Point Road)	Vista point for wildlife viewing.

Sources: City of Vallejo 2020; USFWS 2016, 2017b, 2021; CDFW 2020; ABAG and MTC 2020b

2.2.4.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect recreation facilities near the project area.

Build Alternatives

Each of the Build Alternatives would require TCEs in the NSMWA and the Refuge. Build Alternatives 3A and 3B would also require permanent use and acquisition of areas in the NSMWA and Refuge. The NSMWA and the Refuge are park and recreational facilities protected by Section 4(f) of the Department of Transportation Act of 1966. This project would result in a "use" of those facilities as defined by Section 4(f). Please see Appendix B, Section 4(f), for additional details.

Build Alternatives 1 and 2 would not require the permanent use of any publicly owned park or recreational facility because they would be constructed largely within Caltrans' right-of-way. All build alternatives would require TCEs (all area quantities provided are approximate). Build Alternative 1 would require a TCE of 0.12 acre within the 15,200-acre NSMWA. Build Alternative 2 would require TCEs of approximately 0.16 acre within the NSMWA, and 0.44 acre within the 19,000-acre Refuge. Build Alternative 3A would require TCEs of 0.15 acre within the NSMWA, 0.03 acre in the Refuge, in addition to permanent use of approximately 1.65 acres of the Refuge. Build Alternative 3B would require TCEs of 0.28 acre within the NSMWA and permanent use of 3.92 acres of the Refuge.

The temporary use of the properties would be needed for sufficient space to accommodate construction activities. Given the limited area that would be occupied and the short-term duration, Build Alternatives 1 and 2 would not preclude or substantially impede the use of any parks or recreation facilities during construction. Construction activities would not require closure or substantial alteration of the recreational facilities listed above in Table 2-5. Furthermore, Build Alternatives 1 and 2 would not have long-term effects to any publicly owned parks or recreation facilities.

Permanent use of areas in the Refuge would be required for Build Alternatives 3A and 3B to facilitate widening of the existing roadway. However, there would be no long-term disruption of the recreational activities in the Refuge, due the minimal area of use in the Refuge, as discussed above. In addition, the location of permanent use directly adjacent to SR 37, which provides limited recreational value (e.g., boating, fishing, etc.) along the highway. Therefore, implementation of Build Alternatives 3A and 3B would not represent a major adverse change to the Refuge.

Construction activities would take place primarily within Caltrans' right-of-way and would not require closure or substantial alteration of the recreational facilities listed in

Table 2-5. However, Alternative 3B would require a partial closure of a parking lot during construction. The parking lot provides access to recreational activities. Because portions of the parking lot would remain open during construction, recreational activities would not be impacted. Construction impacts would be short term, and the minimal area of TCEs in adjacent recreational facilities would be used for a limited period of one construction season. The Build Alternatives would not have long-term effects to any publicly owned parks or recreation facilities.

Appendix B provides the Section 4(f) analysis. Caltrans has determined that no change would occur in the values, accessibility, or attributes of Section 4(f) uses as a result of the project. This conclusion is subject to confirmation during the pending public review process for the proposed project, and via concurrence from the appropriate officials with jurisdiction at the USFWS and CDFW.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

Property acquisition at the Refuge lands would require compensation. This would be identified in consultation with the Refuge prior to a FONSI and be either monetary compensation or provision of new land area that could be incorporated into the Refuge to be worked out during the design phase.

2.2.5 Farmlands

2.2.5.1 Regulatory Setting

NEPA and the Farmland Protection Policy Act (FPPA, 7 USC 4201-4209; and its regulations, 7 CFR Part 658) require federal agencies, such as the FHWA, to coordinate with the Natural Resources Conservation Service if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

CEQA requires the review of projects that would convert Williamson Act contract land to nonagricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to discourage the early conversion of agricultural and open space lands to other uses.

2.2.5.2 Affected Environment

The information provided in this section is from the Community Impact Assessment prepared in June 2021 (AECOM 2021f). Farmland is classified and mapped by the

California Department of Conservation, Division of Land Resource Protection for the purposes of tracking farmland development throughout the state. The Farmland Mapping and Monitoring Program classifies farmland according to five types:

- Prime Farmland: Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production
- Farmland of Statewide Importance: Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture
- Unique Farmland: Farmland of lesser quality soils, used for the production of the State's leading agricultural crops
- Farmland of Local Importance: Land of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee
- Grazing Land: Land on which the existing vegetation is suited to the grazing of livestock (CDC 2010)

The California Land Conservation Act of 1965, which is commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses. In return, the landowners receive property tax assessments that are much lower than would otherwise be the case because the taxes are based on property value assessments that assume farming and open space uses in contrast to potential market rate development.

The project is adjacent to Farmland of Local Importance and Grazing Land as well as Non-Prime Agricultural parcels with Williamson Act contracts located between the SR 37/SR 121 interchange and the Sonoma Bridge in Sonoma County.

2.2.5.3 Environmental Consequences

The project would not convert Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance away from farmland use. The project would require TCEs; however, the easements would not affect the continued use of the properties for agricultural use. None of the Build Alternatives are anticipated to require permanent property acquisitions. Additionally, there would be no permanent acquisition of Williamson Act properties. The project would not modify, nullify, or require changes to the Williamson Act contracts on the properties. Therefore, there would be no impact.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.2.6 Growth

2.2.6.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with NEPA, 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 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…"

2.2.6.2 Affected Environment

The following section is based on the *Community Impact Assessment* prepared for the project (AECOM 2021f).

The project area is in North Bay region of the Bay Area on SR 37 along the northern edge of San Pablo Bay. The project extends from the western landing of SR 37 at the Napa River Bridge across the Napa River, in Solano County, to 1.15 miles west of the SR 37/SR 121 Interchange in Sears Point, Sonoma County. The project area is in an unincorporated community but connects various moderately growing communities in Sonoma, Napa, and Solano Counties. Table 2-6 displays the increase in population in the Bay Area from 2015 to 2050, according to Plan Bay Area 2050 population projections.

The projections indicate that recent population growth in the Bay Area is expected to continue. It is projected that there would be a 34.9 percent increase in population in 2050 from 2015.

Table 2-6 Population Change in the Project Area

Jurisdiction	2015 Population*	2030 Population	2040 Population	2050 Population	Percent increase 2015-2050
Bay Area (nine counties)	7,660,000	8,560,000	9,490,000	10,330,000	+34.9%

Notes: *A tabulation from the 2010 pre-run microdata, designed to approximate (but may still differ from) Census 2010 counts.

Source: Plan Bay Area 2050 – Projections 2050

Based on MTC's regional travel demand model, traffic growth is estimated at 0.8 percent per year through 2040 and is expected to result in increased peak period congestion and longer travel times. The westbound AM peak hour travel time on SR 37 in the project study area is expected to increase from 47 minutes to 58 minutes by 2022. The eastbound PM peak hour travel time is expected to increase from 100 minutes to 139 minutes by 2022 (Caltrans 2018). This regional travel demand model indicates that traffic along the SR 37 corridor would continue to get more congested as the region's population increases. The average annual daily trips on SR 37 at the Sonoma/Solano County border was 35,000 in 2017. According to the SCTA, trips are projected to increase up to 58,000 by 2040 (Caltrans 2017b).

This project is designed to address existing traffic demand along this corridor. The current traffic congestion on SR 37 between the Napa River Bridge and the SR 37/SR 121 Interchange in Sears Point is primarily due to the reduction from two lanes to one lane in each direction, causing a bottleneck situation that backs up traffic on either side. The segment of SR 37 from U.S. 101 to the SR 37/SR 121 interchange was upgraded to a four-lane express way in 1957 to support the rising traffic demand on SR 37 due to the Mare Island Naval Base (Tom 2020).

The segment of SR 37 extending east from the Napa River Bridge was upgraded to a four-lane expressway when the state rebuilt the bridge in 1967. In 2004 the two-lane section of SR 37 between Napa River Bridge and the SR 37/SR 121 Interchange in Sears Point had a cross-over barrier installed to prevent the increasingly high rate of fatal collisions along the two-lane corridor (which had led to it being coined the "Blood Alley of San Pablo Bay") (Tom 2020). The upgrades that were historically made on SR 37 to provide more capacity on SR 37, coupled with the continued increase in population in the north bay counties, ultimately created an eastbound and westbound bottleneck of traffic congestion on SR 37.

As previously discussed, the project is designed to accommodate current traffic demands to reduce traffic congestion along this section of the SR 37 corridor. The proposed alternatives each include an HOV/express lane to facilitate a shift from

SOVs, thereby reducing traffic demand and decreasing corridor congestion while increasing person throughput. Although this design would help alleviate traffic along this corridor, it would not eliminate the traffic congestion completely.

2.2.6.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not increase capacity for the project and would not foster or accommodate economic or population growth in the project area.

Build Alternatives

The Build Alternatives would increase SR 37 capacity by incorporating a movable barrier (Alternative 1) to provide an additional lane, converting the existing outside shoulder lane during peak hours (Alternative 2), or by converting the outside shoulder lanes to provide a four-lane facility (Alternatives 3A and 3B). This additional capacity is anticipated to alleviate congestion and improve travel time reliability along SR 37. Thus, no direct effect on the existing and planned uses would result from project implementation. Furthermore, the project would not provide new access to previously undeveloped land. Therefore, the project would accommodate planned growth, but would not result in reasonably foreseeable changes to planned land uses both adjacent to and in the vicinity of the project study area.

The project would increase roadway capacity in the study area. Specifically, the capacity increase on SR 37 would result in increased throughput of vehicles and persons. Although the project may facilitate transportation access through the corridor, any such development would have to occur in accordance with those uses designated in the applicable general plan and subject to the zoning of the affected jurisdiction. The additional traffic lanes would be restricted to HOV use during peak travel periods, and such lanes encourage carpools and bus use. In addition, much of the SR 37 corridor is protected as wildlife refuge lands and unavailable to local development. Thus, the project would help alleviate traffic congestion and would not induce unplanned growth. If planned growth increases in existing communities served by SR 37, the precise location and type of such growth is not reasonably foreseeable; therefore, further analysis of the effects associated with an increased rate of growth is considered speculative.

2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.2.7 Community Character and Cohesion

2.2.7.1 Regulatory Setting

NEPA, as amended, established that the federal government must use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 USC 4331[b][2]). 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. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under CEQA, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Because this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

2.2.7.2 Affected Environment

The following section is based on the *Community Impact Assessment* prepared for the project (AECOM 2021f).

Population

In recent years, the populations of Solano and Napa Counties both grew. Solano County saw a 0.259 percent increase between 2017 and 2018, and Napa County saw a 0.129 percent increase between 2016 and 2017. In contrast, Sonoma County declined from 504,217 to 499,942 between 2017 and 2018, a -0.848 percent decrease (Data USA 2020).

The study area is predominately White and Hispanic or Latino. The population of Solano County is 37.3 percent White, 26.9 percent Hispanic or Latino, and 15.2 percent Asian. The population of Sonoma County is 62.8 percent White, 27.2 percent Hispanic or Latino, and 4.17 percent Asian. Similarly, Napa County's population is 53.2 percent White, 33.7 percent Hispanic or Latino, and 7.76 percent Asian (Data USA 2020).

The median household income in Solano County is $84,395, in Sonoma County is $81,395, and in Napa County is $79,637. Solano County's poverty rate is 11.5 percent, Sonoma County's is 10.7 percent, and Napa County's is 8.21 percent (Data USA 2020).

Neighborhoods/Communities/Community Character

Residential land uses in the project area are described in Section 2.2.1; as noted in that section, no existing or planned residential uses are adjacent to or near SR 37. Parks and recreational facilities are described in Section 2.2.4. Businesses in the project area and study area are discussed below. There are no activity centers such as childcare centers, banks, churches, or grocery stores in the immediate project area.

There are several local roads with direct access to SR 37 that lead to rural residences and businesses. These roads include Tolay Creek Road, Noble Road, and Skaggs Island Road.

Housing

In 2018, Solano County had 62.9 percent homeowners and a median property value of $442,700; Sonoma had 61.5 percent homeowners and a median property value of $655,200; and Napa had 63.1 percent homeowners and a median property value of $603,700. Each county has rate of homeowners similar to the national average of 63.9 percent (Data USA 2020). According to the California Association of Realtors, the median price of a home in the Bay Area is around $900,000, nearly four times the national average.

In the nine-county Bay Area, the largest job clusters are in Santa Clara County (916,000), Alameda County (700,000), and San Francisco (591,000). Most residents work in their county of residence. However, employees in Solano County have a longer commute time (33.3 minutes) than the average U.S. worker (25.7 minutes). Additionally, 9.16 percent of the workforce in Solano County experience “super commutes” greater than 90 minutes (Data USA 2020). On the other hand, Sonoma County employees have a shorter commute time (23.5 minutes) compared to the average U.S. worker, and only 3.84 percent of the Sonoma County workforce experience “super commutes” (Data USA 2020). Napa County residents have the shortest commutes in the study area, with an average of 22.8 minutes.

Regional/Local Economy

Solano County employs 216,000 people, Sonoma County employs 260,000 people, and Napa County employs 71,100. The largest industries in Solano County are health care, and social assistance (34,197 people), Retail Trade (24,584 people), and Construction (20,092 people). The highest-paying industries are Utilities ($101,222), Mining, Quarrying, and Oil and Gas Extraction ($91,495), and Public Administration ($74,894). The Solano County Chamber of Commerce indicates that the largest employer in the county is Travis Airbase, followed by Vallejo Kaiser Permanente, and then Solano County.

The largest industries in Sonoma County are Health Care and Social Assistance (34,113 people), Retail Trade (30,715 people), and Construction (24,425 people). The highest-paying industries are Utilities ($100,179), Public Administration ($80,762), and Information ($75,782).

The largest industries in Napa County are Health Care and Social Assistance (9,719 people), Manufacturing (9,196 people), and Accommodation and Food Services (7,699 people). The highest-paying industries are Public Administration ($75,877), Mining, Quarrying, and Oil and Gas Extraction ($73,464), and Utilities ($71,838) (Data USA 2020).

Businesses directly adjacent to the project area include Speedway Sonoma LLC (commonly known as Sonoma Raceway), Paradise Vineyards, Gold Coast Vineyards, and The Wing and Barrel Ranch/Kenwood-DPSC Hunt Club. Paradise Vineyards and Gold Coast Vineyards have access to SR 37 by Tolay Creek Road/Sears Point Road at the traffic light intersection of SR 37 and SR 121.

The Wing and Barrel Ranch/Kenwood-DPSC Hunt Club is accessed by Noble Road, which has a turning lane in the eastbound direction of SR 37 but does not currently have a traffic signal. Sonoma Raceway is one of the largest businesses in the vicinity of the project, though it does not have direct access from SR 37. The main entrance to Sonoma Raceway is accessed by SR 121, approximately 0.5 mile north from the SR 37/SR 121 interchange; there is also a private entrance off Lakeville Highway, which is opened to the public for large events. The raceway houses a motorsports industrial park of more than 70 businesses in 104 shops (Speedway Motorsports, LLC 2020). Sonoma Raceway hosts many events throughout the year, including the annual NASCAR race, which holds a multi-day event with thousands of visitors. These large annual racing events pose traffic challenges along SR 37 and SR 121, which bring approximately 100,000 people and 5,000 campers to the annual NASCAR event (Sonoma Index Tribune 2019).

2.2.7.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not change access to the existing community and would not affect neighborhoods or the local economy. It would have no effect on existing community cohesion.

Build Alternatives

Population

As described in Section 2.2.6, the increased capacity on SR 37 proposed by the Build Alternatives is not expected to encourage more people or employers to move to

Sonoma, Solano, or Napa Counties. The project would primarily benefit the current population of commuters in the study area and at the regional level.

Neighborhoods/Communities/Community Character

The project would not change any existing community boundaries or physically divide an established community. The project is not anticipated to influence growth patterns for the reasons described in Section 2.2.6, and as a result would not change the existing character of the communities in the study area.

Local residents and businesses could experience temporary access impacts from the construction closures. Property access would be maintained throughout project construction. No full closures of SR 37 or SR 121 are anticipated. Implementation of a TMP would minimize the potential for short-term construction impacts.

Housing

The project would not displace or relocate any residents or encourage more people to move to unincorporated Sonoma, Solano, or Napa Counties, including the surrounding areas. The proposed project would not create additional land availability or affect housing stock in the study area or at a regional level. The additional capacity provided by the project would shift some traffic to the SR 37 corridor, but is not expected to increase growth, because SR 37 is an existing highway within land uses largely protected from growth. Although potential changes resulting from increased housing demand and associated population increase may occur in the North Bay Area, the relatively incremental change to traffic patterns that would result from the proposed project in the context of larger Bay Area is not expected to be substantial.

Regional/Local Economy

The project would not directly affect the employment rates in the study area, nor would it impede the accessibility to the adjacent businesses, as described in Section 2.2.7.2. Project operations may increase the accessibility of adjacent and nearby businesses by reducing congestion but, as noted previously, no unplanned development is anticipated that would substantially alter employment in the study area.

The project would add a traffic signal at Noble Road and SR 37, which would only activate when a vehicle approaches the SR 37 Noble Road intersection. This would have no effect on accessibility to the business.

Project construction would have to minimize or avoid lane reductions or closures that would overlap with events at local land uses, primarily the Sonoma Raceway. Project construction would be subject to the TMP described under Section 1.4.2.6. Given the limited duration of project construction activities that would affect the Sonoma

Raceway and the implementation of the TMP, construction activities would not substantially affect access or operation of the raceway.

The project would generally improve access to adjacent and nearby land uses by reducing congestion. Therefore, the project is not expected to adversely affect the values of properties along the frontage roads.

2.2.7.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.2.8 Relocations and Real Property Acquisition

2.2.8.1 Regulatory Setting

The Caltrans Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and 49 CFR 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons would not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age, or sex. Please see Appendix C for a copy of the Caltrans Title VI Policy Statement.

2.2.8.2 Affected Environment

The project is within Caltrans' right-of-way along SR 37; this corridor crosses through the City of Vallejo and the counties of Solano, Napa, and Sonoma. The Refuge and NSMWA are adjacent to a portion of the route.

2.2.8.3 Environmental Consequences

Most of the project would be constructed within Caltrans' right-of-way, and no relocations of homes or businesses are necessary. However, to provide construction access—in addition to widening required for Build Alternatives 3A and 3B; and work at the SR 121 intersection, Tolay Creek Bridge, Noble Road, the Cullinan Ranch public access intersection, and other private access driveways—the project would result in partial property acquisitions and TCEs on several properties. Table 2-7 below identifies the potentially proposed TCEs. Permanent partial property acquisition would occur at the Refuge, as listed in Table 2-8. The actual impacts to properties would be determined during detailed project design.

Table 2-7 Temporary Construction Easements

Assessor's Parcel Number (APN)	Street Address	Owner	Alternative 1 TCE (Acres)	Alternative 2 TCE (Acres)	Alternative 3A TCE (Acres)	Alternative 3B TCE (Acres)	Existing Parcel Use: Project Impact
068-160-006	7715 Lakeville Highway Sonoma, CA 95476	Private	—	—	—	0.027	Miscellaneous: Temporary construction – roadway widening
068-170-002	29730 Tolay Creek Road Sonoma, CA 95476	Private	—	0.003	0.003	0.008	Residence: Temporary construction – construct motor vehicle pullout for sign structure
068-190-H2O	Tolay Creek	Creek	0.005	0.005	0.005	0.005	Miscellaneous: Temporary access road from staging area
068-190-015	6600 Noble Road Sonoma, CA 95476	Wing and Barrel Ranch	0.09	0.09	0.09	0.09	Miscellaneous: Temporary access road from staging area
068-190-017	Unincorporated Sonoma County	Wing and Barrel Ranch	2.30	2.30	2.30	2.30	Field crops: Temporary construction staging area and access road
068-190-008	5400 Sears Point Road Sonoma, CA 95476	Black Point Game Bird Club	0.06	0.06	0.06	0.05	Field crops: Intersection reconstruction at Noble Road
068-190-032	None	Sonoma Marin Area Rail Transit	0.15	0.16	0.16	0.16	Railroad grade crossing and railroad right-of-way: Modify grade crossing panels to accommodate roadway widening. Relocate railroad signal and cabinets.

Assessor's Parcel Number (APN)	Street Address	Owner	Alternative 1 TCE (Acres)	Alternative 2 TCE (Acres)	Alternative 3A TCE (Acres)	Alternative 3B TCE (Acres)	Existing Parcel Use: Project Impact
067-02-0010	None	State of California – CDFW	0.006	—	0.07	0.18	Miscellaneous: Temporary construction – viewpoint intersection modifications/driveway
068-180-020	5000 Sears Point Road, Unincorporated Sonoma County	Vallejo Sanitation and Flood Control District	—	—	—	—	Miscellaneous: Reconstruct Noble Road driveway
067-02-0100	None	State of California – CDFW	0.11	0.10	0.09	0.10	NSMWA: Temporary construction – Cullinan Ranch Road intersection modifications
067-02-0110	None	State of California	—	0.004	—	0.009	Miscellaneous: Temporary construction
067-03-0060	None	State of California	—	—	0.005	—	Miscellaneous: Temporary construction
067-04-0050	None	State of California	—	—	0.020	—	Miscellaneous: Temporary construction
067-04-0120	None	USFWS	—	0.438	—	—	Miscellaneous: Temporary construction
Totals (Acres)	—	—	**2.712**	**3.220**	**2.833**	**2.938**	—

Table 2-8 Permanent Partial Acquisition

APN	Street Address	Owner	Alternative 1 (Acres)	Alternative 2 (Acres)	Alternative 3A (Acres)	Alternative 3B (Acres)	Existing Parcel Use: Project Impact
067-02-0010	None	State of California – CDFW	—	—	—	0.1236	Refuge: Partial take for roadway fill
067-02-0110	None	State of California	—	—	—	0.016	Refuge: Partial take for roadway fill
067-03-0060	None	State of California – CDFW	—	—	—	0.72	Refuge: Partial take for roadway fill
067-04-0050	None	State of California – CDFW	—	—	—	0.56	Refuge: Partial take for roadway fill
067-04-0120	None	USFWS	—	—	1.65	2.62	Refuge: Partial take for roadway fill
Totals	—	—	**0**	**0**	**1.65**	**3.922**	—

The TCEs required for the temporary construction activities for the Build Alternatives would not result in substantial changes to existing land uses on any of the affected parcels. Only a limited work area would be required for a limited period time (one construction season). Following construction, the affected TCE parcels would be restored to pre-project conditions. Construction would have no effect related to the zoning and land use designations of the TCE parcels. Because the affected parcels would be restored following construction, no permanent change to any land use would result. The project would not require any full property acquisitions and would not relocate any residences or businesses. The permanent partial property acquisitions would not affect the continued function of the Refuge. The project would not result in the conversion of any parcels to a new land use or otherwise interfere with the continued use of parcels for their existing purpose.

Property access would be maintained throughout project construction, and no full closures of SR 37 or SR 121 are anticipated. Property owners whose access may be temporarily affected by project construction would be notified in advance.

2.2.8.4 Avoidance, Minimization, and/or Mitigation Measures

No relocations are required. Temporary easements and partial property acquisitions would be compensated, which would be determined during the right-of-way phase of the project.

2.2.9 Environmental Justice

2.2.9.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with 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 2017, this was $24,600 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 C of this document.

2.2.9.2 Affected Environment

The environmental justice analysis for this project included review of 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 United States Census Bureau's 2013-2017 American Community Survey 5-Year Estimates (United States Census Bureau 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.

The environmental justice analysis includes the census tracts 1506.12, 1501, 2518.02, 2508.01, 2518.03, 2517.01, 2517.02, and 2011.02. All tracts are immediately adjacent to the project area. The census tracts are compared to Sonoma County, Solano County, and Napa County, which serve as the reference area for the project. California data are also provided for context. There are eight census block groups that border the project area. Table 2-9 describes the minority and low-income populations in the selected tracts in each county.

2.2.9.3 Environmental Consequences

The No Build Alternative would not change operations on SR 37 nor have the potential to disproportionally effect a minority or low-income community.

The Build Alternatives would add HOV lanes to improve traffic conditions along SR 37 and encourage carpooling. As shown in Table 2-9, four of the census tracts adjacent to the project area meet the criteria of an environmental justice community due to a minority population exceeding a meaningfully greater proportion than the minority population percentage in Solano County. None of the census tracts adjacent to the project contain more than 25 percent low-income populations.

Table 2-9 Summary of Race, Ethnicity, and Poverty Status in the Study Area and Reference Areas

Geography	Black	Native American	Asian	Native Hawaiian or Other Pacific Islander	Minority*	Hispanic	Below Poverty Level
California	5.8%	0.7%	14.1%	0.4%	21%	38.8%	15.1%
Sonoma County	*1.6%*	*1.1%*	*3.9%*	*0.3%*	*6.9%*	*26.4%*	*10.7%*
Census Tract 1506.12	0.4%	0.2%	6.2%	0.0%	6.26%	10.1%	4%
Census Tract 1501	0.0%	0.3%	0.0%	0.0%	0.3%	12.7%	7.2%
Solano County	*14.2%*	*0.5%*	*15.3%*	*0.9%*	*30.9%*	*25.8%*	*11.5%*
Census Tract 2518.02	23.6%	0.0%	23.4%	0.08%	**47.08%**	34.6%	4.3%
Census Tract 2508.01	**28.9%**	0.3%	13.4%	4.2%	**46.8%**	18.8%	19.4%
Census Tract 2518.03	17.5%	1.1%	23.8%	0.2%	**42.6%**	**42.3%**	5%
Census Tract 2517.01	**25.9%**	0.1%	11.3%	0.2%	37.5%	21.7%	21.6%
Census Tract 2517.02	**31.2%**	0.0%	**28.5%**	4.7%	**64.4%**	13.4%	9.6%
Napa County	2.1%	0.9%	7.9%	0.2%	11.1%	33.7%	8.2%
Census Tract 2011.02	0.0%	0.0%	3.0%	0.0%	3%	8.6%	3.4%

Notes:

*Minority is the sum of United States Census Bureau reported Black, Native American, Asian, and Native Hawaiian or Other Pacific Islander

Shaded Cells indicate a reference population. Bold cells indicate an Environmental Justice Community.

Source: United States Census Bureau 2017

The proposed work in these areas would be limited to pavement widening and resurfacing for each Build Alternative to accommodate an additional HOV lane, installation of electronic tolling equipment, replacement of the concrete median barrier, and the addition of signs and lighting. During project construction, air quality and noise impacts would occur, but these impacts would be short in duration. These temporary impacts are not expected to be substantial and would only occur during a short duration. Impacts from construction would not be more impactful to environmental justice communities than non-environmental-justice communities.

During operation of the project, traffic conditions are expected to improve, resulting in reduced air pollution. This would be a benefit to environmental justice communities.

Toll Lanes

Caltrans is considering the option of installation and operation of tolling in all lanes of SR 37 (see Section 1.2.2.2, Legislation). It is recognized that tolls paid on a frequent basis could represent a greater economic burden to low-income travelers than to middle- and high-income travelers. Although none of the Census Tracts adjacent to the project contain more than 25 percent low-income populations, there still are low-income individuals represented in these census tracts who could be impacted. Tolling is described in the project description, Section 1.4.2.6, including that HOVs would receive a discount, and that a means-based toll discount would be implemented. The means-based discount would be available based on income, through a program that would pre-qualify the motorists that would be eligible for the discount. The project would also promote and encourage ridesharing, which helps alleviate congestion and maximize the people-carrying capacity of a highway. Any user of the highway in a multiple-occupant vehicle would gain a time savings advantage and reduced toll over single-occupant vehicles, and this advantage is available to all multi-occupant drivers and passengers.

Based on the above discussion and analysis, the Build Alternatives would not cause disproportionately high and adverse effects on any minority or low-income populations, in accordance with the provisions of EO 12898.

2.2.9.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and mitigation measures (AMMs) are required.

2.2.10 Utilities/Emergency Services

The following section is based on the *Community Impact Assessment* prepared for the project (AECOM 2021f). There are power, gas, telecommunication (fiber optic), and water utilities in the study area. PG&E provides gas and electricity service, and American Telephone & Telegraph Company (AT&T) provides telecommunication service. Sonoma Water, Sonoma Valley County Sanitation District, Solano County Water Agency, and Vallejo Flood and Wastewater District manage water utilities within the project limits.

Police protection and traffic enforcement services in the study area are provided by the Sonoma County Sheriff's Department, Solano County Sheriff's Department, and the City of Vallejo Police Department. The CHP has jurisdiction over SR 37 for matters involving traffic violations and emergency services. Fire protection services in the study area are provided by Vallejo Fire Department, Sonoma County Fire Department, and Sonoma Valley Fire Department.

2.2.10.1 Environmental Consequences

No Build Alternative

Because the No Build Alternative would not result in changes to SR 37, it would not require utility relocations or construction activities that could interfere with the provision of emergency services.

Build Alternatives

The Build Alternatives would require relocation of some PG&E overhead electrical distribution lines. Some wooden poles would be relocated due to the construction and widening of the roadway in certain sections.

The relocation of electrical facilities may result in temporary interruptions of service. Final verifications of utilities would be performed during the project's detailed design phase, and any needed relocations would be coordinated with the affected utility owner. As a result, no substantial disruption to electrical power is anticipated. No impacts to water service are anticipated.

Law enforcement, fire, and emergency services would be maintained during project construction. During final design, a TMP would be developed for the project to minimize construction-related delays and inconvenience to project area residents and the traveling public. The TMP would include notification to emergency service providers and the public of lane closures and detours; coordination with CHP and local law enforcement on contingency plans; and using portable Changeable Message Signs, CHP Construction Zone Enhanced Enforcement Program, and Freeway Service Patrol where possible to minimize delays. The TMP would be implemented to ensure that emergency services would not be affect during the construction of the project. Therefore, the project is not expected to result in decreased response times.

For these reasons, the Build Alternatives would not result in long-term effects on utilities or emergency services.

2.2.10.2 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required.

2.2.11 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.2.11.1 Regulatory Setting

The Department, as assigned by the 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, 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 USC 794). The 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.

2.2.11.2 Affected Environment

The information in this section is based on the *Traffic Operations Analysis Report* prepared in August 2021 (AECOM 2021a). The operational analysis evaluated existing and future conditions. Existing conditions represent the year 2020. Future conditions are projected for the years 2025 (Opening Year) and 2045 (Design Year). The majority of SR 37 is a four-lane facility with two lanes in the eastbound and westbound directions. The segment of SR 37 that makes up the project limits (between SR 121 and the Mare Island Interchange) narrows to a two-lane facility with one lane in each direction.

Currently, there are significant recurring traffic congestion/delay issues experienced by commuters at the bottlenecks within the traffic study limits during the peak hours, due to traffic demands exceeding capacity in segments between SR 121 and Mare Island, where the existing two lanes merge into one lane in both the eastbound and westbound directions. Traffic conditions are expected to worsen with continual developments in the region and within and adjacent to the SR 37 corridor. Growth in travel demand on SR 37 is expected to result in longer periods of travel times during the AM and PM peak periods.

The traffic study included the segment of SR 37 between SR 121 and Mare Island, and several mainline and intersections extending from the SR 29 interchange in the City of Vallejo to the U.S. 101 interchange in the City of Novato. The study area extended farther than the physical project limits to allow for full analysis of traffic conditions. The study mainline segments and intersections include:

Mainline Segments

- SR 37 between U.S. 101 Interchange and SR 121 Intersection
- SR 37 between SR 121 Intersection and Mare Island Interchange
- SR 37 between Mare Island Interchange to SR 29 Interchange

Intersections

- SR 37 and Lakeville Hwy (Signal)
- SR 37 and SR 121 (Signal)
- SR 37 and Noble Road (Two-Way Stop Control)
- SR 37 and Skaggs Island Road (Two-Way Stop Control)
- SR 37 Westbound Ramps and Walnut Avenue/Main Gate (Two-Way Stop Control)
- SR 37 Eastbound Ramps and Walnut Avenue/Main Gate (Two-Way Stop Control)

Pedestrian and Bicycle Facilities

There are no pedestrian facilities on SR 37 within the project limits, except along the Napa River bridge and the approaches to that bridge. Bicyclists are permitted on the shoulders of SR 37.

Traffic Operations Analysis Study Area and Methods

The traffic study area is described in the preceding section. This section describes and compares overall performance of the No Build and Build future conditions, by factors such as delay, total travel time, and speed, and VMT. The traffic study analyzed peak period conditions defined as 5 AM to 11 AM (AM peak) and 2 PM to 9 PM (PM peak). These conditions represent the most congested periods of the day and are used to define the peak hour for purposes of the impact analysis.

The operational analysis for the project was conducted using the VISSIM simulation modeling program. VISSIM is a simulation model capable of analyzing the vehicle-to-vehicle interaction along the highway mainline, HOV lane facilities, ramps, and intersections. Existing conditions AM and PM peak period VISSIM models were developed and calibrated to replicate observed field condition bottlenecks and queues for the hours specified above.

The traffic volumes dataset for the SR 37 corridor was derived from the project-specific data collections, including 2019 SR 37 Highway Vehicle Classification Counts; 2019 SR 37 Highway HOV Occupancy Survey; 2019 SR 37 Highway and Ramp Segment Counts; and 2019 Study Intersection Turning Movement Counts. The 2019 data collected were used to establish the 2020 baseline year.

Level of service (LOS) is used to describe the ability of a roadway to accommodate prevailing traffic volumes at the critical intersections based on the physical characteristics of the roadway. LOS ranges from "A" (representing uncongested free-flow conditions) to "F" (representing total breakdown with stop-and-go operation). Table 2-10 shows the LOS designation and corresponding delay thresholds for both signalized and unsignalized intersections.

Table 2-10 Intersection LOS Thresholds

LOS	Signalized Intersection Delay Thresholds	Unsignalized Intersections Delay Thresholds	Description
A	delay ≤ 10.0	delay ≤ 10.0	Little or no traffic delay
B	10.0 < delay ≤ 20.0	10.0 < delay ≤ 15.0	Minimal traffic delay
C	20.0 < delay ≤ 35.0	15.0 < delay ≤ 25.0	Average traffic delay
D	35.0 < delay ≤ 55.0	25.0 < delay ≤ 35.0	Long traffic delay
E	55.0 < delay ≤ 80.0	35.0 < delay ≤ 50.0	Very long traffic delay
F	delay > 80.0	delay > 50.0	Extreme traffic delay

VMT is a measure of the number of miles traveled by vehicles in a roadway network. It is the calculation of every trip taken or estimated, multiplied by the length of the trip. An increase or decrease in VMT indicates more or fewer trips, a longer or shorter average length of trips, or a combination of both a change in trips and a change in the average distance traveled. VMT is generally evaluated by comparing alternatives to indicate the overall difference between the alternatives.

Method Used to Estimate VMT

The Caltrans Transportation Analysis Framework (TAF) (Caltrans 2020c) provides guidance on the methods for estimating VMT, including induced VMT associated with a lane addition. Two methods are available for the VMT analysis. The first is the National Center for Sustainable Transportation (NCST) Induced Travel Calculator (NCST calculator) (NCST 2019); second is the use of a regional travel demand model (TDM), which is the MTC model given the multi-county location of this project. Induced demand refers to a change in travel behavior, such as longer trips that avoid slower areas of congestion, new trips because a travel mode offers a lower cost, quicker, or more convenient route by car, or land use changes that might attract trips that are longer in distance. Because the NCST calculator is not an application for the evaluation of a tolled facility, the MTC model was selected for the VMT analysis.

The TAF includes a series of steps for evaluation of the VMT induced demand analysis. This includes a checklist that was completed regarding the sensitivity of the model to

land use inputs, the sensitivity of trip making behavior on travel times and travel costs, the sufficiency of the model network detail and study area, model network assignment, and model calibration and validation. Potential deficiencies of the TDM model were identified for specific varied land uses and level of detail of the roadway network, and therefore a calibration or benchmark comparison was made between the MTC travel model and the NCST VMT calculator method, consistent with the TAF guidance.

The NCST calculator was used as an off-model tool to inform and benchmark the results and any necessary adjustments to the MTC model. The following overall model comparison and evaluation was used to determine the VMT analysis for the project and location:

- Apply the NCST calculator for a travel lane addition and identify induced VMT.
- Add the proposed HOV lane(s) to the MTC model and run the MTC model to determine induced VMT.
- Compare VMT results between the NCST calculator and the MTC travel model.
- If the MTC model results are within 20 percent of the value provided by the NCST Calculator, the MTC model results are used. The 20 percent threshold was established by Caltrans' TAF (Caltrans 2020c).
- If the MTC model results differ from that of the NCST calculator by more than 20 percent, then the NCST calculator results are used. In some cases the MTC model results may be used with specific quantitative evidence explaining this variation provided.

Benchmark/Model Validation Process

For the travel lane addition in the same location as the project (regardless of HOV or general purpose lanes), the NCST calculator estimated an induced annual VMT of approximately 40.1 million, based on approximately 5.4 directional lane miles in Sonoma County and 13.4 directional lane miles in Solano County. These lane miles represent the addition of a single lane in each direction, consistent with the project description and the proposed new lane miles in those two counties. The project is in Sonoma and Solano Counties, in Metropolitan Statistical Areas (MSAs) with a Class 2 facility (as defined by the TAF method for projects on the State Highway System). The TAF specifies that the analysis for a project involving a lane addition should apply a travel demand model or county and or TDM estimate benchmarked against the NCST Calculator, which was the method followed. For the proposed HOV lanes under the project, the MTC model projected an induced annual VMT of approximately 17.8 million. This is with the addition of the HOV lane(s) only, without the

implementation of tolling. Tolling reduces VMT in the travel demand model, and therefore the initial analysis of VMT without tolling is considered a worst-case or maximum estimate of induced demand with the proposed lane additions.

Because the proposed project is an HOV lane addition, use of the lane is limited only to eligible carpool vehicles during the peak commute periods, with vehicular volumes less than those a general purpose lane. Existing HOV use accounts for 21 percent of all vehicles based on existing field-collected data. This is projected to increase to approximately 25 percent with the proposed project, because the HOV lane would incentivize more travelers to carpool rather than driving alone. The existing SR 37 route at the project location has only one general purpose lane in each direction, with an estimated hourly total vehicular traffic demand in the order of 2,000 vph. The HOV volumes are estimated to be in the order of 500 vph during the peak hours; this is significantly below the capacity of the existing general purpose lane, which is approximately 1,650 vph (according to the MTC model for a conventional highway traffic lane).

The MTC model's projected VMT increase with the HOV lane is 44 percent compared to the NCST calculator's estimation of a travel lane addition. Although this exceeds the 20 percent difference tolerance, it is expected that the induced travel from the proposed HOV lane on SR 37 would be significantly lower than the induced travel from a general purpose lane addition. This is because the project encourages a mode shift away from driving alone to carpooling. Moreover, the new lane is restricted to eligible carpool vehicles during the peak periods, where most of the potential induced travel would occur for new lane additions. The MTC model's projected VMT increase due to the proposed HOV lane demonstrated that the model is more sensitive and conservative (higher VMT) in estimating potential induced travel than the NCST Calculator.

To further assess the MTC model's ability to estimate induced travel demand, an additional scenario run was performed by adding a general purpose lane in the same location as the project. The model then projected an annual VMT increase of approximately 48.7 million. This is a more conservative (higher VMT) result than the NCST calculator's projected VMT increase of 40.1 million.

For the reasons listed above, the MTC model was deemed appropriate and conservative (higher estimated VMT) as the selected tool to perform the VMT analysis for assessment of impacts for the proposed project alternatives.

Existing Conditions

Based on field observations, westbound is the peak direction during the AM peak period. The westbound SR 37 bottleneck starts at the Mare Island lane drop and the queue extends to Wilson Avenue interchange during the AM peak hours. The maximum

flow from this bottleneck is approximately 1,250 vph. The maximum travel time between SR 29 and southbound U.S. 101 is 50 minutes, as observed from 6 to 7 AM; and the minimum travel time is 25 minutes, as observed during the 10 to 11 AM hour.

During the AM peak period, the intersection of the SR 37 westbound ramps/Walnut Avenue intersection operates at LOS E/F during 5 to 8 AM hours. The intersection of SR 37 eastbound ramps/Walnut Avenue intersection operates at LOS E/F between 6 and 8 AM. The congestion forms at these intersections because demand exceeds capacity for SR 37.

During the PM peak period, eastbound is the peak direction. The eastbound bottleneck starts at the lane drop east of the SR 121 Intersection, and the queue extends to Railroad Avenue. The maximum flow from this bottleneck is approximately 1,250 vph. The maximum travel time between northbound U.S. 101 and SR 29 is 68 minutes, as observed during the 4 to 5 PM hour; and the minimum travel time is 22 minutes, as observed during the 8 to 9 PM hour.

In the PM peak period, the intersection of SR 37/SR 121 operates at LOS F during from 2 to 8 PM, and the intersection of SR 37/Lakeville Highway operates at LOS E/F from 3 to 7 PM (evening commute). Eastbound traffic typically becomes congested from the bottleneck east of the SR 121 Intersection to the Lakeville Highway intersection during evening commute hours.

There are several study intersections currently operating at LOS (E/F) conditions in one or more hours during the AM and PM peak periods. Unsignalized intersections at Noble Road and Skaggs Island Road experience delays in general as the drivers exiting from these side streets have difficulties finding gaps in the heavily used SR 37.

HOV Volumes

HOV volumes were extracted from the 2019 vehicle occupancy data collected manually at Noble Road for both eastbound and westbound SR 37 for the project limits.

Truck Volumes

In the project limits during the AM peak period, truck volumes account for 12 percent of the of vehicle composition in the eastbound direction and 9 percent in the westbound direction. During the PM peak period, truck volumes account for 5 percent of the vehicle composition in both eastbound and westbound directions.

2.2.11.3 Environmental Consequences

This section summarizes the traffic conditions for the opening year 2025 and design year 2045 for the No Build and Build Alternatives, as reported in the December 2021 Traffic Operations Analysis Report (TOAR). LOS were modeled for key intersections

and are included in Appendix H. Travel times (the modeled average time to travel a segment of the corridor) were also predicted and are discussed in the following sections. The SR 37/Noble Road intersection was evaluated and reported in the TOAR without a signal, but a project decision was made to include a signal at this intersection. With the signal, operations at SR 37/Noble Road would be expected to function as or better than as described in this section and the TOAR for all alternatives. Overall, the project's Build Alternatives would provide for additional traffic capacity during the peak periods and, in many cases, improve travel time.

Intersection LOS 2025

Intersection LOS results were obtained from the VISSIM operational analysis and are summarized in intersection LOS tables in Appendix H.

Similar to the existing conditions, under 2025 No Build Conditions, the results indicate that out of six study intersections, three in the AM (SR 37/Noble Road, SR 37 westbound ramps/Walnut Avenue, and SR 37 eastbound ramps/Walnut Avenue) would operate at LOS E or F for one or more peak period hours. The alternatives would have the following results:

- Alternatives 1 and 2: In the AM peak period, the SR 37/Noble Road would generally improve from LOS E (No Build) and operate with Alternatives 1 and 2 at no worse than LOS D. But the intersections at SR 37/Walnut Avenue in the westbound and eastbound directions would continue to operate at LOS F and delay times would generally worsen, beginning as early as 5 AM. During the 5 AM peak hour, the delay increases from 57 seconds delay to 150 seconds; and during the 6 AM peak hour, the delay increases from 89 to 101 seconds.

  In the PM peak period, with the No Build Alternative, the SR 37 intersections at Lakeville Highway, SR 121, Noble Road, and Skaggs Island Road operate at LOS E or F, with substantial delays of up to 3 to 6 minutes. These intersections would still operate at LOS E and F with Alternatives 1 and 2 but would have comparatively reduced delay times of less than 1 minute to 5 minutes.

- Alternatives 3A and 3B: In the AM peak period, these alternatives would improve intersection operations compared to the No Build Alternative at the SR 37/Walnut Avenue intersection, and would be similar to the No Build except at one location/one peak hour: SR 37/Noble Road at the 8:00 AM peak hour (Scenario 1) would decrease from LOS E to LOS F, and delay would increase from 43 to 57 seconds. All other intersections would function at LOS D or better. The Alternative 3A/3B variations S1, S2, and S3 at the SR 37/SR 121 intersection would all function at LOS D or better (except for SR 37/Noble Road

at 8 AM, Scenario 1, as noted above), and the differences in delay would be similar (the differences in delay would be within a range of 0 to 3 seconds).

In the PM peak period, Alternatives 3A and 3B would improve most study intersections to LOS D or better. The SR 37/Noble Road intersection would function at conditions of LOS E and F during the afternoon hours of 2 to 5 PM, but the delay would be less than the No Build Alternative. The SR 37/SR 121 intersection would have substantial improvement compared to the No Build (and Alternatives 1 and 2).

Intersection LOS 2045

Under 2045 No Build conditions, the results indicate that out of six study intersections, three intersections in the AM period and five intersections in the PM period operate at LOS E or F in one or more hours during the AM and PM peak period. The intersections affected with the No Build and Build Alternatives are similar to the 2025 year, but the delays are longer due to growth in traffic. Delays are most severe for the No Build Alternative, and Alternatives 1 and 2.

- Alternatives 1 and 2: In the AM peak period at the SR 37 ramps/Walnut Avenue intersection, delays increase compared to the No Build Alternative, especially at the 5 AM peak period hour. The remaining intersections would operate at LOS A to C, except for the 8 AM hour at SR 37/Noble Road, which would function at LOS E (although this would be an improvement over the No Build, which would function during the 8 AM hour at LOS F).

  In the PM period, delays with the No Build Alternative increase substantially at the Lakeville Highway, SR 121, Noble Road, Skaggs Island Road, and the westbound SR 37/Walnut Avenue ramps. At the Noble Road intersection, delays are as high as 53 minutes at the 6 PM peak hour and range from 3 to 5 minutes delay at the Lakeville Highway, SR 121, Skaggs Island Road, and Walnut Avenue intersections. With Alternatives 1 and 2, these delays decrease at these same intersections but still remain at 1 to 10 minutes of delay.

- Alternatives 3A and 3B: In the AM peak period, intersection operations would function at LOS A to C at the Lakeville Highway, SR 121, and Skaggs Island intersections, similar to the No Build and Alternatives 1 and 2. The Noble Road and Walnut Avenue intersections would still operate at LOS E and F, but delays would be reduced.

  In the PM peak period, LOS would improve at most of the intersections, especially at Lakeville Highway, Noble Road, Skaggs Island Road, and the westbound ramps at Walnut Avenue.

2025 Traffic Operations Analysis

Eastbound PM Peak Period

The following paragraphs compare 2025 traffic conditions of the No Build Alternative and Build Alternatives for SOVs and HOVs during the PM peak period in the eastbound direction. All times provided below are approximate.

- Under the No Build conditions, the maximum travel time is 100 minutes for SOV and HOVs because there is no HOV lane provision.
- Under Alternatives 1 and 2, the maximum travel time is 53 minutes for SOVs and 46 minutes for HOVs. The travel time savings for SOV and HOV is 47 minutes and 54 minutes, respectively, compared to the No Build Alternative.
- Under Alternatives 3A and 3B, the maximum travel time is 26 minutes for SOVs and 23 minutes for HOVs. The travel time savings for SOVs and HOVs is 74 minutes and 77 minutes, respectively, compared to the No Build Alternative.

Westbound AM Peak Period

The following paragraphs compare 2025 traffic conditions of the No Build Alternative and Build Alternatives for SOVs and HOVs during the AM peak period in the westbound direction. All times provided below are approximate.

- Under the No Build conditions, the maximum travel time is 65 minutes for SOVs and HOVs because there is no HOV lane provision.
- Under Alternatives 1 and 2 conditions, the maximum travel time is 40 minutes for SOVs and 37 minutes for HOVs. The travel time savings for SOVs and HOVs is 25 minutes and 28 minutes compared to the No Build Alternative.
- Under Alternatives 3A and 3b conditions, the maximum travel time is 40 minutes for SOVs and 37 minutes for HOVs. The travel time savings for SOVs and HOVs is 25 minutes and 28 minutes, respectively, compared to the No Build Alternative.

2045 Traffic Operations Analysis

The following paragraphs compare 2045 traffic conditions of the No Build Alternative and Build Alternatives for SOVs and HOVs during the PM and AM peak periods.

Eastbound PM Peak Period

- Under the No Build conditions, the eastbound queues extend 11 miles beyond the U.S. 101 interchange (outside of the project study limits), compared to up to Harbor Drive in the 2025 No Build Conditions.

- Under Alternatives 3A and 3B, queues extend close to Railroad Avenue or Harbor Drive due to the proposed lane geometry conditions at the SR 37/ SR 121 intersection.

Westbound AM Peak Period

- Under the No Build conditions, the westbound queues extend up to 19 miles beyond the SR 29 interchange (outside of the project study limits), compared to up to the SR 29 interchange in 2025 No Build conditions during the AM peak period.

- Under Alternatives 1 and 2, queues extend up to 9.5 miles beyond the SR 29 Interchange Conditions due to limited HOV operational hours.

- Under Alternatives 3A and 3B, queues extend up to just beyond the SR 29 Interchange, similar to existing conditions.

Along the SR 37 corridor, the project would remove an existing constraint in the westbound and eastbound directions. In the westbound direction during AM peak period, because the Build Alternatives improve the throughput traveling toward U.S. 101, there would be additional traffic reaching the interchange of SR 37 with the ramps at U.S. 101 in Marin County. In addition, the westbound traffic would disperse onto other roadway links, including SR 121 and Lakeville Highway. The freeway ramps at the SR 37/U.S. 101 interchange constrain traffic getting onto U.S. 101; therefore, freeway operations on U.S. 101 are not anticipated to worsen during the AM peak period. In the eastbound direction, additional traffic would likewise be less constrained at the SR 121 intersection, with additional traffic able to flow eastbound toward I-80 and SR 29. The currently constrained traffic is not expected to substantially affect these downstream roadways.

Total Vehicle Miles Traveled, Vehicle Hours Traveled, and Vehicle Hours of Delay

As discussed in the Section 2.2.11.2, the MTC model was used to evaluate the differences in measures of travel and delay for the No Build Alternative and Build Alternatives for the years 2020 (representing existing), 2025, and 2045. Daily VMT indicates the total miles of all vehicle trips, measured by the distance traveled. VHD indicates the total hours that vehicles are delayed as a result of congestion. Vehicle hours traveled (VHT) is the total hours traveled for all vehicle trips. These measures for 2020, 2025, and 2045 are shown and compared in Table 2-11, Table 2-12, and Table 2-13, respectively.

Table 2-11 VMT, VHD, and VHT for 2020 (Existing Conditions)

Description	No Build
Daily VMT	149,948,925
Daily VHD	5,523,543
Daily VHT	8,783,953

Table 2-12 VMT, VHD, and VHT Estimates of No Build and Build Alternatives for 2025

Description	No Build	Alternatives 1/2	Alternatives 3a/3b
Daily VMT	156,255,326	156,261,672	156,264,925
VMT Difference from No Build	Not Applicable	6,346	9,599
Daily VHD	6,501,187	6,499,000	6,498,000
VHD Difference from No Build	Not Applicable	-2,187	-3,187
Daily VHT	9,893,225	9,892,534	9,892,538
VHT Difference from No Build	Not Applicable	-691	-687

Table 2-13 VMT, VHD, and VHT Estimates of No Build and Build Alternatives for 2045

Description	No Build	Alternatives 1/2	Alternatives 3a/3b
Daily VMT	181,480,934	181,512,664	181,528,926
VMT Difference from No Build	Not Applicable	31,729	47,992
Daily VHD	10,411,762	10,400,827	10,395,826
VHD Difference from No Build	Not Applicable	-10,935	-15,936
Daily VHT	14,330,313	14,326,857	14,326,880
VHT Difference from No Build	Not Applicable	-3,456	-3,443

With the proposed project, daily VMT in 2025 and 2045 is projected to increase for all Build Alternatives compared to the No Build conditions. Based on regional model results showing an average trip length of 53.4 miles, the increase in trips is estimated at 180 vehicle trips per day. In 2045, the increase in trips would be 899 vehicles per day. As described earlier, this increase includes all estimated new trips, including induced trip generation. Although VMT would increase, VHD and VHT would reduce for all Build Alternatives compared to the No Build Alternative.

Application of Tolling

For this project, two tolling strategies are being considered. The first is a one-way westbound-only tolling in the project corridor, which would be similar to other state-owned tolled bridges in the Bay Area (such as the Richmond-San Rafael and Golden Gate bridges in the northbound or southbound directions, respectively). The second is two-way tolling at half of the toll rate for each direction. HOVs would receive a discount similar to other existing tolled bridges, to further incentivize the use of carpooling. Both tolling scenarios were evaluated using the MTC travel model to estimate VMT changes with the project. The toll rate is assumed to be consistent with the other state-owned tolled bridges in the region, such as the Richmond-San Rafael Bridge. HOV users would get a discount to encourage carpooling. An income means-based discount would also be available for eligible motorists, which is described in Section 3.3.17.1.

The application of tolling in either one direction only or both directions was also modeled for 2025 and 2045. In 2025, tolling would result in reduced VMT by 17,344 for westbound-only tolls, and by 6,594 when both directions are tolled. In 2045, tolling would result in reduced VMT on an annual basis. The proposed HOV lane with tolling in the westbound direction would result in a net annual VMT reduction of approximately 17 million from No Build conditions. The proposed HOV lane with tolling in both directions would result in a net annual VMT reduction of approximately 10 million from No Build conditions. The results are shown in Table 2-14, below.

Table 2-14 VMT Estimates of No Build and Build Alternatives with Tolling

Description	No Build	Alternatives 1/2	Alternatives 3a/3b	Tolling WB Only (EB/WB)
2025 Daily VMT	156,255,326	156,261,672	156,264,925	156,237,983 / (156,248,732)
Difference from No Build	Not Applicable	6,346	9,599	-17,344 / (-6,594)
2045 Daily VMT	181,480,934	181,512,664	181,528,926	181,394,216 / (181,447,963)
Difference from No Build	Not Applicable	31,729	47,992	-86,718 / (-32,971)

Bicycle Access

Bicyclists are allowed on the outside shoulders along SR 37. As discussed in Section 1.4, existing shoulders are 8.75 feet wide. Under the Build Alternatives, shoulders widths may be reduced depending on the chosen alternative. Under Alternative 1, shoulders would be 8 feet wide along the project alignment, except for an at-grade crossing at Noble Road, where shoulders would be 4 to 6 feet wide; and on Sonoma Creek Bridge, where shoulders would be 4 feet wide. Alternative 2 would have 4-foot shoulders within the project limits. Alternative 3A would have 4-foot shoulders within the project limits, except at Sonoma Creek Bridge, where there would be no shoulders. Therefore, for Alternative 3A, bicyclists would not have use of the shoulders in this segment (Sonoma Creek Bridge). Alternative 3B would provide for 8-foot-wide shoulders within the project limits. Therefore, the Build Alternatives have varying shoulder widths but would not prevent bicycle access, with the exception that Alternative 3A would eliminate shoulders at Sonoma Creek Bridge.

Effect Summary

The project is expected to improve traffic conditions along SR 37 by adding HOV lanes, which would improve the person-carrying capacity of the corridor, as well as improve the traffic flow and travel times in the peak direction. The project also supports reducing VMT (if tolling is implemented) by encouraging carpools and fewer vehicle trips.

Alternatives 1 and 2 would add one HOV lane in the peak direction during the peak periods. Alternatives 3A and 3B would widen SR 37 within the project limits to four full-time lanes, two lanes in each direction. During the peak period, the outside lane (right-side lane) in each direction would be restricted to HOV use. Alternatives 1 and 2 would improve traffic conditions compared to the No Build conditions but would not eliminate the entire congestion, due to limited hours of operations for HOV lane; during non HOV hours, there would be only one lane, similar to the existing situation. Alternatives 3A and 3B would eliminate the lane reductions in each direction at all times, and shows benefits for the general purpose lane as well as the HOV lane in each direction. The queues—slowdowns caused when an approaching car is within one car length of a stopped vehicle—are improved in the eastbound direction compared to the No Build conditions. Additionally, intersection traffic would be improved under all the Build Alternatives during most peak period hours.

Compared to the No Build, VMT is expected to increase with all of the Build Alternatives, but would decrease if tolling is implemented (Table 2-14). VHD and VHT would decrease with all of the Build Alternatives compared to the No Build Alternative, although the decreases would be greatest with Alternatives 3A and 3B.

Related to bicycle access, the Build Alternatives have varying widths of shoulders, and would not restrict or prevent bicycle access except for Alternative 3A at Sonoma Creek Bridge, where shoulders would be eliminated.

Construction Impacts

Although SR 37 traffic would be maintained during construction, temporary traffic impacts may occur during construction. Traffic speeds would be reduced for vehicles approaching construction on the shoulder. Construction staging areas would be needed along or near the route for equipment and materials. A TMP would be prepared during the design phase of the project. A TMP would be incorporated as part of standardized project measures to address traffic disruptions from project construction during structural replacements and widening work. Access would be maintained for all emergency response vehicles. Periodic delays may occur if lane closures are necessary, but these would be minimized and planned during nonpeak periods. A temporary shuttle service for bicyclists would be evaluated during the design phase and development of construction staging, since the highway shoulders may not be available at times. Effects on traffic during project construction would be temporary, and traffic access along SR 37 would be maintained during peak travel periods.

2.2.11.4 Avoidance, Minimization, and/or Mitigation Measures

Without tolling, VMT would increase with each Build Alternative. The proposed improvements add sufficient capacity to improve traffic conditions along SR 37. Neither the U.S. EPA nor FHWA require VMT analysis. FHWA emphasizes concepts of sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and EOs on VMT reduction, the issue is addressed in the CEQA transportation chapter of this document (Section 3.3.17). The CEQA analysis may be used to inform the NEPA determination for the project.

2.2.12 Visual/Aesthetics

2.2.12.1 Regulatory Setting

NEPA, 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 USC 4331[b][2]). To further emphasize this point, 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.

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" (California 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.

2.2.12.2 Affected Environment

The following discussion is based on the *Visual Impact Assessment* completed for this project in July 2021 (AECOM 2021h).

The project corridor is a two-lane highway along the northern shoreline of San Pablo Bay, from the northern end of Mare Island in the east to Sears Point in the west. The project corridor crosses low-lying coastal marshland and is at points no more than 2 feet above typical daily tide levels.

The eastern and central part of the project corridor (from the eastern terminus to Sonoma Creek) passes primarily through publicly owned marshland (the Refuge and NSMWA). This area is a patchwork of meandering sloughs, open water, mud flat, tidal marsh, estuary, and seasonal wetlands. The wildlife refuges contain a recreational area at Cullinan Ranch and some trails, as discussed below. The western end of the project corridor, from Sonoma Creek to the western terminus, is mostly privately owned land that has been converted to agriculture or managed for waterfowl hunting and fishing. Oat hay farms and vineyards are the primary agricultural use. The area west of Tolay Creek rises up toward Sears Point, the southernmost peak of the Sonoma Mountains.

The eastern and central parts of the project corridor are undeveloped. The area west of Sonoma Creek contains a little development associated with agriculture. Sonoma Raceway, a professional racetrack with elevated stands, is just upslope from the western end of the project corridor on Sears Point. Other development includes Wing and Barrel Ranch, a membership-based hunting club accessible from the project corridor that offers hunting and fishing grounds. Thirty-Seven Winery is 0.1 mile from the intersection of SR 37 and SR 121. The winery's vineyards cascade down a hillside visible from the western end of the project corridor.

Designated scenic areas, roadways, corridors, vistas, and trails in and near the project corridor include the following:

- **Eligible State Scenic Highway**. The project corridor is on a stretch of SR 37 that is classified as eligible for the State Scenic Highway designation but it is not officially designated. Sonoma County has indicated its intention to pursue an official state scenic highway designation for the portion of the project corridor within its borders in its General Plan (page OS-57) (Sonoma County 2020). The closest Officially Designated State Scenic Highway is a stretch of SR 12, 3 miles north of the project corridor.

- **Sonoma County Scenic Corridor and Scenic Landscape Unit**. SR 37, within the project corridor, is a designated Sonoma County Scenic Corridor (Sonoma County 2020). In addition, the parts of Sonoma County through which the project corridor passes (Napa-Sonoma Marsh and Sears Point) are county-designated Scenic Landscape Units.

- **Solano County Scenic Roadway.** SR 37, within the project corridor, is a designated Solano County Scenic Roadway (County of Solano 2008).

- **Refuge/Cullinan Ranch.** The east, central, and westernmost parts of the project corridor pass through or are adjacent to the Refuge, a 13,190-acre refuge established to protect migratory birds, wetland habitat, and endangered species. Cullinan Ranch is a 1,500-acre recreational area in the refuge that is accessible from the project corridor. It contains open-water areas accessible to boaters and fishers and an approximately 1-mile walking trail. Cullinan Ranch features an observation pier, interpretive panels, and a gangway to a dock. Waterfowl hunters use the boat launch to access hunting areas.

- **San Francisco Bay Trail**. The San Francisco Bay Trail is a planned 500-mile walking and cycling shoreline path around the entire San Francisco Bay. More than 350 miles of the trail is already in place. A planned segment of the San Francisco Bay Trail runs alongside SR 37, from the project corridor's eastern terminus to the western side of Sonoma Creek within the project corridor, where the planned trail turns south and follows the shoreline of Tubb's Island. Where the Tubb's Island shoreline meets Lower Tubbs Island, the planned path intersects a finished section of the San Francisco Bay Trail, which follows Tolay Creek back to the Tolay Creek/Tubbs Island Trailhead beside SR 37. From this point, the planned San Francisco Bay Trail continues alongside SR 37 to the western terminus of the project corridor.

- **Wildlife Viewing Sites.** There are wildlife viewing areas with walkways and interpretive panels on either side of Sonoma Creek, accessible from the project corridor.

- **Tolay Creek/Tubbs Island Trail.** Popular with bird watchers, the 8-mile Tolay Creek/Tubbs Island Trail is open to hikers and cyclists and offers views of San Pablo and Greater San Francisco Bays and surrounding ridgelines and peaks. The trail starts along the project corridor near the intersection of SR 121 and SR 37 near Sears Point on the southern side of SR 37, follows Tolay Creek, and splits for a loop around Lower Tubbs Island.

Visual impacts analyze existing visual resources, resource change created by the project, and viewer response to that change. Visual resource change is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project area before and after construction of the project. Changes in visual character can be identified by how visually compatible a proposed project would be with the existing condition, using visual character attributes as an indicator. The project corridor is a rural highway that offers widespread views of marshlands, San Pablo Bay, agricultural lands, and the surrounding hills. Visual quality is evaluated by identifying the vividness, intactness, and unity present in the project area. Public attitudes validate the assessed level of quality and predict how changes to the project area can affect these attitudes.

Viewer response is a measure or prediction of the viewer's reaction to changes in the visual environment and has two dimensions, as previously mentioned: viewer exposure and viewer sensitivity. Overall, motorists would have moderately high to high viewer response to project-related changes, depending on specific location within the project corridor.

It was not feasible to analyze all the views in which the proposed project would be seen; consequently, it was necessary to select a number of key views (KVs) that would most clearly demonstrate the change in the project's visual resources. Five KVs were selected to represent project-related changes and to highlight changes to certain areas. The KV locations also represent the viewer groups that have the highest potential to be affected by the project, considering exposure and sensitivity.

These views are described below:

- KV-1: Looking down the westbound side of the project corridor near eastern terminus; represents motorist views of a potential new toll gantry
- KV-2: Looking toward the project corridor from Cullinan Ranch; represents views of recreationists
- KV-3: Looking down the eastbound side of the project corridor near the Refuge; represents motorist views of surrounding landscape

- KV-4: Looking at Sonoma Creek Bridge from a wildlife viewing area adjacent to the project corridor; represents views of recreationists
- KV-5: Looking down the eastbound side of the project corridor toward Tolay Creek Bridge; represents views of motorists at a potential new toll gantry

2.2.12.3 Environmental Consequences

Short-Term Construction Impacts

There would be short-term and temporary impacts to visual resources during the construction of the project. Because of the flat terrain of the project area, staging areas for construction would be visible from SR 37 or near SR 37 for viewers, which include motorist, nearby workers, and recreationists. Temporary impacts include removal of existing vegetation and visibility of dust, construction equipment, materials, and the construction site. Additionally, some night-time work would be required, and construction lighting would be used to illuminate construction areas in an otherwise dark environment. Alternative 1 would involve construction of maintenance and operation buildings near the highway. Alternative 3B would require construction at the Sonoma Creek Bridge, which would require about 2 years of temporary trestle and falsework that would be visible would likely temporarily block views during construction.

Long-Term Operational Impacts

Alternatives 2 and 3A are similar from a visual perspective, so they are considered together for this analysis. Alternatives 1 and 3B are discussed separately from the other Alternatives because they have different visual impacts. In addition to the alternatives, two outside barrier design options are considered: Type 85B and MGS Guard Rail. Type 85B is a partially see-through barrier consisting of concrete vertical posts and horizontal beams. The Type 85 barrier is 36 inches high with posts spaced every 10 feet. Type 85B outside barriers are typically used in scenic areas as a replacement to a solid barrier. MGS is a partially see-through barrier consisting of steel horizontal rails (also referred to as w-shaped beams) and wood or steel posts spaced about every 6 feet. The MGS barrier height is 31 inches. VIS-01 would be implemented to limit permanent light pollution from proposed light on new ramps, at intersections and on toll gantries, as described in more detail in Section 2.2.12.4.

Key View 1 – Looking Westbound Down the Project Corridor near the Eastern Terminus

Figure 2-1 presents the view looking westbound along the project corridor from, KV-1, near its eastern terminus. The existing median barrier is 36 inches high, and there is no outside barrier except for a short stretch of MGS several yards ahead on the right shoulder. Long-distance views are available on both sides of the highway across undeveloped marshland. From this vantage point, water is visible on both sides of the highway, depending on the season and tidal activity. Inundated marshland is currently visible on the left side of the highway and extends outside of the range of view. A few hundred yards ahead of this viewpoint, a section of the Bay is visible on the left side of the road. Hills are visible in the distance across the horizon line, depending on atmospheric conditions. A few signs and a streetlight are the only encroaching elements that detract from the natural qualities of the view.

Figure 2-1 Existing Conditions from KV-1

KV-1 Proposed Condition – Alternative 1

An overhead toll gantry has been constructed across the highway. In this stretch of highway, the existing 36-inch median barrier is likely to be replaced by a 42-inch barrier (the Alternative 1 32-inch moveable barrier starts west of this location, outside of this view). An MGS outside barrier would be constructed along this stretch of the

project corridor for Alternative 1, visible on the right side starting at the gantry (Figure 2-2).

Figure 2-2 Simulated Condition for Alternative 1 from KV-1

The new toll gantry would the tallest built element in view. The gantry may attract attention by creating a new tall, wide structure in a primarily low-lying natural setting. However, its gray color, slim lines, and lattice form would reduce its obtrusiveness. The gantry would only be visible at close range for several seconds. From distant views, it would be partially visible, with the open lattice structure helping reduce its visibility. The gantry would not block water views on either side of the highway.

The new, taller median barrier partially blocks views of the landscape on the left side of the highway. In the existing condition, most highway travelers can see above the median barrier. In the proposed condition, the added 6 inches to the barrier would affect some motorists' views over the barrier, depending on the height of the vehicle. Views from taller vehicles, such as trucks, are not likely to be altered. With this median barrier in place, views of the wetlands and the Bay south of SR 37 are partially or no longer available in the westbound direction from lower profile vehicles. However, views of the landscape north of the highway would be preserved under Alternative 1, as would views of distant hills. The combination of the gantry and the higher median barrier would add to the built character or features visible along this route.

Additionally, an MGS outside barrier is proposed and would be visible from KV-1. The new outside barrier starts at approximately the same location as the existing metal beam guard railing and continues into the distance. The barrier can be seen through at oblique angles. However, in frontal views down the highway, the barrier appears more solid. The barrier would not be tall enough substantially to block views, but it would block some views of the adjacent vegetation. However, coupled with the new medium barrier, the outside barrier would have moderate to high resource change because it would stand out as a new feature in this rural setting.

The movable barrier would require new structure(s) or buildings alongside the highway for maintenance and worker crews. These have not been defined but would be present at either end of the highway. These would introduce a new building(s) where none exist along this corridor. This is considered a high visual impact.

The project at this location would have a moderate to high viewer response and a moderate to high resource change. Combined with a moderately high level of viewer response, Alternative 1 would create a moderately high to high level of visual impact from KV-1.

KV-1 Proposed Condition – Alternatives 2 or 3A

An additional lane has been added to each side of the highway; three westbound lanes are now merging into two. A new toll gantry, a higher median barrier, and outside barrier would also be constructed. The visual impacts of the proposed gantry and the median barrier would be the same as those discussed for KV-1 Alternative 1 (see discussion above). The median barrier shown on Figure 2-3 is the same height as the median barrier pictured in Alternative 1 (42 inches). However, it appears to be lower in this simulation because the viewer is farther away. From the middle or left lane, the median barrier would partially block views of the wetlands and Bay on the southern side of the highway. Views of distant hills are preserved under Alternatives 2 or 3A.

Under Alternatives 2 or 3A, either MGS or Type 85B outside barriers would be considered. The Type 85B outside barrier option is simulated on Figure 2-3 because it represents the taller option under consideration. The new outside barrier starts beyond the existing MGS barrier and continues into the distance. The Type 85B would be made of concrete and slightly taller than the MGS. However, visual impacts would be similar. The barrier can be seen through at oblique angles. However, in frontal views down the highway, the barrier appears more solid and would block views of adjacent vegetation. Coupled with the new medium barrier, the outside barrier would have moderate to high resource change because it would stand out as a new feature in this rural setting.

Figure 2-3 Simulated Condition for Alternatives 2 or 3A from KV-1 with the Type 85B Outside Barrier

The project at this location would have a moderate to high viewer response and a moderate to high resource change. Combined with a moderately high level of viewer response, Alternatives 2 or 3A would create a moderately high level of visual impact from KV-1.

Figure 2-4 represents visual changes that would be created by Alternative 3B. Alternative 3B would have visual changes similar to those of Alternatives 2 and 3A, discussed above. An additional lane has been added to each side of the highway and, at KV-1, three westbound lanes are now merging into two. A new toll gantry, a higher median barrier, and an outside barrier have also been constructed. These features would present a moderate to high resource change.

KV-1 Proposed Condition – Alternative 3B

Figure 2-4 Simulated Condition for Alternative 3B from KV-1

The difference is that under Alternative 3B, an MGS outside barrier would be constructed, as shown on Figure 2-3. The new outside barrier starts at approximately the same location as the existing metal beam guard railing and continues into the distance. The wooden legs are spaced apart, which provides areas were viewers could see through at oblique angles. The barrier would not be tall enough substantially to block views, but it would block some views of the adjacent vegetation. Coupled with the new medium barrier, the outside barrier would have moderate to high resource change, because it would stand out as a new feature in this rural setting.

The combination of the proposed gantry, 42-inch median barrier, and additional lane would add to the built character or features visible along this route. Because views of the coastline on the left side of the view would be blocked (depending on the height of the vehicle), long-term resource change would be moderately high from KV-1 for Alternative 3B. Combined with a moderately high level of viewer response, Alternative 3B would create a moderately high level of visual impact from KV-1.

Key View 2 – View from Cullinan Ranch Toward Project Corridor

KV-2 looks south toward the project corridor from the Cullinan Ranch parking lot (Figure 2-5). In this view, the existing 36-inch median barrier largely blocks views of the wetlands and Bay south of the highway. Only the tops certain shrubs and trees are visible. Depending on weather conditions, hills on the other side of the Bay are partially visible across the horizon above the median barrier.

Figure 2-5 Existing Condition at KV-2

KV-2 Proposed Condition – Alternative 1, 2, 3A, and 3B

Alternatives 1, 2, 3A and 3B are grouped in this analysis because they have the same or very similar visual impacts at this location. The median barrier height as seen from the Cullinan Ranch parking lot is very similar for all three alternatives. On the right and left side of the simulations, the guard rails are MGS (Alternatives 1 and 3B) or Type 85B (Alternatives 2 and 3A). As Figure 2-5 shows, at this location, the visual change from existing conditions would be minor.

For Alternative 1, the existing 36-inch median barrier has been replaced by a 42-inch barrier, and an outside barrier has been constructed. An MGS outside barrier is proposed. Although the combination of new median barrier and outside barrier block more of the vegetation and distant hills, the project corridor appears substantially

similar to the existing condition (Figure 2-6). Visual character and quality would not be substantially altered. Long-term resource change for Alternative 1 would be very low from KV-2. The view is substantially similar to existing conditions in terms of visual character and quality. Long-term resource change for Alternative 1 would be very low from KV-2.

Figure 2-6 Simulated Condition KV-2 – Alternative 1

Alternatives 2, 3A, and 3B at location KV-2 would have the same visual impacts as Alternative 1. The existing 36-inch median barrier has been replaced by a 42-inch barrier, and an outside barrier has been constructed. The new, taller median barrier blocks more of the vegetation and the distant hills beyond the highway. On Figure 2-7, the view is simulated with a Type 85B outside barrier. Either MGS or a Type 85B outside barrier is proposed at this location. Both barrier types would have a low resource change. At this location, the project corridor appears substantially similar to the existing condition. The view is substantially similar to existing conditions in terms of visual character and quality. The long-term resource change for Alternatives 2, 3A, and 3B would be very low from KV-2.

KV-2 Proposed Condition – Alternatives 2, 3A, and 3B

Figure 2-7 Simulated Condition KV-2 – Alternatives 2, 3A, and 3B

Key View 3 – Looking Eastbound Down Project Corridor Near Cullinan Ranch

Figure 2-8 presents a view from KV-3 looking east from the project corridor along the Refuge and NSMWA. This stretch of highway is undeveloped and offers long-distance views of wetlands and open water as well as views of hills in the distance. North of the highway (left side) are views of open water and marshland in Cullinan Ranch recreational area. South of the highway (right side) are views of seasonally and tidally inundated marshlands that form the coastline of San Pablo Bay.

Figure 2-8 Existing Condition KV-3

KV-3 Proposed Condition – Alternative 1

Under Alternative 1, the highway would be widened by approximately 4 feet to construct a three-lane highway with a 32-inch movable median barrier separating the two directions of traffic. The new median barrier would be 4 inches shorter than the existing barrier. An outside barrier would also be installed. Figure 2-9 simulates the movable median barrier and MGS outside barrier design option.

The additional lane and outside barrier somewhat alter the character of the highway. On the right side of the highway, the addition of the MGS creates a low visual barrier that somewhat reduces the expansiveness of the view, but the MGS barrier is not tall enough to substantially block views of the landscape south of the highway. The MGS would have a moderate to low resource change. On the left side of the highway, the combination of new median barrier and the new outside MGS barrier would decrease visibility of wetlands and open water north of the highway from most vehicles but would not entirely block it. Views of distant hills across the horizon line are not substantially affected.

On the whole, Alternative 1 with the MGS outside barrier design option would largely preserve views of adjacent landscape on both sides of the highway, but add an outside barrier. The project would create a moderately low level of adverse resource change.

Figure 2-9 Simulated Condition KV-3. Alternative 1 with MGS Outside Barrier

KV-3 Proposed Condition – Alternatives 2 or 3A with MGS Outside Barrier

Figure 2-10 shows a simulated view of Alternatives 2 or 3A with an MGS outside barrier. Under Alternatives 2 or 3A, the highway has been widened to accommodate an additional lane in each direction and 4-foot outside shoulders. Furthermore, the existing 36-inch median barrier has been replaced with a 42-inch median barrier.

The widened freeway and new barriers give the roadway a more enclosed character. An MGS outside barrier is simulated on Figure 2-10, although the Type 85B design is also being considered. On the right side, the MGS forms a new low barrier but is not tall enough to substantially alter views of the adjacent landscape. However, coupled with the new medium barrier, the outside barrier would have a high resource change. The new median barrier blocks views of the adjacent landscape north (left side) of the highway from many vehicles. In Figure 2-10, all though the tops of shrubs adjacent to the highway can still be seen, but marshland is no longer visible. With this median barrier, views of the marshland north of SR 37, including Cullinan Ranch, can no longer be readily seen in the eastbound direction from most lower profile vehicles. Distant hills are still visible in the background, but portions of the hills are slightly blocked by the median barrier.

Figure 2-10 Simulated Condition KV-3. Alternatives 2 or 3A with MGS Outside Barrier

Alternatives 2 and 3A with the MGS outside barrier option would create a high resource change because views of open water in the Refuge on the northern side of the highway would be blocked from most motorists.

KV-3 Proposed Condition – Alternative 3B with MGS Outside Barrier

Figure 2-11 shows a simulated view of Alternative 3B with an MGS outside barrier. Under Alternative 3B, the highway has been widened to accommodate an additional lane in each direction, and 8-foot outside shoulders. The existing 36-inch median barrier has been replaced with a 42-inch median barrier.

The view and changes are similar to Alternatives 2 and 3A, with the exception that the outside shoulder is 8 feet wide (Alternatives 2 and 3A); under Alternative 3B, it is 4 feet wide. The evaluation is the same as for Alternatives 2 and 3A. Alternative 3B with the MGS outside barrier option would create a high resource change because views of open water in the Refuge on the northern side of the highway would be blocked from most motorists. However, mountains and hills in the distance can still be seen, so scenic views would not be completely impaired.

Figure 2-11 Simulated Condition KV-3. Alternative 3B with Type 85B Outside Barrier

Key View 4 – Looking at Project Corridor From Wildlife Viewing Area

Figure 2-12 presents the existing view from a wildlife viewing area accessible on the westbound side of the project corridor. It features views of the Sonoma Creek Bridge and surrounding marshlands, with Sears Point in the background. A series of lattice steel electric transmission towers is also visible.

No simulation was created for this viewpoint because project-related changes to Sonoma Creek Bridge would be so minor that they would not alter the character or quality of the view from this viewpoint. For Alternative 1, Approximately 4 to 5 feet of widening on the westbound side is proposed. This widening would not create a notable change from the current view. Additionally, under Alternative 1, the existing median barrier would be replaced with a barrier that is 4 inches shorter. This change in median barrier height is not considered noticeable.

Figure 2-12 Existing Condition KV-4

Alternative 3B would result in a bridge widened by approximately 20 feet on the westbound side. This is more extensive widening than Alternative 1; from the perspective at KV-4, the impact would be low to moderate because widening would occur on the other side and the median and lanes would be shifted to align with the widened structure.

For Alternatives 2 and 3A, no changes would be made to the bridge width or outside barriers. No new signage or lighting is proposed. Under Alternatives 2 and 3A, the median barrier would be replaced with one that is 6 inches taller. Neither change in median barrier height would be very noticeable from this point because the visual mass or shape of the bridge would not be altered.

Key View 5 – Looking Eastbound Down Project Corridor Toward Tolay Creek Bridge

Figure 2-13 presents a view from KV-5 looking eastbound toward Tolay Creek Bridge near the western terminus of the project corridor. The Tolay Creek Bridge is not very visible and is only marked by a section of concrete outside the barrier, beyond the railroad tracks. Just ahead are marshlands associated with Tolay Creek. Behind the bridge are the hills of Sears Point. This view is of farmland typical of the western end of the project corridor. This particular view has encroaching elements such as rail crossing infrastructure and electric transmission lines.

Figure 2-13 Existing Condition KV-5

KV-5 Proposed Condition – Alternative 1

In Figure 2-13, Alternative 1 is simulated with a Type 85B outside barrier; it is the taller barrier option under consideration. However, the MGS design is also being considered. Under Alternative 1, the highway has been widened to two lanes in each direction. New median barrier and outside barriers have been added to the roadway. In the distance, a proposed toll gantry is visible.

The addition of an extra lane in each direction adds additional structures to this relatively rural highway. KV-5 is near the western terminus of the project corridor,

which slopes gradually up to Sears Point (Figure 2-14). KV-5 shows the highway gently sloping downhill. From this vantage point, the new median and outside barriers do not block views of the surrounding landscape. The new toll gantry is visible but not an entirely new element in the view because its open lattice design and gray color help blend into the horizon line, and is similar to the railroad gates. The most prominent parts of the gantry are its side poles. However, these are of a form and weight similar to many other utility and railroad poles in the landscape. The gantry does not block views of the surrounding landscape or of distant hills. The project improvements would blend in with the existing railroad structure and signage. Therefore, Alternative 1 would create a moderate resource change from this vantage point.

Figure 2-14 Simulated View KV-5 – Alternative 1

KV-5 Proposed Condition – Alternatives 2 or 3A

In Figure 2-15, Alternatives 2 and 3A are simulated with a Type 85B outside barrier as the taller barrier option under consideration. However, the MGS design is also being considered. Under Alternatives 2 or 3A, the highway has been widened. The westbound side of the highway now has two lanes and the eastbound side three, including an HOV lane. This HOV lane merges into the second lane just past Tolay Creek Bridge. The eastbound lanes would taper into two lanes toward the east. New median and outside barriers have been added to the roadway. In the distance, a new toll gantry is visible.

Alternatives 2 and 3A would create a wider roadway than Alternative 1 from KV-5 because of the eastbound HOV transition lane that merges a few hundred yards ahead of the viewpoint and because of the pullout. However, other aspects of the alternative are similar to those discussed for Alternative 1 and would create a similar level of resource change. Alternatives 2 or 3A would create a moderate resource change from this vantage point.

Figure 2-15 Simulated View KV-5 – Alternatives 2 or 3A

KV-5 Proposed Condition – Alternative 3B

In Figure 2-16, Alternative 3B is simulated with an MGS outside barrier design. It appears the same as Alternative 2 and 3A except that it has an MGS barrier instead of the Type 85 outside barrier. All other conditions are the same. Alternative 3B would create a moderate resource change from this vantage point.

Figure 2-16 Simulated View KV-5 – Alternative 3B

Table 2-15 summarizes the differences between alternatives with respect to the visual impact findings.

Table 2-15 Summary of Key View Narrative Ratings

Key View	Alternative	Outside Barrier Design Option	Viewer Response	Resource Change	Visual Impact
1	1	MGS	Moderate-High	Moderate-High	Moderate-High
	2/3A	Either	Moderate-High	Moderate-High	Moderate-High
	3B	MGS	Moderate-High	Moderate-High	Moderate-High
2	1	MGS	Moderate-High	Very Low	Moderate-Low to Moderate
	2/3A	Either	Moderate-High	Very Low	Moderate-Low to Moderate
	3B	MGS	Moderate-High	Very Low	Moderate-Low to Moderate
3	1	MGS	High	Moderate-Low	Moderate
	2/3A	MGS	High	High	High
		Type 85B	High	High	High
	3B	MGS	High	High	High
4	1/2/3A1/ 2/3A	N/A*	Moderate	Very Low	Low
	3B	N/A*	Moderate	Very Low	Moderate
5	1	Either	Moderate	Moderate	Moderate
	2/3A	Either	Moderate	Moderate	Moderate
	3B	MGS	Moderate	Moderate	Moderate

2.2.12.4 Avoidance, Minimization, and/or Mitigation Measures

The following measure would be implemented to limit impacts from light pollution for all proposed build alternatives:

- **VIS-01: Limit Light Pollution.** For permanent impacts, lighting on new ramps, at intersections, in advance of tolling gantries, and at CHP enforcement areas would be designed to limit light pollution and have minimum impact on the surrounding environment. All light fixtures would have light-emitting diodes configured at the minimum necessary number of bulbs, optimal mounting height, mast-arm length, and angle to restrict light to the roadways. Where applicable, shields on the fixtures to prevent light trespass to adjacent properties would be considered during the detailed design phase.

2.2.13 Cultural Resources

2.2.13.1 Regulatory Setting

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, and water conveyance systems); 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 NHPA 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 CFR 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among FHWA, the ACHP, the California SHPO, and Caltrans 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 Caltrans. FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 USC 327).

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. California 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, 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 Caltrans 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 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 between Caltrans 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.

2.2.13.2 Affected Environment

The following section is based on information from the *Archeological Survey Report* (AECOM 2021c); *the Extended Phase I Report* (AECOM 2021d); and the *Historic Property Survey Report* (AECOM 2021e) for the proposed project. These reports were completed in April 2021.

The Area of Potential Effects (APE) defined for the Cultural Resources study encompasses all areas in the physical footprint of improvements proposed for Alternatives 1, 2, 3A, and 3B. The project's APE encompasses nearly the entirety of Caltrans right-of-way and extends from approximately Lakeville Highway to the west, the Sacramento Street Overcrossing in Vallejo to the east, and approximately 0.2 mile north on SR 121 in Sonoma County. A project staging area is proposed on the northern side of SR 37, east of SR 121, in a portion of APN 068-190- 017. A project staging area is proposed on the northern side of SR 37, east of SR 121, in a portion of APN 068-190- 017. The APE was developed to assess the project's potential effects on cultural resources.

Records and Archival Review

A cultural resources records search was conducted by AECOM Senior Archeologist, Karin Beck, at the Northwest Information Center of the California Historical Resources Information System, Sonoma State University, on October 15, 2019. Site records and previous studies were accessed for the APE and a 0.5-mile radius of the APE. The records search identified one prehistoric archaeological site and four historic-era resources mapped in or adjacent to the APE. The background search also found that almost the entire APE is mapped as moderately sensitive for submerged archaeology; however, small portions of the APE are mapped as high or highest sensitivity for submerged archaeology.

Field Survey and Subsurface Testing Results

On October 5 and October 6, 2020, AECOM conducted geoarchaeological testing to determine whether archaeological deposits were associated with one previously recorded archaeological site and whether any unrecorded archeological sites were contained in the APE. A drill rig was used to excavate a series of exploratory bores. A total of six Geoprobe bores were excavated. No artifacts, features, or culturally sensitive soils were identified in any of the bores. Additionally, no previously unrecorded archaeological sites were identified.

Native American Consultation

The NAHC was contacted in October 2019 to request a search of the Sacred Lands File for sacred lands or other cultural properties of significance to Native Americans in or near the APE. The NAHC replied via email on October 25, 2019, stating that a search of the file had been completed and was negative for cultural resources. The NAHC also provided a list of Native American individuals who may have information related to cultural resources in the APE, and/or concerns about the project. On November 1, 2019, Caltrans requested AECOM to send letters describing the proposed project to the Native American individuals specified by the NAHC and requested any information or concerns regarding the APE. No responses were received to these letters.

AECOM followed up with individuals via phone on December 23, 2019. A call was received from the United Auburn Indian Community (UAIC), Anna Starkey. She was provided via email with the project map, the NAHC response listing the UAIC as a potential interested party, and AECOM's letter of notification. On December 30, Ms. Starkey responded that the APE was outside the Tribe's boundary, and that the Tribe did not have information on potentially sensitive cultural areas and would not be requesting consultation for the project.

An email was received from Federated Indians Graton Rancheria (FIGR) Tribal Historic Preservation Officer, Buffy McQuillen, on January 2, 2020. Ms. McQuillen stated that the Tribe was concerned that the project could impact cultural resources and requested consultation and the opportunity to comment on the project as it develops. Caltrans would consult with FIGR moving forward.

Historic Architectural and Archaeological Resources

The background search identified one prehistoric archaeological site, designated as Nelson Mound, and four historic-era resources mapped in or adjacent to the APE. Historic-era resources in the APE include:

- The Mare Island Naval Shipyard is a California Historic Landmark and National Historic Landmark District. It was established as a NRHP property in 1975. Its boundaries increased in 1996. The 1996 expanded boundaries of the historic district terminate at G Street, approximately 0.70 mile south of the SR 37 APE.

- A small portion (0.12 acre) of the Tubbs Island levee is in the APE. The Tubbs Island Levee does not meet the criteria for listing in the NRHP or the CRHR, nor does it retain historic integrity.

- An unrecorded segment of the Northwestern Pacific Railroad transects the APE near the western end of the APE at Sears Point. It does not appear to be eligible for listing in the NRHP or CRHR as a historic district.

- This pile of historical artifacts was first recorded by Nels Nelson in 1907 and designated as Nelson Mound. It was described as a "shellheap…cut by the railroad" with a few feet of material still intact on a knoll west of the track. In 2005, two historic-era artifacts—a ceramic plate fragment with a partial makers mark, and a yellowware fragment—were observed on the side of the knoll, halfway down to the railroad tracks. However, no definitive evidence suggested that any portion of the prehistoric components of this site as originally recorded by Nelson remained. During AECOM's filed investigations, no archaeological deposits related to the site or a previously unrecorded archaeological resource were identified in either of the bores.

2.2.13.3 Environmental Consequences

Most project construction would occur in Caltrans' right-of-way, which consists of areas that are paved or have had previous ground disturbances. Ground-disturbing activities during construction of the project could affect unknown buried cultural resources in areas adjacent to SR 37. The background research and literature review conducted for this project identified one previously recorded prehistoric archaeological site, designated as Nelson Mound. During the field survey and subsurface testing, no artifacts, features, or culturally sensitive soils were identified in any of the bores. Therefore, it is not expected that archeological resources would be encountered during construction activities. Furthermore, project features included in Table 1-4 would be implemented during construction activities to avoid any effects to cultural resources if discovered.

These include: PF-CULT-01: Discovery of Human Remains. If human remains are discovered, California H&SC Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. If the remains are thought by the coroner to be Native

American, the coroner would notify the NAHC, who, pursuant to PRC Section 5097.98, would then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains would contact [insert the project contact the District Environmental Branch 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. PF-CULT-02. Discovery of Archeological Materials. 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.

No historic properties would be affected and the project would have no adverse effect with standard measures. Section 4(f) of the Department of Transportation Act of 1966 provides protection for historic properties. There are no historic properties present within the APE; therefore, there are no Section 4(f) historic sites affected by the proposed project. Therefore, there would be no impact to cultural resources.

2.2.13.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required. The following project features would be implemented as described Table 1-4 in Section 1.5:

- PF-CULT-01. Discovery of Human Remains; and
- PF-CULT-02. Discovery of Archeological Materials.

2.3 Physical Environment

2.3.1 Hydrology and Floodplain

2.3.1.1 Regulatory Setting

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. FHWA requirements for compliance are outlined in 23 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 1 percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.3.1.2 Affected Environment

The following discussion is based on the SR 37 *Draft Water Quality Assessment Report* (WRECO 2021) and Location Hydraulic Study Report (WRECO 2021).

The project is adjacent to San Pablo Bay, which connects to San Francisco Bay. The project crosses over three water bodies: Tolay Creek, Sonoma Creek, and the Napa River, all of which drain into San Pablo Bay. The Napa Slough is a surrounding water body near the project location, north of SR 37, that is not a receiving water (i.e., it does not receive treated or untreated wastewaters [e.g., stormwater runoff] or effluent [e.g., liquid waste or sewage]). The Napa Slough drains south of the NSMWA and is part of the Refuge. The slough then flows into Sonoma Creek before draining south toward San Pablo Bay. East of the project limits, Dutchman Slough joins the Napa River and drains to San Pablo Bay near Mare Island.

Floodplains

As determined from FEMA Flood Insurance Rate Maps (FIRMs), most of the project is in SFHA Zone AE. This zone represents the base floodplain with areas subject to flooding by the 100-year flood event, where base floodplain elevations are provided. In these areas, the 100-year flood elevation is approximately 10 to 11 feet North American Vertical Datum of 1988 (NAVD88).

Portions of the project area adjacent to Tubbs Island (between Tolay Creek and Sonoma Creek) are in SFHA Zone VE, which are coastal areas subject to coastal high-hazard flooding and to inundation by the 1-percent-annual-chance flood event, with additional hazards due to storm-induced velocity wave action. In these project areas, the 100-year flood elevation is approximately 11 to 12 feet NAVD88.

A small portion of the project area just east of the Tolay Creek crossing is in a shaded Zone X area. Zone X represents areas of moderate flood hazard, usually depicted on FIRMs as between the limits of the base and 500-year floods.

Natural and Beneficial Floodplain Values

The surrounding floodplain in the area surrounding the project consists of waterways, open space, and agricultural lands, as defined in the General Land Use Plans of Napa, Solano, and Sonoma Counties (County of Napa 2008; County of Solano 2008; Sonoma County 2020).

Incompatible Floodplain Development

The project would follow the existing SR 37 roadway within the project limits and would not create new access to developed or undeveloped land in the flood zone. Therefore, the project would not support incompatible floodplain development.

2.3.1.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not affect the floodplains within the project limits. None of the existing floodplain values in or adjacent to the project would be altered under the No Build Alternative.

Build Alternative

Under all Build Alternatives, the project would not change the overall land use in the watershed basin and would not add substantial amounts of impervious area to the watershed. Although the Build Alternatives would require different amounts of permanent fill to widen the highway, most improvements in the project would re-work existing impervious areas. The proposed fill placed in the floodplain is relatively minor in the context of the greater floodplain area and is not anticipated to impede flood waters, affect bay level floodplains, or substantially reduce the area available to convey floodwaters.

23 CFR 650.105 defines a significant floodplain encroachment of a highway as: (1) a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route; (2) a significant risk; or (3) a significant adverse impact on natural and beneficial floodplain values. During a 100-year flood event, flood waters could cause the lowest elevations of SR 37 to periodically close, which could affect travel, emergency vehicle, and evacuation access. However, the project would not cause any changes to these existing flood events or the frequency of their occurrence. The following routes provide practicable detours around the project area in the case of traffic interruptions from potential flooding conditions:

- For westbound traffic: SR 29 south to I-80, west to Richmond Parkway to I-580, west to Richmond Bridge to U.S. 101

- For eastbound traffic: U.S. 101 to I-580 east to Richmond Bridge to Richmond Parkway or I-80

There is the potential for temporary closures, but not a significant potential for long-term interruption or termination of SR 37, because these events would not occur often. Closures would require drivers to temporarily use the alternative routes identified.

Potential short-term adverse effects to the natural and beneficial floodplain values during the construction of the new bridge may include the following: (1) the loss of vegetation during construction activity; and (2) temporary disturbance of wildlife and aquatic habitat. Construction would not create a hazard to life during the service life of the highway, nor would it result in adverse effects to natural and beneficial flood-plain values. Biological compensation described in Section 2.4 would be provided as appropriate where natural and beneficial floodplain values are potentially impacted within the project area.

None of the existing floodplain values in or adjacent to the project would be altered under the any of the Build scenarios, and the project would not create a significant risk to property. Therefore, there would be a minimal effect.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

The amount of new impervious surface area added would not have an impact to the flows within the project's limits. Therefore, no floodplain avoidance or minimization measures are proposed, and no mitigation measures are required for this project under the Build Alternatives.

2.3.2 Water Quality and Stormwater Runoff

2.3.2.1 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 United States (U.S.) from any point source 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 stormwater from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- 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. RWQCBs administer this permitting program in California. Section 402(p) requires permits for discharges of stormwater 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 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 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 the 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 CFR Part 230), and whether the permit approval is in the public 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. 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 effluent 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 the 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 in 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 the 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 water body 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 nonpoint 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, nonpoint, and natural) for a given watershed.

SWRCB and RWQCBs

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

NPDES Program

MS4s

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of stormwater 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 stormwater, that is designed or used for collecting or conveying stormwater." The SWRCB has identified Caltrans 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 5 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) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015), has three basic requirements:

1. The Department must comply with the requirements of the Construction General Permit (see below).

2. The Department must implement a year-round program in all parts of the state to effectively control stormwater and nonstormwater discharges.

3. The Department stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities in Caltrans for implementing stormwater 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 Caltrans uses to reduce pollutants in stormwater and nonstormwater 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 stormwater 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), regulates stormwater discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this 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 stormwater 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 Caltrans' SWMP and Standard Specifications, a WPCP is necessary for projects with a DSA of less than 1 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 Certification, which certifies that the project would be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, depending 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.

2.3.2.2 Affected Environment

The following discussion is based on the SR 37 *Draft Water Quality Assessment Report* (WRECO 2021).

Surface Water Resources

The project lies along San Pablo Bay, which is connected to San Francisco Bay. The project limits are within the San Pablo hydrologic unit, in three unidentified hydrologic subareas (HSA) of the Petaluma, San Pablo, and Napa Rivers (HSAs 206.30, 206.40, and 206.50). The overall drainage pattern of the area is from the north to south, with portions of the project area in watersheds that drain to the Petaluma River hydrologic area, to the Sonoma Creek hydrologic area, and to the Napa River hydrologic area.

Receiving Waters

The project's receiving waters are Tolay Creek, Sonoma Creek, Napa River, and San Pablo Bay. The creeks flow north to south and drain into San Pablo Bay (Figure 2-17, on the second page following).

Tolay Creek

Tolay Creek is one of the surface waters to cross the project; the creek crosses SR 37 at PM SON 4.04, near Sears Point, California, and drains into San Pablo Bay. Tolay Creek is a natural meandering channel with rock slope protection near the Tolay Creek Bridge. Water surface elevations in Tolay Creek are controlled by San Pablo Bay well upstream of SR 37.

Sonoma Creek

Sonoma Creek crosses the project at PM SOL R0.01. The creek lies between Sonoma and Solano Counties. Sonoma Creek is one of three principal streams draining the subbasin, Sonoma Valley, to the mouth of San Pablo Bay. The creek is less than 1 mile wide and composed of unconfined gravel sand, silts, clays, and peat, according to the FEMA Flood Insurance Study (FEMA 2017). The channel is described in the Sonoma Creek Bridge Inspection Report as a broad, flat tidal channel with Bay Mud that flows north to south. Water surface elevations in Sonoma Creek are controlled by San Pablo Bay well upstream of SR 37.

Napa River

The eastern project limits end prior to the Napa River crossing, adjacent to the Mare Island interchange. The Napa River basin drains north to south and is joined by various tributaries. The river ends in broad tidal sloughs approximately 9 miles north of San Pablo Bay, as described in the FEMA Flood Insurance Study (FEMA 2016).

San Pablo Bay

San Pablo Bay is a receiving water body of the SR 37 corridor. All creek crossings and surrounding water bodies in the project vicinity drain into San Pablo Bay. San Pablo Bay is north of San Francisco Bay.

The surface waterways in or near the project areas provide beneficial uses defined in the RWQCB Water Quality Control Plan (Basin Plan) for San Francisco Bay, including industrial service supply; commercial and sports fishing; shellfish harvesting; cold freshwater habitat; estuarine habitat; fish migration; preservation of rare and endangered species; fish spawning; warm freshwater habitat; wildlife habitat; water contact recreation; noncontact water recreation; and navigation (SFRWQCB 2019). Table 2-16 provides a summary of these existing beneficial uses at each receiving water.

Groundwater Resources

The project area is in the San Francisco Bay Hydrologic Region and spans three groundwater basins: the Petaluma Valley Basin (2-001), and the Napa-Sonoma Valley-Sonoma Valley subbasin (2- 002.02) and Napa-Sonoma Valley-Napa-Sonoma Lowlands subbasin (2-002.03) of the Napa- Sonoma Valley Basin. Table 2-17 summarizes the groundwater basins and subbasins present within the project limits, as well as the existing and potential beneficial uses listed in the Basin Plan (SFRWQCB 2019).

CWA 303(d) List

The 2014/2016 Integrated Report, CWA Section 303(d) List/305(b) Report, (SWRCB 2017) lists the water quality impairments and TMDL for Sonoma Creek, Napa River, and San Pablo Bay. Tolay Creek is not listed as having any water quality impairments or TMDLs. Although Caltrans is a named stakeholder for the sediment TMDL at Napa River and Sonoma Creek, the tidal portions are not listed for sediment. Table 2-18 summarizes all TMDLs for each receiving water in the project area.

Source: AECOM, 2021; Solano County, 2019; Sonoma County, 2018; ESRI, 2016 (roads); Graymer, 2002

N

0 1 Mile

SR 37 Traffic Congestion Relief Project
Sonoma, Napa & Solano Counties, CA

- Biological Study Area
- Water

Geology

- af - Artificial fill (Historic)
- alf - Artificial levee fill (Historic)
- Qhf - Alluvial fan deposits (Holocene)
- Qhbm - Bay mud deposits (Holocene)
- Qpf - Alluvial fan deposits (late Pleistocene)
- Tpc - Petaluma Formation - Claystone (early Pliocene and late Miocene)
- Tps - Petaluma Formation - Mudrock, sandstone, and conglomerate (early Pliocene and late Miocene)
- KJfm? - Franciscan Complex – Metagraywacke (Early Cretaceous and Late Jurassic)
- sp – Serpentinite (Jurassic)

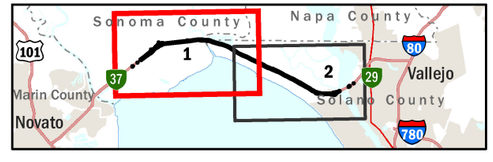
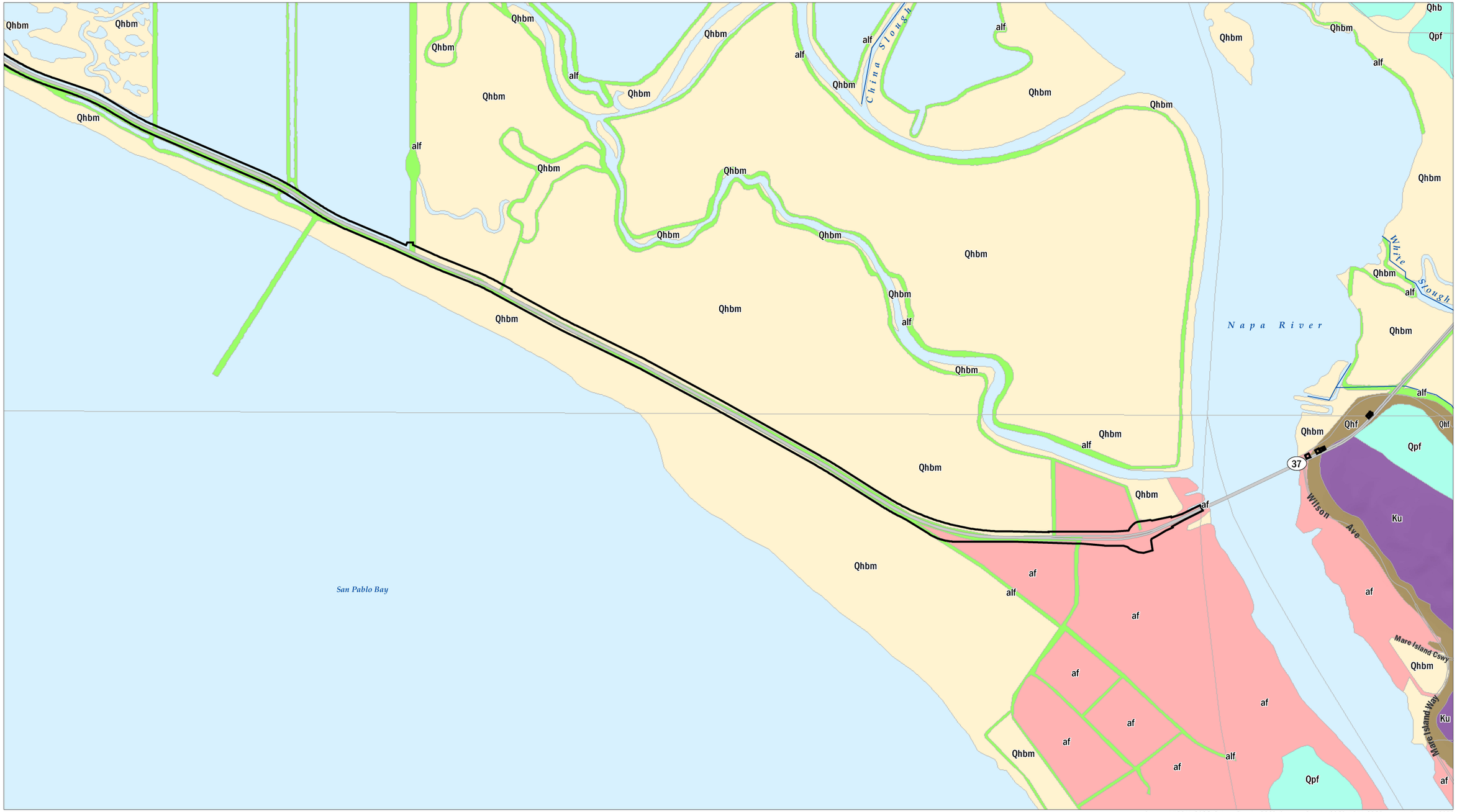


FIGURE 2-17: SITE GEOLOGY



Source: AECOM, 2021; Solano County, 2019; Sonoma County, 2018; ESRI, 2016 (roads); Graymer, 2002

N

0 1 Mile

SR 37 Traffic Congestion Relief Project
Sonoma, Napa & Solano Counties, CA

- Biological Study Area
- Water

Geology

- af - Artificial fill (Historic)
- alf - Artificial levee fill (Historic)
- Qhf - Alluvial fan deposits (Holocene)
- Qhbm - Bay mud deposits (Holocene)
- Qpf - Alluvial fan deposits (late Pleistocene)
- Ku - Sandstone and shale (Late Cretaceous)

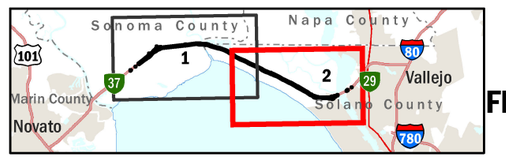


FIGURE 2-17: SITE GEOLOGY

Table 2-16 Beneficial Uses for the Receiving Waters in the Project Area

Beneficial Use	Tolay Creek	Sonoma Creek	Napa River	San Pablo Bay, Mare Island Strait and Tidal Waters
Industrial service supply	NO	NO	NO	YES
Commercial and sports fishing	NO	YES	YES	YES
Shellfish harvesting	NO	NO	NO	YES
Cold freshwater habitat	NO	YES	NO	NO
Estuarine habitat	NO	NO	YES	YES
Fish migration	NO	YES	YES	YES
Preservation of rare and endangered species	YES	YES	YES	YES
Fish spawning	NO	YES	YES	YES
Warm freshwater habitat	YES	YES	NO	NO
Wildlife habitat	YES	YES	YES	YES
Water contact recreation	YES	YES	YES	YES
Noncontact water recreation	NO	YES	YES	YES
Navigation	NO	NO	YES	YES

Source: Summarized from SFRWQCB 2019

Table 2-17 Existing and Potential Beneficial Uses in Groundwater Basins

Use Status	Beneficial Use	Petaluma Valley Groundwater Basin; Petaluma Valley Subbasin	Napa Valley-Sonoma Basin; Sonoma Valley Subbasin	Napa Valley-Sonoma Basin; Napa-Sonoma Lowlands Subbasin
Existing	Municipal and Domestic Water Supply	Present	Present	Present
Existing	Industrial process water supply	Not Present	Present	Present
Existing	Industrial service water supply	Not Present	Present	Present
Existing	Agricultural water supply	Present	Present	Present
Potential	Industrial process water supply	Present	—	—
Potential	Industrial service water supply	Present	—	—

Source: SFRWQCB 2019

Table 2-18 CWA 303(d) List Impairments and TMDLs at Water Bodies in the Project Area

Receiving Water	Pollutant Category	Pollutant	Source
Sonoma Creek, Tidal	Nutrients	Nutrients	Agriculture Onsite Wastewater Systems (Septic Tanks)
Sonoma Creek, Tidal	Pathogens	Pathogens	Onsite Wastewater Systems (Septic Tanks)
Napa River, Mare Island Strait	Toxic Organics	PCBs	Unknown
Napa River, Mare Island Strait	Pesticides	Chlordane	Unknown
Napa River, Mare Island Strait	Pesticides	Dieldrin	Unknown
Napa River, Mare Island Strait	Pesticides	Total dichlorodiphenyltrichloroethane (DDT) (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD)	Unknown
Napa River, Mare Island Strait	Metals	Mercury	Unknown
Napa River, Tidal	Nutrients	Nutrients	Agriculture Onsite Wastewater Systems (Septic Tanks)
Napa River, Tidal	Pathogens	Pathogens	Agriculture Onsite Wastewater Systems (Septic Tanks)
San Pablo Bay	Pesticides	Dieldrin	Unknown
San Pablo Bay	Toxic Organics	PCBs (dioxin-like)	Unknown
San Pablo Bay	Toxic Organics	Dioxin compounds (including 2,3,7,8-TCDD)	Unknown
San Pablo Bay	Pesticides	Chlordane	Unknown
San Pablo Bay	Toxic Organics	Furan Compounds	Unknown
San Pablo Bay	Other Cause	Invasive Species	Unknown
San Pablo Bay	Toxic Organics	PCBs	Unknown
San Pablo Bay	Metals	Selenium	Unknown
San Pablo Bay	Pesticides	DDT	Unknown
San Pablo Bay	Metals	Mercury	Unknown

Source: SWRCB 2017

MS4s

The project is entirely within Caltrans' right-of-way and, therefore, is not subject to other MS4 permits. However, the Memorandum of Caltrans Post-Construction Stormwater and Hydromodification Standards (SFRWQCB 2008) states that Caltrans District 4 projects that are subject to 401 Water Quality Certification are required to design biofiltration devices and implement hydromodification assessment in accordance with the local city/county stormwater design criteria.

The project is adjacent to MS4 districts, including Sonoma, Solano, and Napa Counties, and all alternatives considered would comply with county stormwater design criteria.

2.3.2.3 Environmental Consequences

No Build Alternative

No short-term water quality impacts would occur with the No Build Alternative because it would not require any construction activities.

Build Alternatives

Under all Build Alternatives, there would be no anticipated impacts to the following water quality parameters:

- Current, circulation or drainage patterns
- Flood control functions
- Hydromodification (erosion and accretion patterns)
- Recreational or commercial fisheries
- Water related recreation

These parameters are not discussed further in this document.

Impacts to biological parameters, including wetlands, wildlife, special aquatic sites, and other biological characteristics of the aquatic environment, are discussed later in this document under Section 2.4, Biological Environment.

Disturbed Soil Areas and Impervious Areas

Temporary water quality impacts can result from sediment discharge from DSAs and construction near water resources or drainage facilities that discharge to water bodies.

Permanent impacts to water quality result from the addition of impervious area; this additional impervious area prevents runoff from naturally dispersing and infiltrating into the ground, resulting in increased concentrated flow. The project would not remove

any impervious areas under any alternative. Each alternative would rework and replace existing impervious surfaces; these impacts would be a maintenance of existing roadway and would not be considered a new permanent impact. Preliminary estimates for DSAs and added impervious area for each Build Alternatives are listed in Table 2-19. The DSA and impervious area values would be further refined during the design phase once the limits of grading, construction staging locations, and other areas of improvement have been further developed.

Implementation of water quality project features is required for all construction projects, in compliance with federal, state, and local requirements, and would minimize the potential for water quality impacts from runoff entering storm drains.

Table 2-19 Disturbed Soil and Added Impervious Areas by Build Alternative

Alternative	DSA (acres)	Added Impervious Area (acres)	Replaced Impervious Area (acres)	New Impervious Surfaces: Added + Replaced (acres)
1	44.86	12.17	11.57	23.74
2	44.86	19.75	20.42	40.17
3A	79.88	21.19	21.11	42.41
3B	87.42	28.25	21.27	49.52

The Caltrans MS4 permits (SWRCB 2013) require this project to implement treatment BMPs in the Caltrans' right-of-way because the proposed improvements result in the creation or replacement of more than 1 acre of impervious area. Because SR 37 is bound on most sides by wetlands and waters, with a high groundwater table in much of the Caltrans' right-of-way, the potential locations for onsite treatment are limited. There would be a treatment deficit of approximately 25 to 40 acres, which must be treated off site.

Suspended Particulates (Turbidity)

The additional impervious areas described above would increase the amount of runoff and sediment-laden flow directly discharging to receiving water bodies. Within the limits of the project, existing drainage facilities are expected to be modified or removed, capped, or abandoned, and new drainage features installed to convey runoff. Rock slope protection would be placed at locations where necessary, and existing culverts would be maintained or extended where shoulder widening is necessary. These drainage design features would limit increases in suspended sediment in storm drain systems and receiving water bodies.

This project would be required to implement treatment BMPs because the proposed improvements result in the creation or replacement of more than 1 acre of impervious

area. The treatment BMP strategy for areas within Caltrans' right-of-way would comply with the Caltrans MS4 Permit and the *Memorandum of California Department of Transportation Post-Construction Stormwater and Hydromodification Standards* (SFRWQCB 2008).

Permanent erosion control measures would be applied to all exposed areas once grading or soil disturbance work is completed, as a permanent measure to achieve final slope stabilization. These measures may include hydraulically applying a combination of hydroseed with native seed mix, hydro-mulch, straw, tackifier, and compost to promote vegetation establishment, and installing fiber rolls to prevent sheet flow from concentrating and causing gullies. For steeper slopes or areas that may be difficult for vegetation to establish, measures such as netting, blankets, or slope paving could be considered to provide stabilization. The project would consider bioretention swales and biofiltration strips within Caltrans' right-of way.

Given that the project area has shallow groundwater, other conventional treatment measures that capture and treat stormwater runoff may need to be considered; these devices could include basins or media filters. Due to the presence of environmentally sensitive areas and limited available treatment area for BMPs, the project may need to consider offsite stormwater treatment options. WQ-01: Offsite Stormwater Treatment would be implemented as an AMM since a deficit of approximately 25 to 40 acres requires off-site treatment. On-site BMPs may address some portion of this deficit in the final design, and preliminary discussions with the City of Vallejo and the City of Sonoma have identified potential off-site mitigation projects. The final drainage design, selection of treatment BMP types and locations, and determination of impervious area treated would be refined during the final design. Permanent project features would include measures to address permanent erosion control, drainage facilities, and onsite treatment.

Oil Grease and Chemical Pollutants

Heavy metals associated with vehicle tire and break wear, oil and grease, and exhaust emissions are the primary pollutants associated with transportation corridors. Generally, roadway stormwater runoff has the following pollutants: total suspended solids, nitrate nitrogen, total Kjeldahl nitrogen, phosphorus, ortho-phosphate, copper, lead, and zinc. The pollutants are dispersed from tree leaves that have been exposed through aerial deposition, combustion products from fossil fuels, and the wearing of brake pads and tires. The project is expected to ease congestion leading to less deposition of particulates from exhaust and heavy metals and braking. the project would implement treatment BMPs to remove pollutants, including trash, mercury, and PCBs, from stormwater runoff before discharging into the receiving waters. The project would maintain the goal of treating new impervious services as summarized in

Table 2-19, and with implementation of BMPs is anticipated to completely avoid impacts to water quality from oil, grease, and chemical pollutants.

Trash

According to Caltrans District 4's Regional Board 2 Trash General Map Application (2020), the project contains a low trash density area highway and medium trash density ramps. Therefore, the project would be required to implement trash capture devices at the ramps. Additional trash device locations may be required due to the Section 401 Water Quality Certification criteria. The project environmental study is inclusive of trash capture locations; however, the final design, selection of trash capture devices and locations, and determination of impervious area treated would be refined during the selected alternative's final design.

Aquifer Recharge and Groundwater

There are no aquifers within the project limits, and the majority of impervious fills would be placed in areas underlain by saturated soils. Permanent impacts to groundwater are not anticipated for all build alternatives.

Temporary Impacts to Water Quality

Temporary impacts to water quality during construction are anticipated for all build alternatives. Soil disturbing activities, stockpiling, and unclean equipment during construction may cause sediment to runoff and enter storm drainage facilities or directly discharge into the receiving water bodies, increasing the turbidity, decreasing the clarity, and potentially impacting the beneficial uses of the receiving water bodies. Fueling or maintenance of construction vehicles may pose risk of accidental spills or releases of fuels, oils, or other potentially toxic materials that would threaten water quality if contaminants enter storm drains, open channels, or receiving water bodies.

Because the project involves more than 1 acre of DSA under all considered alternatives, it must comply with the SWRCB's Construction General Permit (NPDES No. CAS000002, SWRCB Order No. 2009-0009-DWQ as amended). The permit regulates stormwater discharges from construction sites that result in a DSA of 1 acre or greater, and/or are smaller sites that are part of a larger common plan of development. For all projects subject to the Construction General Permit, the applicant is required to hire a qualified SWPPP developer to develop and implement an effective SWPPP.

The project would require dewatering for excavation activities for work in Tolay Creek. Dewatering activities would comply with *Caltrans' Field Guide to Construction Site Dewatering* (2014a) and *Caltrans' Standard Specifications* (2020), and, if needed, a separate dewatering permit would be obtained prior to the start of construction.

Dewatering may also be required along the sideslopes through the length of the corridor.

Temporary construction BMPs would be developed in the contractor's SWPPP that would meet Caltrans standard stormwater treatment requirements, MS4 requirements, and any additional requirements provided by regulatory agencies in issued permits to the project or as provided by the RWQCB. Temporary BMP measures during construction would address soil stabilization, sediment control, tracking control, non-stormwater management (e.g., dewatering operations), waste management, pollutions control, and job site management.

Operations and Maintenance Impacts

The added impervious area summarized in Table 2-19 would have a minimal increase to stormwater pollution effects. Runoff from project activities would be treated with stormwater treatment facilities and diverted into modified drainage systems to maximize infiltration. Pollution and runoff sources are not expected to change. These impacts would be reduced through the implementation of stormwater treatment BMPs.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of the following project features as described Table 1-4 in Section 1.5 are anticipated to avoid and minimize impacts to water quality from temporary dewatering and stormwater runoff:

- PF-WQ-01. Water Quality Best Management Practices;
- PF-WQ-02. Temporary Dewatering Activities;
- PF-WQ-03. Groundwater Treatment;
- PF-WQ-04. Inclement Weather Restriction

The following AMM would be implemented:

- **WQ-01: Offsite Stormwater Treatment.** Offsite treatment to address the site's limited onsite stormwater treatment capacity would be coordinated with appropriate mitigation project proponents and the RWQCB during the project's final design phase. The project would be programmed to meet the requirements of Caltrans' current MS4 and NPDES permits, (SWRCB 2013) following the guidelines and procedures outlined in Caltrans' latest Statewide SWMP to address stormwater runoff; and in accordance with *Memorandum of Caltrans Post-Construction Stormwater and Hydromodification Standards* (SFRWQCB 2008).

2.3.3 Geology/Soils/Seismic/Topography

2.3.3.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Department's Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification would determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria at https://dot.ca.gov/programs/engineering-services.

2.3.3.2 Affected Environment

The information in this section is summarized from the *Preliminary Geotechnical Design Report* (AECOM 2021j).

Site Geology

The project limits consist of artificial fill (af), artificial levee fill (alf), early Pliocene and late Miocene Petaluma Formation (Tps), late Pleistocene alluvial fan deposits (Qpf), Holocene alluvial fan deposits (Qhf), and Holocene Bay Mud deposits (Qhbm) deposits. Figure 2-17 shows site geology along the project limits.

The bedrock northwest of the site near Sears Point is mapped as Cretaceous to Jurassic-age mélange and metagraywacke of the Franciscan Complex; serpentinite of the Great Valley Complex, overlain by late Miocene-age Donall Ranch mafic and rhyolitic volcanics; and early Pliocene and late Miocene-age claystone and mudstone of the Petaluma Formation, interfingered with Pliocene and late Miocene-age andesite and rhyolite flows of the Sonoma Volcanics. The bedrock north of the site near Highway 12 consists of the early Pleistocene and Pliocene volcanoclastic conglomerate of the Huichica Formation, which overlies Eocene-age Domengine sandstone. To the southeast on Mare Island and Vallejo, Late Cretaceous-age undivided sandstone, siltstone, and shale of the Great Valley Complex underlie the surficial soils (Graymer et al. 2002).

Seismic Hazards

The project limits are in a seismically active area and lie between known active and potentially active geologic faults. Hayward/Rodgers Creek, Green Valley/Concord, San Andreas, and Calaveras faults are all within 62 miles of the project limits. These faults are expected to represent the highest potential hazard to the project area due to their proximity and the probability that they would experience one or more earthquakes over a magnitude of 6.7 in the next 30 years. Other potentially active faults that could affect the project alignment include the West Napa fault, less than 4 miles to the east; Franklin fault, adjacent to the project alignment to the east; Tolay fault, adjacent to the project alignment to the west; and Lakeview fault, approximately 1 mile from the project alignment to the west. Additionally, recent studies suggest that the Rodgers Creek fault connects with the Hayward fault under San Pablo Bay, in which case the fault would pass through the western end of the project limits, near SR 121. However, the project alignment is not in the Alquist-Priolo Earthquake Fault Zone.

Other Geological Hazards

Expansive Soils. Near-surface fills are expected to have low expansion potential; the underlying native Bay Mud has a Plasticity Index of 50 or more and is expected to exhibit high shrink/swell behavior.

Landslides and Erosion. The project alignment is relatively flat, exclusive of the bridge approach embankment. The likelihood of landslides affecting the proposed project is considered low. Fills used to construct existing bridge approach embankments are generally described as clayey and would have low erosion potential, as would the underlying Bay Mud.

Subsidence. The ground surface along the project alignment is subject to long-term settlement due to consolidation of underlying soft Bay Mud. Areas directly below the roadway embankment have undergone long-term settlement.

Liquefaction. The project alignment is underlain by soils with low to moderate liquefaction susceptibility. The near-surface clayey sands that overlie the Bay Mud are present as thin and discontinuous lenses and would have low potential for liquefaction. The sands encountered below the Bay Mud are very dense and also not potentially liquefiable.

Lateral Spreading. The potential for lateral spreading is expected to be low, based on conditions revealed in historic borings.

2.3.3.3 Environmental Consequences

The following discussion pertains to both the Build and No Build Alternatives because seismic and geologic hazards on the project alignment are present under the existing condition and would be present under both the No Build and Build Alternatives. The proposed improvements would not increase existing seismic or other geological hazards.

Seismic Hazards

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, the distance to the earthquake epicenter, the 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 that additional geotechnical subsurface and design investigations 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. Furthermore, Caltrans would implement standard measures described in Table 1-4. Therefore, the project would have no impact.

Other Geological Hazards

During construction of the project, earthmoving activities such as grading, excavation, and trenching have the potential to result in soil erosion and loss of topsoil, especially in areas where there are steeper slopes. Because the project alignment is relatively flat and a large portion of the project lies on artificial fill (clayey soils with a low erosion potential), there would be lower potential for substantial soil erosion to occur. The embankment of the bridge has greater slopes but is on soils with a low erosion potential. Nonetheless, BMPs would be implemented to reduce erosional impacts during construction activities, such as stabilization by paving, rock slope protection, and erosion control.

The project alignment is relatively flat, exclusive of the bridge approach embankment. The likelihood that landslides would affect the proposed project is considered low. The potential for lateral spreading is expected to be low, based on conditions revealed in historic borings. The project alignment is underlain by soils with low to moderate liquefaction susceptibility. Subsidence and settlement have the potential to occur, but the project would be designed to account for this settlement. Additionally, Caltrans'

design and construction guidelines incorporate engineering standards that address expansive soils. Caltrans would implement project features described in Table 1-4, and no project related effects on geological resources are anticipated.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required. The following project features would be implemented as described Table 1-4 in Section 1.5:

- PF-GEO-01. Geotech Investigations;
- PF-GEO-02. Seismic Standards; and
- PF-GEO-03. Embankment Design.

2.3.4 Paleontology

2.3.4.1 Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils. Several federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

16 USC 431-433 (the “Antiquities Act”) prohibits appropriating, excavating, injuring, or destroying any object of antiquity situated on federal land without the permission of the Secretary of the Department of Government having jurisdiction over the land. Fossils are considered “objects of antiquity” by the Bureau of Land Management, the National Park Service, the Forest Service, and other federal agencies.

16 USC 470aaa (the Paleontological Resources Preservation Act) prohibits the excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.

23 USC 1.9(a) requires that the use of Federal-aid funds must be in conformity with all federal and state laws.

Under California law, paleontological resources are protected by CEQA.

2.3.4.2 Affected Environment

The information in this section is summarized from the *Paleontological Identification Report/Paleontological Evaluation Report* (PIR/PER) prepared in October 2020 (AECOM 2020a). The area studied for paleontological resources was the project limits,

which encompasses nearly the entirety of Caltrans right-of-way and extends from approximately Lakeville Highway to the west, the Sacramento Street Overcrossing in Vallejo to the east, and approximately 0.2 mile north on SR 121 in Sonoma County. A project staging area is proposed on the northern side of SR 37, east of SR 121, in a portion of APN 068-190- 017. This PIR/PER presents the results of identification efforts, consistent with Volume 1, Chapter 8, of the Caltrans Standard Environmental Reference (Caltrans 2020b), and guidelines from the Society of Vertebrate Paleontology (1996, 2010).

Figure 2-17 in Section 2.3.2.2 show site geology along the project limits, which contain artificial fill (af), artificial levee fill (alf), early Pliocene and late Miocene Petaluma Formation (Tps), late Pleistocene alluvial fan deposits (Qpf), Holocene alluvial fan deposits (Qhf) and Holocene Bay Mud deposits (Qhbm).

A paleontological locality search of the University of California Museum of Paleontology (UCMP) records indicated that no paleontological resources have previously been recorded within the project limits. However, the UCMP listed three fossil localities in the vicinity of the project limits. These fossil localities include:

- UCMP locality V5231 is approximately 2 miles north of the western end of the PDA and was reported to contain a single horse tooth of likely Pliocene age from the Petaluma Formation.
- UCMP locality IP8549 (formerly United Sates Geological Survey [USGS] Cenozoic locality M4234) is about 0.5 mile west of Sears Point. The UCMP online database did not have any specimens currently cataloged at this location but noted it contained invertebrates. It was noted that mollusks were accepted from this locality from the USGS in Menlo Park.
- UCMP locality D7294 was the site of the excavation of a canal for the Leslie Salt work ponds along SR 37 west of Vallejo in 1975. The UCMP online database contained 29 listings of Pleistocene age invertebrate (mollusks) from this location.

A field study was conducted on May 23, 2020. Limitations related to parking and locked gates prevented surveyors from surveying the surrounding lands. No fossils were observed during the field study.

2.3.4.3 Environmental Consequences

Impacts to paleontological resources are rated in accordance with the sensitivity ratings of the geological rock units impacted. Below is a summary of these ratings for the geological rock units that occur within the project limits:

High Potential Sensitivity (Direct impacts to high sensitivity rock units)

- Late Pleistocene Alluvial fan deposits (Qpf)
- Early Pliocene and late Miocene Petaluma Formation (Tps)

No Potential (Direct impacts to zero sensitivity rock units)

- Historic artificial fill (af)
- Historic artificial levee fill (alf)
- Holocene Alluvial fan deposits (Qhf)
- Holocene Bay Mud deposits (Qhbm)

No paleontological resources have previously been recorded within the project limits and none were found during the field study. However, there is a potential to encounter unknown paleontological resources during project construction, given that there were three fossil localities in the vicinity of the project limits and there are areas within the project limits that have high potential sensitivity.

Direct impacts to paleontological resources could occur during project construction involving earthmoving activities such as grading, excavation, and boring. Direct impacts are the destruction of the fossil remains and the geographic, geologic, phylogenetic, and taphonomic information associated with them. There is greater potential for direct impacts to occur in the two high geological rock units, Qpf and Tps. These areas are at the western portion of the project limits. It is highly unlikely that any impacts would occur in geological rock units af, alf, Qhf, and Qhbm, which make most of the project limits. PF-PAL-01 and PF-PAL-02 described in Table 1-4 in Section 1.5 would be implemented to avoid any impacts to paleontological resources during construction activities. Therefore, no effect is expected to occur.

2.3.4.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required. The following project features would be implemented as described Table 1-4 in Section 1.5:

- PF-PAL-01. Discovery of Paleontological Resources
- PF-PAL-02. During design phase, Caltrans would determine whether a Paleontology Mitigation Plan is needed.

2.3.5 Hazardous Waste/Materials

2.3.5.1 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 of 1992
- CWA
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, 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 California State Health and Safety Code (available at https://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=HSC&tocTitle=+Health+and+Safety+Code+-+HSC) 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.

2.3.5.2 Affected Environment

Information in this section is summarized from the Initial Site Assessment (ISA) prepared on July 30, 2020, for this project (AECOM 2020b). The purpose of the ISA was to identify potential hazardous materials in soil, groundwater, and/or building materials that could be disturbed during project construction and maintenance activities. The assessment included a review of environmental records and investigations of hazardous materials release sites within 0.5 mile of the project limits.

Hazardous Materials Sites and/or Investigations

A review of the Department of Toxic Substances Control's (DTSC's) EnviroStor database included four state response/voluntary cleanup sites within 0.5 mile of the project limits. All four of the cases were completed, and no further action is required. A review of the SWRCB's GeoTracker database contained 15 potential contaminated sites and/or investigated sites within a 0.5-mile radius of the project limits. All but three of the sites were at Mare Island, Skaggs Island, and Tubbs Island, which were previously used for military activities. Thirteen of these sites are listed as closed cases, which indicates that hazardous materials have been addressed to the satisfaction of the applicable regulatory authority, and a formal closure decision document has been issued.

Of the 19 sites listed in the regulatory databases, one was determined to have a greater potential to impact the proposed project: the former Tubbs Island Gunnery Range on the Coast of San Pablo Bay in Petaluma. The former gunnery range historical use may present hazards in soil within the project limits, as described below in the Recognized Environmental Conditions section.

Recognized Environmental Conditions

A Recognized Environmental Condition (REC) is defined by the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

Two RECs have been identified within 0.5 mile of the project area and are described below.

Tubbs Island Gunnery Range, Southern Tip of Sonoma County, on the Coast of San Pablo Bay, Petaluma (Approximately 0.5 Mile South of Project Limits, 358 Acres of Land)

The former Tubbs Island Gunnery Range site is a flat reclaimed tidal marshland situated approximately 1 foot below sea level. According to USACE, the United States Army built

the Tubbs Island Gunnery Range to support gunnery training at Hamilton Army Airfield in 1941. The range was used as a combination of an air-to-ground strafing range using machine guns, cannons, practice bombs, and sub-caliber aircraft rockets. It is suspected that around 1945 chemical spray missions were conducted. The range was closed in October 1945. The land is currently used for farming wheat, oat, and hay (Parsons 2008). No evidence of hazardous, toxic, or radiological waste was found during site inspections by USACE personnel. In March 2013, the DTSC concurred with a finding of no Department of Defense actions indicated for formerly used defense sites in California (DTSC 2013). Although no evidence of hazardous materials were discovered in the 2012 investigation, this investigation was only conducted on the southern part of the island and not within the project limits. Based on the proximity, historical site use, and a suggestion by a DTSC case worker noted in a work plan, the presence of UXO, mustard gas, or other military hazards cannot be ruled out.

Sears Point Farming Company, 5400 Sears Point Road, Sonoma, California (north of SR 37 at Sonoma County mile marker 5.4); Paradise Vineyards, 3000 Sears Point Road, Sonoma, California (south of SR 37)

Paradise Vineyards and Sears Point Farming Company have used lands adjacent to the project area for farming. Agricultural chemicals are presumed to have been used for farming processes and may be found in soils within the project limits.

Historical Recognized Environmental Conditions

Historical Recognized Environmental Conditions (HRECs) are a past release of any hazardous substances or petroleum products that occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority, or meets unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.

Three HRECs have been identified within 0.5 mile of the project area and are described below.

Bondurant School of Driving, 29355 Arnold Drive, Sonoma (Approximately 0.4 mile North of Project Limits)

Potential contaminants of concern included waste oil, motor oil, hydraulic oil, and lubricating media in soil. Because it is not known whether contaminants have been removed from this site, it is not known whether contamination remains in the ground and has migrated to the project area. Although detailed information is missing regarding the scope, it can be assumed that closure was granted to this site by the RWQCB based on an in-depth investigation.

Riverview Estates Wilson & Lighthouse, Vallejo (Approximately 0.5 Mile East of Project Limits)

On September 18, 2000, a heating oil/Bunker C underground storage tank (UST) was removed. Soil impacts were reported, and soil was excavated and transported off site for disposal. The case was granted closure by the RWQCB in April of 2002 (Solano County Environmental Health Services 2002).

Skaggs Island Naval Security Group Activity (NSGA), 8 Miles Northwest of Vallejo (Approximately 0.8 Mile North of Project Limits)

NSGA Skaggs Island operated between 1942 and 1993. Its primary mission was operating and maintaining a system of high frequency, direction-finding antenna; providing communication computer support; and training the US Navy and other parts of the Department of Defense. Skaggs Island comprises 4,390 acres, and the US Navy owned approximately 3,310 of those acres. A series of environmental studies and remedial efforts have been previously conducted at Skaggs Island. Investigations have included the former pistol range, landfills, gas stations, antenna areas, and sludge-drying beds. In October of 2010, the RWQCB issued case closure on all associated cases with this former military facility. In February 2011 the DTSC concurred with a No Further Action determination, with no restrictions and approval the land for use as a wetland. The land was transferred to the Refuge.

Controlled Recognized Environmental Conditions

Controlled Recognized Environmental Conditions (CRECs) are RECs resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

Four CRECs have been identified within 0.5 mile of the project limits and are described below.

Mare Island Naval Shipyard (Vallejo) – Mare Island Naval Shipyard USTs 993-1, 993-2 and 993-3, Mare Island Naval Shipyard, Vallejo, Solano County, California (Approximately 0.5 South of Project Limits)

In June 1999, the RWQCB issued a case closure letter for three 12,000-gallon gasoline USTs formerly located at the facility address above, with the stipulation that if a change in land use is proposed, the owner must notify the RWQCB.

Mare Island Naval Shipyard (Vallejo) – Mare Island Naval Shipyard UST 993-4, Mare Island Naval Shipyard, Vallejo, Solano County, California (Approximately 0.5 Mile South of Project Limits at Solano County Mile Marker 7.2)

Building 993 was the former base fuel station between Walnut Avenue and Railroad Avenue. Four USTs were historically used at Building 993. USTs 993-1, 993-2, and

993-3 received closure status on January 9, 1999. UST 993-4 was a 500-gallon waste oil tank removed on July 18, 1990. The Navy removed contaminated soil outside of the existing building and conducted soil and groundwater investigation inside and around the building. In 2016, the RWQCB issued no further action, but the site has residual petroleum hydrocarbons at concentrations greater than the unrestricted standards for groundwater. The site can only be used for commercial/industrial use.

Mare Island Naval Shipyard (Vallejo) – Mare Island Naval Shipyard 577S, Railroad Ave, Mare Island, CA 94592, Solano County, Military UST Site (Approximately 0.5 Mile South of Project Limits at Solano County Mile Marker 7.3)

A 2,000-gallon waste oil tank and a 500-gallon heating oil tank were removed from this facility sometime in the late 1990s. A site investigation was completed in 1997. Based on the current land use, the RWQCB issued two no further action letters for the locations of the former two tanks. If there is a change in land use, the owner must notify the RWQCB.

Mare Island Lennar Investigation Area A3, 900 Walnut Avenue, Quarters D, Vallejo, CA 94592, (Approximately 0.4 Mile South of Project Limits at Sonoma County Mile Marker 6.9, 50 Acres of Land)

Investigation Area A3 was used as a small arms firing range from approximately 1917 to 1940. Previous investigations in the area have indicated PCBs contamination in soils. Some remediation efforts have been completed in the area. Two land use covenants were executed and recorded with Solano County in 2003 and 2004. A covenant to restrict use of property was executed between Lennar Mare Island, LLC and DTSC in 2003. The covenant restricts the use of Investigation Area A3 to commercial/industrial activities and prohibits the building of residences, hospitals, daycares, or schools for persons under 18 years old. A subsequent covenant to restrict use of property was executed between Qualified Investment Opportunities, Inc. and DTSC in 2004. This covenant prohibits the use of the land for residences, hospitals for humans, public or private schools for person under 18 years old, or daycares for children.

Additional Finding

Although reports indicated that biosolids were being spread and tilled at the time of inspection, proper setbacks were maintained and no violations or areas of concern were observed. Tubbs Island Sludge Disposal at 5400 Sears Point in Sonoma affects or has the potential to affect water quality in the project limits.

Natural Occurring Arsenic

Based on previous studies indicting elevated concentrations of naturally occurring arsenic in the Bay Area, naturally occurring arsenic is anticipated to be present in soils in the project footprint.

Asbestos-Containing Materials

Asbestos-containing material (ACM) is commonly found in many man-made products. In the State Highway System, ACM is commonly found in the shims used under aluminum bridge barrier rails and in asbestos-containing cement pipe, and has been found, on rare occasions, in Portland cement concrete. Therefore, ACM might be present in the project footprint.

Aerially Deposited Lead

Leaded gasoline was used from early 1920s through the 1970s. Because SR 37 has been in operation since the use of lead in gasoline, it is anticipated that aerially deposited lead (ADL) would be observed in soils next to SR 37.

Lead-Containing Paint

Lead and other potentially toxic substances could be present in traffic stripes, pavement markings, and paint used on concrete and steel bridges.

Treated-Wood Waste

The preservatives used to treat the wood can include one or more of the following constituents: arsenic, chromium, copper, pentachlorophenol, or creosote. When the treated wood has reached the end of its service life, it is regarded as treated-wood waste.

2.3.5.3 Environmental Consequences

No Build Alternative

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

Build Alternatives 1, 2, 3A, and 3B

Short-Term Construction Impacts

Project construction activities are expected to involve the temporary transport, use, and disposal of typical construction hazardous materials (e.g., fuels, paints, asphalt, and lubricants). These materials could pose a threat to human health or the environment if not properly managed.

Standardized measures, as required by state and federal regulations, would be implemented during project construction. 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. Workers who handle hazardous materials are required to adhere to OSHA and Cal/OSHA health and safety requirements.

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 stormwater collection systems or waterways. In addition, BMPs would be incorporated, such as performing fueling and maintenance operations of vehicles and equipment at least 50 feet away from watercourses.

ADL from the historical use of leaded gasoline, exists along roadways throughout California. There is the likely presence of soils with elevated concentrations of lead as a result of ADL on the State Highway System right-of-way within the limits of the project alternatives. Soil determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California DTSC. This ADL Agreement allows such soils to be safely reused within the project limits as long as all requirements of the ADL Agreement are met.

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.

Disturbance of Hazardous Materials

Construction of the project could result in the potential disturbance of hazardous materials in the soil and groundwater. If there is contamination in the project area, ground-disturbing activities during construction, such as drilling, excavation, grading, and trenching, could potentially expose construction workers and the public to hazardous conditions. Grading activities could also result in accidental mobilization of contaminants from the soil to groundwater or air. As described in the Affected Environment, there is a potential for natural occurring arsenic, ACM, ADL, and treated-wood waste to be encountered during soil excavation activities.

A review of regulatory databases Geotracker and EnviroStor identified sites that were investigated for chemical releases. Seventeen of the 19 sites have been addressed to the satisfaction of the applicable regulatory authority. Therefore, the majority of these sites are unlikely to result in impacts during construction and maintenance activities for the proposed project. However, hazardous material at the former Tubbs Island Gunnery Range has the potential to have impacts.

To avoid impacts related to disturbing possible contamination in the soil and groundwater, Caltrans would implement project features, as described in Table 1-4. With the incorporation of these measures, impacts from hazardous materials are not expected to be substantial.

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 of SR 37 and may require the use of hazardous materials. However, with adherence to federal and state regulations regarding the use of hazardous material there would be no long-term impacts.

2.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required. The following project features would be implemented as described Table 1-4 in Section 1.5:

- PF-HAZ-01. Site Investigations;
- PF-HAZ-02. Health and Safety Management Plan;
- PF-HAZ-03. Soil and Groundwater Management Plan; and
- PF-HAZ-04. Hazardous Structure Material Surveys.

2.3.6 Air Quality

2.3.6.1 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 is its companion state law. These laws, and related regulations by the U.S. EPA and 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 (NO_2), ozone (O_3), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), lead, and sulfur dioxide (SO_2). In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide, 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 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 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. U.S. EPA regulations at 40 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 CO, NO_2, O_3, particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California), SO_2. California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead; however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of 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), FHWA, and Federal Transit Administration 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 scope that has not

changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and U.S. 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 in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.3.6.2 Affected Environment

The analysis summarized in this section is from the *Air Quality Report* prepared in September 2021 (AECOM 2021g). The project area is in the San Francisco Bay Area Air Basin (SFBAAB). Air quality regulation in SFBAAB is administered by the Bay Area Air Quality Management District (BAAQMD).

Climate, Meteorology, and Topography

Weather and terrain can influence air quality. Certain weather parameters are highly correlated to air quality, including temperature, the amount of sunlight, and the type of winds at the surface and above the surface. Winds can transport O3 and O3 precursors (i.e., reactive organic gases [ROG]) from one region to another, contributing to air quality problems downwind of source regions. Furthermore, mountains can act as a barrier that prevents O3 from dispersing.

The Gnoss Field climatological station near Novato, California, is maintained by the National Weather Service and is the nearest station at approximately 6 miles from the western end of the project site. The climate of the project area is generally Mediterranean in character, with cool winters (average 24-hour temperature of 50 degrees Fahrenheit in January) and warm, dry summers (average 24-hour temperature of 64 degrees Fahrenheit in July). SR 37 traverses one of the Bay Area's largest remaining tidal marsh environments, known as the San Pablo Bay lands. As a result, San Francisco Bay and the coastal mountains have a significant influence on the climate of the project area. Annual average rainfall is 23.6 inches (at Gnoss Field), mainly falling during the winter months.

Regional Air Quality Conformity

State and federal government set standards for criteria air pollutants, including O_3; CO; PM_{10}; $PM_{2.5}$; NO_2; SO_2; and lead. The BAAQMD monitors these pollutants of concern and air quality conditions throughout the SFBAAB. Under current designations of the Air Basin, the area is in nonattainment for California Ambient Air Quality Standards (CAAQS) for O_3, PM_{10}, and $PM_{2.5}$, and NAAQS nonattainment for O_3 and $PM_{2.5}$. The area is in unclassifiable/attainment for PM_{10}, NO_2 and SO_2. Table 2-20 shows the state and federal attainment status for each pollutant.

Table 2-20 State and Federal Attainment Status

Pollutant	Averaging Time	State Standard[1]	Federal Standard[2]	State Project Attainment Status	Federal Project Area Attainment Status
O_3 [3]	1 hour	0.09 ppm (parts per million)	N/A	N	N/A
O_3	8 hours	0.070 ppm	0.070 ppm (4th highest in 3 years)	N	N (Marginal)
CO [4]	1 hour	20 ppm	35 ppm	A	A
CO	8 hours	9.0 ppm	9 ppm	A	A
PM_{10} [5]	24 hours	50 micrograms per cubic meter ($\mu g/m^3$)	150 $\mu g/m^3$ (expected number of days above standard < or equal to 1)	N	U
PM_{10}	Annual	20 $\mu g/m^3$	N/A	N	N/A
$PM_{2.5}$ [6]	24 hours	N/A	35 $\mu g/m^3$ [6]	N/A	N
$PM_{2.5}$	Annual	12 $\mu g/m^3$	12.0 $\mu g/m^3$	N	U, A
NO_2	1 hour	0.18 ppm	0.100 ppm [7]	A	U
NO_2	Annual	0.030 ppm	0.053 ppm	N/A	A
SO_2 [8]	1 hour	0.25 ppm	0.075 ppm (99th percentile over 3 years)	A	N/A
SO_2	3 hours	N/A	0.5 ppm [9]	N/A	N/A
SO_2	24 hours	0.04 ppm	0.14 ppm (for certain areas)	A	U
SO_2	Annual	N/A	0.030 ppm (for certain areas)	N/A	U
Pb [10]	Monthly	1.5 $\mu g/m^3$	N/A	N/A	A
Pb	Calendar Quarter	N/A	1.5 $\mu g/m^3$ (for certain areas)	N/A	A
Pb	Rolling 3-month average	N/A	0.15 $\mu g/m^3$ [11]	N/A	N/A
Sulfates	24 hours	25 $\mu g/m^3$	N/A	A	N/A
H_2S	1 hour	0.03 ppm	N/A	U	N/A
Visibility Reducing Particles (VRP) [12]	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70 %	N/A	U	N/A

Pollutant	Averaging Time	State Standard[1]	Federal Standard[2]	State Project Attainment Status	Federal Project Area Attainment Status
Vinyl Chloride [12]	24 hours	0.01 ppm	N/A	N/A	N/A

Source: CARB Air Quality Standards chart accessed June 29, 2021. Greenhouse gases (GHGs) do not have concentration standards; conformity requirements do not apply to GHGs and therefore are not listed.

Notes:

A = Attainment
N = Nonattainment
U = Unclassified
N/A = Not Applicable or No Information

1 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 Federal standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3 On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm. Transportation conformity applies in newly designated nonattainment areas for the 2015 national 8-hour O_3 primary and secondary standards on and after August 4th, 2019 (see Transportation Conformity Guidance for 2015 O_3 NAAQS Nonattainment Areas).

4 Transportation conformity requirements for CO no longer apply after June 1, 2018 for the following California CO Maintenance Areas (see U.S. EPA CO Maintenance Letter).

5 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

6 The 65 $\mu g/m^3$ $PM_{2.5}$ (24-hr.) NAAQS was not revoked when the 35 $\mu g/m^3$ NAAQS was promulgated in 2006. The 15 $\mu g/m^3$ annual $PM_{2.5}$ standard was not revoked when the 12 $\mu g/m^3$ standard was promulgated in 2012. Therefore, for areas designated nonattainment or nonattainment/maintenance for the 1997 and or 2006 $PM_{2.5}$ NAAQS, conformity requirements still apply until the NAAQS are fully revoked.

7 Final 1-hour NO_2 NAAQS published in the Federal Register on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

8 On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

9 Secondary standard, the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

10 The CARB has identified vinyl chloride and the PM fraction of diesel exhaust as toxic air contaminants. Diesel exhaust PM is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the CARB and U.S. EPA have identified lead and various organic compounds that are precursors to O_3 and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

11 Lead NAAQS are not considered in Transportation Conformity analysis.

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

Local Ambient Air Quality

The BAAQMD operates a network of air monitoring sites throughout the SFBAAB. Air quality monitoring stations collect air quality data and monitor these pollutants of concern. The closest operating air quality monitoring site to the project is the Vallejo-Tuolumne Street site, approximately 2.8 miles southeast of SR 37 at 304 Tuolumne Street in Vallejo. However, the Station does not collect PM_{10} data. Therefore, the next closest stations that do collect PM_{10} data were selected. These stations are the North College Parking Station in Napa, California and the 534 4th Street Station in San Rafael. Table 2-21 shows the air quality concentrations recorded at these three stations for the past 5 years, or 2015 through 2019.

Table 2-21 Air Quality Concentrations for 2015-2019

Pollutant	Standard	2015	2016	2017	2018	2019
O_3 Measured in Vallejo						
Maximum 1-hour concentration		0.085 ppm	0.097 ppm	0.105 ppm	0.070 ppm	0.092 ppm
Number of days exceeded: CAAQS	0.09 ppm	0	1	1	0	0
Maximum 8-hour concentration		0.071 ppm	0.072 ppm	0.089 ppm	0.056 ppm	0.076 ppm
Number of days exceeded: CAAQS	0.070 ppm	1	1	2	0	1
NAAQS	0.070 ppm	0	1	2	0	1
CO Measured in Vallejo						
Maximum 1-hour concentration		2.4 ppm	2.1 ppm	3.1 ppm	2.8 ppm	2.0 ppm
Number of days exceeded: CAAQS	20 ppm	0	0	0	0	0
NAAQS	35 ppm	0	0	0	0	0
Maximum 8-hour concentration		1.9 ppm	1.8 ppm	2.1 ppm	2.4 ppm	1.5 ppm
Number of days exceeded: CAAQS	9.0 ppm	0	0	0	0	0
NAAQS	9 ppm	0	0	0	0	0
PM_{10} Measured in San Rafael or Napa						
Maximum 24-hour concentration		51.5 µg/m^3	33.0 µg/m^3	94.0 µg/m^3	26 µg/m^3	39 µg/m^3
Number of days exceeded: CAAQS	50 µg/m^3	6.1	0	2	0	0
NAAQS	150 µg/m^3	0	0	0	0	0
Maximum annual concentration		18.7 µg/m^3	16.6 µg/m^3	17.7 µg/m^3	19.0 µg/m^3	14.2 µg/m^3

Pollutant	Standard	2015	2016	2017	2018	2019
Standard exceeded: CAAQS	20 µg/m^3	No	No	No	No	No
$PM_{2.5}$ Measured in Vallejo						
Maximum 24-hour concentration		41.8 µg/m^3	23.0 µg/m^3	101.9 µg/m^3	197.2 µg/m^3	30.6 µg/m^3
Number of days exceeded: NAAQS	35 µg/m^3	3.0	0	9.3	16.4	0
Maximum annual concentration		9.6 µg/m^3	7.3 µg/m^3	11.6 µg/m^3	13.3 µg/m^3	8.8 µg/m^3
Standard exceeded: CAAQS	12 µg/m^3	No	No	No	Yes	No
NAAQS	12.0 µg/m^3	No	No	No	Yes	No
NO_2 Measured in Vallejo						
Maximum 1-hour concentration		0.044 ppm	0.043 ppm	0.049 ppm	0.051 ppm	0.053 ppm
Number of days exceeded: CAAQS	0.18 ppm	0	0	0	0	0
NAAQS	0.10 ppm	0	0	0	0	0
Maximum annual concentration		0.008 ppm	0.007 ppm	0.008 ppm	0.008 ppm	0.0071 ppm
Number of days exceeded: CAAQS	0.030 ppm	N/A	N/A	N/A	N/A	N/A
NAAQS	0.053 ppm	N/A	N/A	N/A	N/A	N/A

Source: CARB 2020d; BAAQMD 2020

Mobile Source Air Toxics

In addition to the criteria air pollutants for which standards exist, U.S. EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources. Mobile source air toxics (MSATs) are a subset of the air toxics defined by the Clean Air Act. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuel or as secondary combustion products. Metal air toxics also result from engine wear or impurities in oil or gasoline.

Vehicles that travel along SR 37 are the largest source of MSATs affecting sensitive receptors in the project area. Vehicle traffic in the area is generated by commuters during the weekdays and by recreational travelers on the weekends.

2.3.6.3 Environmental Consequences

No Build Alternative

The No Build Alternative would not change air quality in the project area.

Build Alternatives 1, 2, 3A, and 3B

Regional Air Quality Conformity

The project would remove an existing bottleneck between Mare Island and SR 121 by constructing either one HOV lane or two HOV/multipurpose lanes. Each of the Build Alternatives would improve operations, reduce congestion, and increase vehicle occupancy within the travel corridor. However, because the project would add lanes, this would be considered a capacity-increasing project. Therefore, the Build Alternatives would not be considered exempt from either regional or project-level conformity requirements. Consequently, the project requires a separate listing in the RTP (i.e., Plan Bay Area 2050), MTC's financially constrained 2021 TIP, and their associated regional emissions analyses to demonstrate regional conformity.

The proposed project is listed in the Plan Bay Area 2050 financially constrained RTP, which was found to conform by MTC on October 21, 2021. The FHWA and FTA will make a regional conformity determination finding on the RTP. The project is also included in the MTC financially constrained 2021 TIP (TIP ID VAR210004). MTC's 2021 TIP will require a conformity determination, that is planned to be issued by the FHWA and FTA. The design concept and scope of the proposed project is consistent with the project description in the 2050 RTP, 2021 TIP, and the open to traffic assumptions of the MTC regional emissions analysis.

Project-Level Conformity

The project is in an attainment/maintenance area for CO and a nonattainment area for $PM_{2.5}$. Thus, a project-level conformity analysis applies to the project for both pollutants under 40 CFR 93.109. However, current guidance from FHWA and Caltrans states that a project-level CO hot-spot analysis is no longer required to demonstrate project-level conformity. Similarly, hot-spot analysis for $PM_{2.5}$ is only required for projects found to meet the definition of a POAQC by the MPO's Air Quality Conformity Task Force (AQCTF). The project was found not to be a POAQC by MTC's AQCTF at their May 27, 2021, consultation meeting. Therefore, a $PM_{2.5}$ hot-spot analysis is not required.

40 CFR 93.123(c)(5) states: "CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is affected by construction-related activities shall be considered separately, using established 'Guideline' methods. Temporary increases

are defined as those which occur only during the construction phase and last 5 years or less at any individual site." Because construction of the project is expected to last less than 5 years, an evaluation of CO, PM_{10}, and $PM_{2.5}$ emissions during project construction is not required for project-level conformity determination.

Short-Term Construction Impacts

There would be temporary and short-term air quality impacts during construction activities, such as excavation, grading, hauling, cut and fill, paving, and removing and replacing pavement of existing roadways. These activities are expected to release particulate emissions such as airborne dust into the atmosphere. Emissions from construction equipment and on-road vehicles powered by gasoline and diesel engines are also anticipated and would include CO, oxides of nitrogen (NO_X), ROG, directly emitted PM_{10} and $PM_{2.5}$, and toxic air contaminants such as diesel exhaust PM. These activities would also result in temporary VMT increases associated with worker and construction vehicle trips. Construction activities in the area may temporarily increase traffic congestion and slow the speed of traffic, resulting in a temporary increase in on-road emissions. These emissions would be limited to the immediate area impacted by construction-related traffic.

Construction activities would not last for more than 5 years at one general location, so construction-related emissions do not need to be included in the regional and project-level conformity analysis (40 CFR 93.123(c)(5)). Construction emissions were estimated using the latest Sacramento Metropolitan Air Quality Management District's Road Construction Model (RCEM) version 9.0. Table 2-22 shows the construction emissions associated with the project.

Short-term air quality impacts would not be substantial and are expected to be localized around construction activities. AMMs described in Section 2.3.6.4 would be implemented during construction activities and would reduce or eliminate construction-related air quality impacts. Therefore, the impacts would be minimal.

Long-Term Operational Impacts

Daily operational emissions estimates were developed using Caltrans' CT-EMFAC2017 emissions model, which is based on CARB's EMFAC2017 emissions model. Emissions were estimated for the baseline year (2019), opening year (2025), RTP horizon year (2040), and design year (2045) for the No Build and Build Alternatives. Overall, emissions in the future would decrease as older vehicles are replaced by newer vehicles with more stringent emissions and fuel economy standards. Based on the operational period emission data in Table 2-23, all of the Build Alternatives would have emissions similar to those for No-Build conditions for each study year.

Table 2-22 Construction Emissions

Stage/Emissions Rate	Phase/Activity	ROG* (pounds per day [lbs/day])	CO (lbs/day)	NO_x (lbs/day)	Exhaust PM_{10} (lbs/day)	Exhaust $PM_{2.5}$ (lbs/day)	Carbon Dioxide (CO_2) Equivalent (metric tons [MT]/ phase)
Roadway	Grubbing/Land Clearing	2.13	19.12	17.96	0.90	0.71	97.5
	Grading/ Excavation	5.66	51.79	56.45	2.43	2.07	987.8
	Drainage/ Utilities/ Sub-Grade	3.18	36.65	34.21	1.55	1.33	542.7
	Paving	2.30	25.80	20.86	1.06	0.83	173.8
Structures (Flyover Ramp, Overcrossing, etc.)	Grubbing/Land Clearing	0.94	10.25	9.94	0.45	0.38	28.0
	Grading/ Excavation	7.60	63.33	80.29	3.25	2.95	311.5
	Drainage/ Utilities/ Sub-Grade	5.37	46.20	56.09	2.27	2.07	217.1
	Paving	0.94	13.25	9.89	0.51	0.43	27.5
Average Workday Emissions (lbs/day)	(Based on 396 Workdays)	5.70 lbs/ day	52.82 lbs/ day	55.75 lbs/ day	2.42 lbs/ day	2.12 lbs/ day	1,590 MT/ year
Roadway Construction (tons)		0.82 ton	7.79 tons	7.82 tons	0.35 ton	0.30 ton	1,802 MT
Structures Construction (tons)		0.31 ton	2.67 tons	3.22 tons	0.13 ton	0.12 ton	584 MT
Total Construction (tons)		1.13 tons	10.46 tons	11.04 tons	0.48 ton	0.42 ton	2,386 MT

Notes:

*ROG is reactive organic gases, which is a subset of total organic gases.

Source: Illingworth & Rodkin using RCEM version 9.0.0, 2021 and off model application of SAFE Rule adjustment factors.

Table 2-23 Summary of Comparative Emissions Analysis in Pounds Per Day

Scenario/ Analysis Year	CO (pounds/day)	$PM_{2.5}$ (pounds/day)	PM_{10} (pounds/day)	ROG (pounds/day)	NO_x (surrogate for NO_2) (pounds/day)
Baseline (Existing Conditions) 2019	414,585	16,190	64,132	53,053	164,013
No Build Alternative 2025	255,774	14,675	63,596	36,159	88,581
Build Alternatives 1 and 2 2025	255,763	14,675	63,598	36,165	88,568
Build Alternatives 3A and 3B 2025	255,767	14,675	63,600	36,165	88,570
No Build Alternative 2040	202,379	16,459	73,451	25,512	92,381
Build Alternatives 1 and 2 2040	202,319	16,461	73,462	25,509	92,293
Build Alternatives 3A and 3B 2040	202,339	16,462	73,467	25,512	92,308
No Build Alternative 2045	206,653	16,612	73,843	25,251	89,551
Build Alternatives 1 and 2 2045	206,548	16,614	73,855	25,228	89,420
Build Alternatives 3A and 3B 2045	206,555	16,679	74,220	25,231	90,761

Source: Illingworth & Rodkin using CT-EMFAC2017 Version 1.0.2, 2021.

MSATs

The project would not change the traffic mix nor move major roadways closer to sensitive receptors. Sensitive receptors are children, elderly, asthmatics, and others whose are at a heightened risk of negative health outcomes due to exposure to air pollution. Sensitive receptors are typically located near schools, hospitals, nursing homes or residential communities where sensitive receptors typically occur. The amount of MSAT emitted is expected to be proportional to VMT, assuming other variables such as fleet mix remain the same.

CT-EMFAC2017, released in January 2019, was used to estimate the emissions of nine MSAT pollutants: acetaldehyde, benzene, ethylbenzene, 1,3-butadiene, formaldehyde, acrolein, naphthalene, diesel PM, and polycyclic organic matter (POM). VMT were estimated for the baseline year (2019), opening year (2025), horizon year (2040), and design year (2045), and applied to the CT-EMFAC2017 emission factors. Table 2-24 shows the MSAT emissions estimated for the baseline, No Build Alternative, and Build Alternatives for all analysis years.

Table 2-24 Summary of Comparative MSAT Emissions Analysis

Scenario/Analysis Year	1,3-butadiene (lbs/day)	Acetaldehyde (lbs/day)	Acrolein (lbs/day)	Benzene (lbs/day)	Diesel PM (lbs/day)	Ethylbenzene (lbs/day)	Formaldehyde (lbs/day)	Naphthalene (lbs/day)	POM (lbs/day)
Baseline (Existing Conditions) 2020	134.40	705.00	27.05	983.45	2,322.43	741.16	1,605.56	62.90	37.32
No Build Alternative 2025	74.98	173.85	16.52	596.17	460.26	554.28	464.12	45.41	13.57
Build Alternatives 1 and 2 2025	74.97	173.81	16.52	596.19	460.23	554.37	464.03	45.42	13.55
Build Alternatives 3A and 3B 2025	74.97	173.81	16.52	596.20	460.24	554.38	464.04	45.42	13.57
No Build Alternative 2040	57.61	172.40	12.38	437.50	428.92	386.76	428.94	32.77	9.60
Build Alternatives 1 and 2 2040	57.57	172.23	12.37	437.33	428.91	386.73	428.55	32.76	9.50
Build Alternatives 3A and 3B 2040	57.58	172.27	12.37	437.40	429.00	386.79	428.63	32.77	9.50
No Build Alternative 2045	60.08	174.39	12.90	445.12	396.83	387.06	436.55	32.83	9.76
Build Alternatives 1 and 2 2045	60.01	174.09	12.88	444.65	396.89	386.74	435.85	32.80	9.53
Build Alternatives 3A and 3B 2045	60.03	175.00	12.89	444.73	402.41	386.73	437.44	32.79	9.54

Source: Illingworth & Rodkin using CT-EMFAC2017 Version 1.0.2, 2021

Conclusions

- MSAT emissions notably decrease for all Build Alternatives compared to existing conditions, but are relatively similar between No Build and Build Alternatives for each study year and alternative.

- CO emissions notably decrease for all Build Alternatives compared to existing conditions, but are relatively similar between No Build and Build Alternatives for each study year and alternative.

- $PM_{2.5}$ and PM_{10} emissions are slightly lower for all alternatives at the opening year when compared to baseline conditions, but then slightly increase above Baseline as VMT increases in the future. A slight increase in $PM_{2.5}$ and PM_{10} emissions is computed for all Build Alternatives in each of the analysis years when compared to the No Build Alternative. This is due directly to an increase in regional VMT between the Build Alternatives and the No Build Alternative.

- A decrease in ROG emissions is computed for all alternatives when compared to baseline conditions. All of the build alternatives have a slightly higher ROG emissions in the opening year (2025) when compared to the No-Build Alternative. However, by the design year (2045), ROG emissions would be lower than the No-Build Alternative.

- A decrease in NOx emissions is computed for all alternatives when compared to baseline conditions. All of the build alternatives were estimated to have emissions lower than the No-Build for all years, with the exception of Alternatives 3A and 3B in 2045. NO_X emissions are higher than the No-Build Alternative for Alternatives 3A and 3B in 2045.

2.3.6.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required. The following project features would be implemented as described Table 1-4 in Section 1.5:

- PF-AIR-01. Construction Best Practices for Dust; and
- PF-AIR-02. Construction Best Practices for Exhaust.

2.3.6.5 Climate Change

Neither U.S. EPA nor FHWA has issued explicit guidance or methods to conduct project-level GHG analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and EOs on climate change, the issue is addressed in the CEQA chapter of this

document. The CEQA analysis may be used to inform the NEPA determination for the project.

2.3.7 Noise and Vibration

2.3.7.1 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 the NEPA/23 CFR 772 noise analysis; 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 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 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2-25 lists the NAC for use in the NEPA/23 CFR 772 analysis.

Figure 2-18 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

Table 2-25 Noise Abatement Criteria

Activity Category	NAC, Hourly A- Weighted Noise Level, Hourly Equivalent Sound Level ($L_{eq}[h]$)	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, amphitheaters, 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.
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

Notes:
[1] Includes undeveloped lands permitted for this activity group

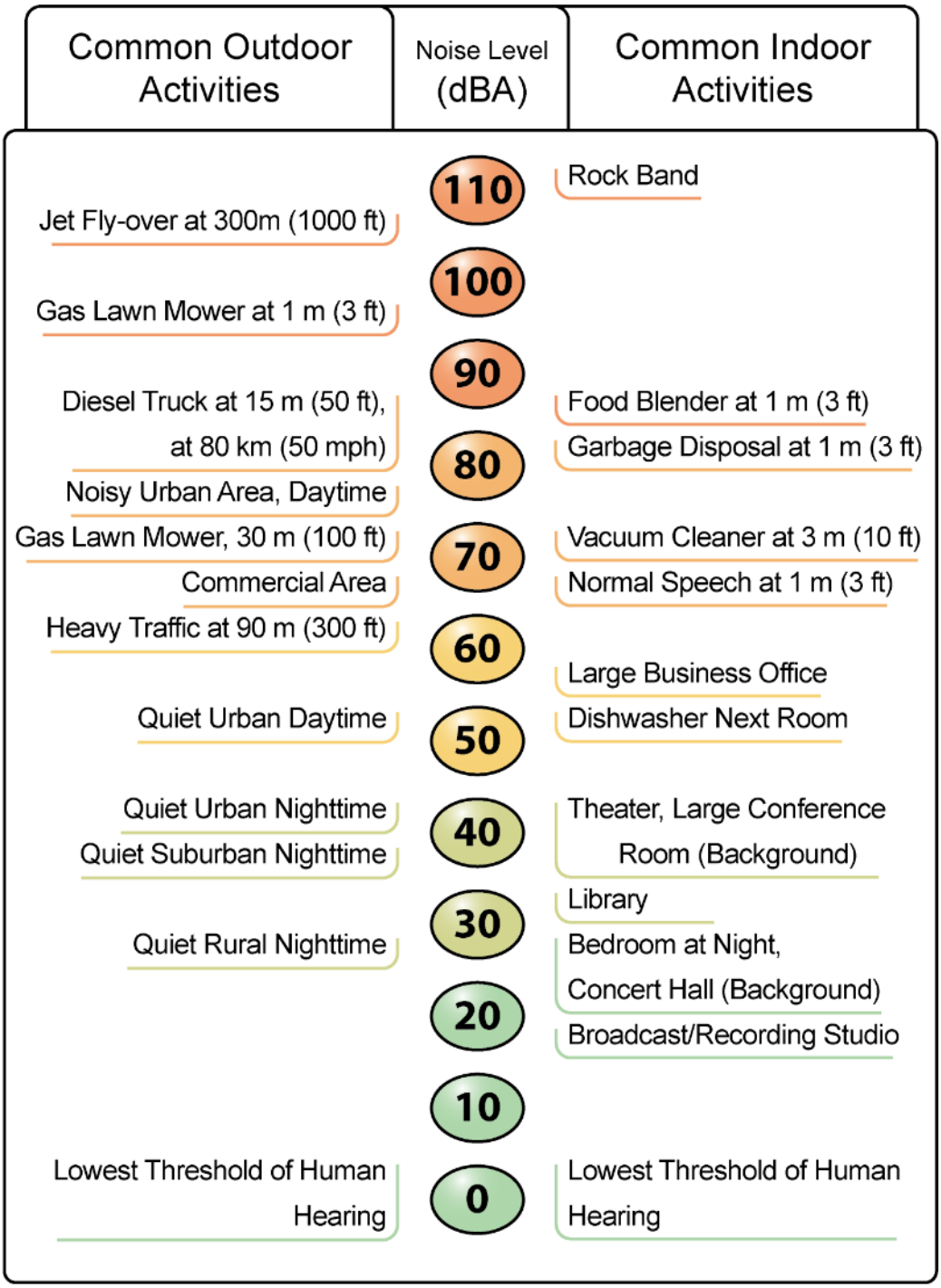


Figure 2-18 Noise Levels of Common Activities

According to the Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, May 2011*, a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more) or when the future noise level with the project approaches or exceeds the NAC. A noise level is considered to approach the NAC if it is within 1 dBA of the NAC.

If it is determined that the project would have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

The Department's Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. Noise abatement must be predicted to reduce noise by at least 5 decibels (dB) at an impacted receptor to be considered feasible from an acoustical perspective. It must also be possible to design and construct the noise abatement measure for it to be considered feasible. Factors that affect the design and constructability of noise abatement include, but are not limited to, safety, barrier height, topography, drainage, access requirements for driveways, presence of local cross streets, underground utilities, other noise sources in the area, and maintenance of the abatement measure. The overall reasonableness of noise abatement is determined by the following three factors: (1) the noise reduction design goal of 7 dB at one or more impacted receptors; (2) the cost of noise abatement; and (3) the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

2.3.7.2 Affected Environment

The analysis summarized in this section is from the Noise Study Report (Illingworth & Rodkin, Inc. 2021) completed for the proposed project. The CEQA baseline for this section is 2019-2020, when the traffic and noise measurements were conducted. The noise study and report were completed in 2021. The NEPA baseline for comparing environmental impacts is the No Build Alternative.

The noise study area encompasses all developed and undeveloped land uses surrounding the project limits, with a focus on noise-sensitive land uses. In general, noise-sensitive land uses include areas where serenity and quiet are of extraordinary significance, such as residential land uses and other community uses such as hospitals, schools, cemeteries, and parks.

The existing noise environment throughout the project limits varies by location, depending on site characteristics such as proximity of receptors to U.S. 101, major

roadways, or other sources of noise in the area; the relative base elevations of roadways and receptors; and the presence of any intervening structures or barriers. Noise receptor locations in the project area were identified through a review of project mapping, aerial photographs, and field reconnaissance. The noise analysis focused on locations with defined outdoor activity areas, including residential backyards, parks, trailheads, and active sport areas. There are no other noise-sensitive noise receptors, such as libraries, churches, hospitals, in the project area. The noise-sensitive land uses in or along the project corridor include Activity Categories B and C.

Noise-sensitive land uses in the project area include single-family and multi-family residences (Activity Category B); active sport areas, day care centers, hospitals, medical facilities, parks, playgrounds, recreation areas, schools, and trails (Activity Category C); day care centers, hospitals, medical facilities, and schools (Activity Category D); and hotels, motels, offices, restaurants, and bars (Category E). These land uses vary in their sensitivity to freeway and road noise and are ranked by activity category in Table 2-25. The noise receptor locations are shown in Figure 2-19.

Noise Study

Long- and short-term noise measurements were made in November 2020. Long-term reference noise measurements were made at three locations in the project vicinity to quantify the diurnal trend in noise levels and to establish the peak traffic noise hour. These reference noise measurements included a site near the Northwestern Pacific Railroad track, just south of SR 37 along Tolay Creek Road (L1); a site just north of SR 37 along Noble Road, at 5400 Sears Point Road (L2); and a site just south of SR 37, at 984 Fortune Street in Vallejo. Nineteen short-term noise measurements (S1 through S19) were made in the project vicinity in concurrent time intervals with the data collected at the long-term reference measurement sites. This method facilitates a direct comparison between both the short-term and long-term noise measurements; it also allows for the identification of the loudest-hour noise levels at land uses in the project vicinity where long-term noise measurements were not made, but where both short-term and long-term measurements are exposed to the same primary noise source. The results of the short and long-term measurements are listed in Table 2-26 and Table 2-27.

Traffic counts and speed observations were made along SR 37 during the short-term noise measurements, for model calibration purposes. Traffic volumes were classified into five vehicle types: (1) light-duty automobiles and trucks, (2) medium-duty trucks (typically trucks with two axles and more than four wheels), (3) heavy-duty trucks (typically trucks with more than two axles), (4) buses, and (5) motorcycles.

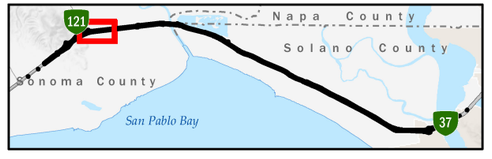
Handheld weather meters were used to collect weather data at noise measurement locations during the field noise investigation. Noise monitoring did not occur if weather conditions consisted of rain or high winds (i.e., greater than 11 mph).

Source: AECOM, 2020; Solano County, 2019; Sonoma County, 2018; ESRI, 2016 (roads)

N

0 200
Feet

Measurement Point
Modeled Barrier



SR 37 Traffic Congestion Relief Project
Sonoma, Napa & Solano Counties, CA

FIGURE 2-19: NOISE MEASUREMENTS AND EVALUATED BARRIERS

Source: AECOM, 2020; Solano County, 2019; Sonoma County, 2018; ESRI, 2016 (roads)

N

0 200
Feet

SR 37 Traffic
Congestion Relief Project
Sonoma, Napa & Solano Counties, CA

Measurement Point
Modeled Barrier

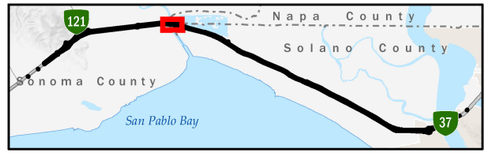


FIGURE 2-19: NOISE MEASUREMENTS AND EVALUATED BARRIERS

Source: AECOM, 2020; Solano County, 2019; Sonoma County, 2018; ESRI, 2016 (roads)

N

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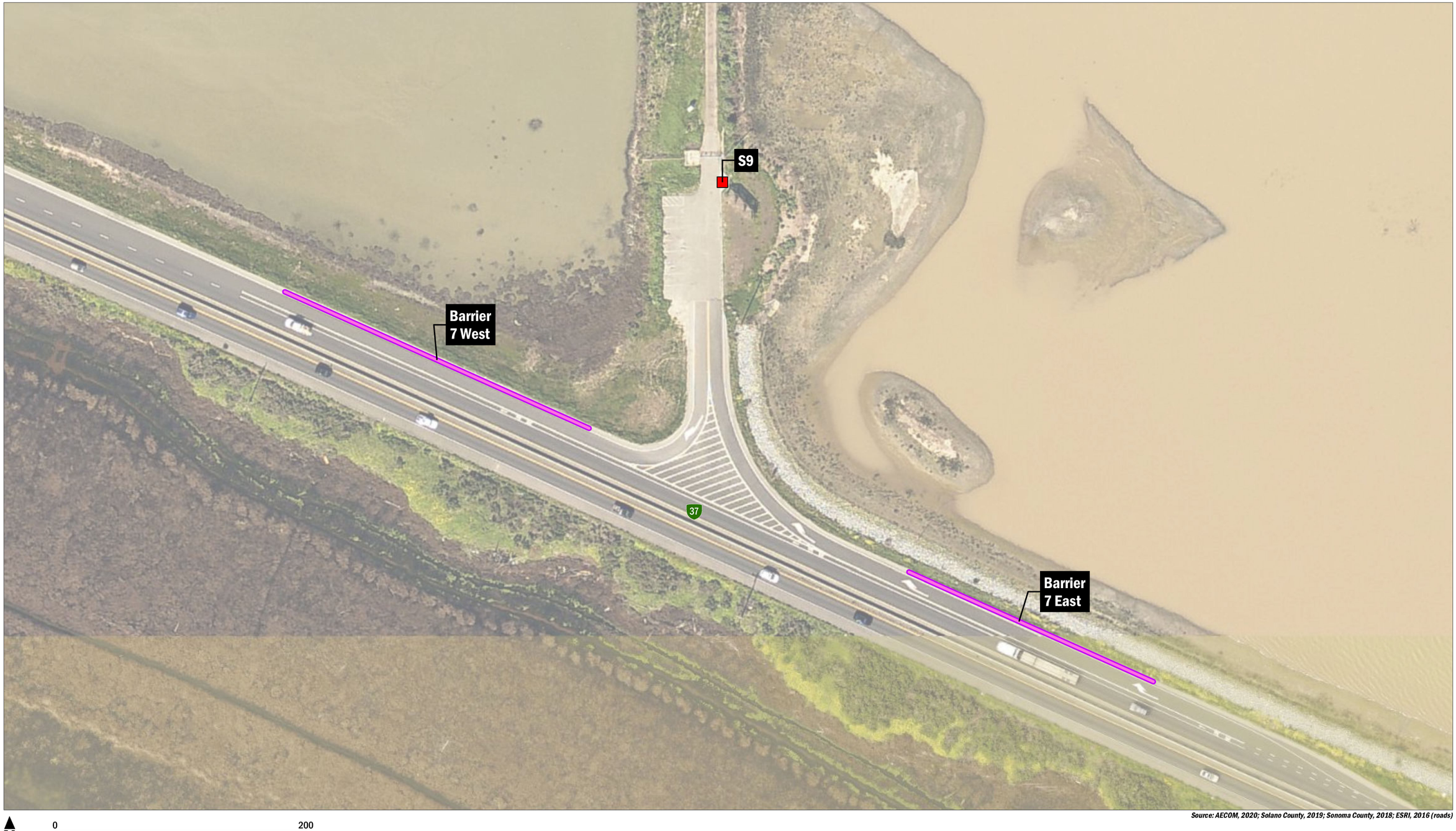
Feet

SR 37 Traffic
Congestion Relief Project
Sonoma, Napa & Solano Counties, CA

Measurement Point
Modeled Barrier

FIGURE 2-19: NOISE MEASUREMENTS AND EVALUATED BARRIERS
Page 3 of 4



Source: AECOM, 2020; Solano County, 2019; Sonoma County, 2018; ESRI, 2016 (roads)

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SR 37 Traffic
Congestion Relief Project
Sonoma, Napa & Solano Counties, CA

Measurement Point
Modeled Barrier

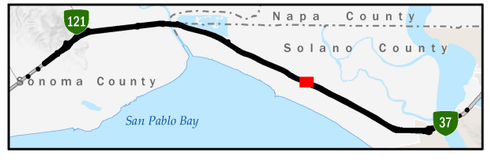


FIGURE 2-19: NOISE MEASUREMENTS AND EVALUATED BARRIERS

Table 2-26 Summary of Long-Term Noise Measurements

Receptor ID	Location (Figure 2-19)	Date	Loudest Hour(s)	Measured Loudest-Hour $L_{eq[h]}$, dBA
L1	Tolay Creek Road	11/19/2020	7:00 a.m., 10:00 a.m.	72
L2	5400 Sears Point Road	11/19/2020	10:00 a.m.	76
L3	984 Fortune Street	11/19/2020	6:00 a.m.	71

Table 2-27 Summary of Short-Term Noise Measurements

Receptor ID	Location (Figure 2-19)	Date	Start Time	10-minute L_{eq}, dBA
S1	2100 Sears Point Road	11/19/2020	10:00 a.m.	72
			10:10 a.m.	72
S2	29790 Tolay Creek Road	11/19/2020	10:00 a.m.	64
			10:10 a.m.	63
S3	Tubbs Island Trailhead	11/19/2020	10:00 a.m.	69
			10:10 a.m.	69
S4	Noble Road	11/19/2020	10:40 a.m.	72
			10:50 a.m.	72
S5	5000 Sears Point Road	11/19/2020	10:40 a.m.	64
			10:50 a.m.	64
S6	Sonoma Creek (North)	11/18/2020	11:00 a.m.	67
			11:10 a.m.	68
S7	Sonoma Creek (South)	11/18/2020	11:30 a.m.	57[1]
			11:40 a.m.	57[1]
S8	Skaggs Island Road	11/18/2020	10:30 a.m.	71
			10:40 a.m.	71
S9	Cullinan Ranch Trailhead	11/18/2020	10:00 a.m.	67
			10:10 a.m.	67
S10	Sylvan Way	11/19/2020	11:20 a.m.	66
			11:30 a.m.	66

Receptor ID	Location (Figure 2-19)	Date	Start Time	10-minute L_{eq}, dBA
S11	Baylands Vista Point	11/19/2020	11:20 a.m.	64
			11:30 a.m.	65
S12	North Pier Street	11/19/2020	11:20 a.m.	59
			11:40 a.m.	60
S13	131 Lighthouse Drive	11/19/2020	12:10 p.m.	64
			12:20 p.m.	63
S14	287 Lighthouse Drive	11/19/2020	12:10 p.m.	63
			12:20 p.m.	62
S15	125 Compass Court	11/19/2020	12:10 p.m.	65
			12:20 p.m.	64
S16	Federal Terrace Elementary School	11/19/2020	12:50 p.m.	48[2]
			1:00 p.m.	47[2]
S17	1016 Fortune Street	11/19/2020	12:50 p.m.	65
			1:00 p.m.	65
S18	984 Fortune Street	11/19/2020	12:50 p.m.	65
			1:00 p.m.	65
S19	5400 Sears Point Road	11/19/2020	10:30 a.m.	75
			10:40 a.m.	75

Notes:

[1] Noise data acquired at measurement S7 is unreliable because weather effects contaminated results.

[2] Hourly average noise levels at measurement S16 were skewed by local traffic events. L_{50} noise levels are used to best represent noise originating from SR 37.

Future Undeveloped Land Uses

Lists of planned and approved projects in Sonoma, Solano, and Napa Counties and in the City of Vallejo in the vicinity of the project were reviewed to identify undeveloped lands for which development is planned, designed, and programmed, so that those proposed developments may be considered approved (or a part of the existing conditions). According to the Traffic Noise Analysis Protocol, future development would be considered planned, designed, and programmed once it receives final development approval. The review focused on projects within approximately 500 feet of the project limits, where traffic noise levels from the improved project roadways could dominate the noise environment. Projects beyond this distance were excluded

from further analysis. No noise-sensitive projects that are proposed within 500 feet of the project alignment were identified.

2.3.7.3 Environmental Consequences

The proposed project would add through traffic lanes and was therefore determined to be a Type I project in accordance with 23 CFR 772, requiring a traffic noise analysis.

Traffic Noise Modeling Results

Traffic noise levels were predicted using the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). TNM 2.5 is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010 (FHWA 1998a, 1998b). Key inputs to the traffic noise model were the locations of roadways, traffic mix and speed, shielding features (e.g., topography and buildings), noise barriers, ground type, and receptors. Three-dimensional representations of these inputs were developed using CAD drawings, aerials, and topographic contours.

Traffic noise was evaluated under existing conditions, design-year no-project conditions, and design-year conditions with the project alternatives. Loudest-hour traffic volumes, vehicle classification percentages, and traffic speeds under existing and design-year (2045) conditions were input into the traffic noise model.

To validate the accuracy of the model calculations, TNM 2.5 was used to compare measured traffic noise levels to modeled noise levels at field measurement locations. For each receptor, traffic volumes counted during the short-term measurement periods were normalized to 1-hour volumes. These normalized volumes were assigned to the corresponding project area roadways to simulate the noise source strength at the roadways during the actual measurement period. Modeled and measured sound levels were then compared to determine the accuracy of the model and whether additional adjustment of the model was necessary.

Traffic noise modeling results and predicted traffic noise impacts (rounded to the nearest dB) for existing and design year conditions are shown in Table 2-28. In this table, 2045 Build traffic noise levels are compared to existing conditions and to 2045 No Build conditions. The comparison to existing conditions is included in the analysis to identify traffic noise impacts as defined under 23 CFR 772. The comparison between 2045 Build and 2045 No Build conditions indicates the direct effect of the project.

Table 2-28 Calculated Noise Measurements by Alternative

Receptor ID	Activity Category (NAC)	Loudest-Hour Noise Levels, $L_{eq(h)}$ dBA				Increase Over Existing, dBA			Increase Over 2045 No Build, dBA		Impact[1]	
				2045 Build			2045 Build		2045 Build		2045 Build	
		Exist	2045 No Build	Alternatives 1 and 2	Alternatives 3A and 3B	2045 No Build	Alternatives 1 and 2	Alternatives 3A and 3B	Alternatives 1 and 2	Alternatives 3A and 3B	Alternatives 1 and 2	Alternatives 3A and 3B
S1	Reference[2]	70	71	71	71	1	1	1	0	0	N/A	N/A
S2	B(67)	66	66	67	67	0	1	1	1	1	A/E	A/E
S3	C(67)	71	72	72	72	1	1	1	0	0	A/E	A/E
S4	Reference[2]	73	74	75	75	1	2	2	1	1	N/A	N/A
S5	C(67)	68	69	69	69	1	1	1	0	0	A/E	A/E
S6	C(67)	67	67	68	68	0	1	1	1	1	A/E	A/E
S7	C(67)	68	69	69	69	1	1	1	0	0	A/E	A/E
S8	C(67)	72	73	73	73	1	1	1	0	0	A/E	A/E
S9	C(67)	67	68	69	69	1	2	2	1	1	A/E	A/E
S10	G[2]	66	67	68	68	1	2	2	1	1	N/A	N/A
S11	C(67)	64	65	65	65	1	1	1	0	0	None	None
S12	G[2]	58	59	60	60	1	2	2	1	1	N/A	N/A
S13	B(67)	63	64	64	64	1	1	1	0	0	None	None
S14	B(67)	62	64	64	64	2	2	2	0	0	None	None
S15	Reference[2]	64	66	66	66	2	2	2	0	0	N/A	N/A
S16	C(67)	48	49	49	49	1	1	1	0	0	None	None
S17	B(67)	62	64	64	64	2	2	2	0	0	None	None
S18	B(67)	61	63	63	63	2	2	2	0	0	None	None
S19	Reference[2]	74	75	76	76	1	2	2	1	1	N/A	N/A

Receptor ID	Activity Category (NAC)	Loudest-Hour Noise Levels, $L_{eq(h)}$ dBA				Increase Over Existing, dBA			Increase Over 2045 No Build, dBA		Impact[1]	
				2045 Build			2045 Build		2045 Build		2045 Build	
		Exist	2045 No Build	Alternatives 1 and 2	Alternatives 3A and 3B	2045 No Build	Alternatives 1 and 2	Alternatives 3A and 3B	Alternatives 1 and 2	Alternatives 3A and 3B	Alternatives 1 and 2	Alternatives 3A and 3B
R1	D(52)[3]	63	63	64	64	0	1	1	1	1	None	None
R2	E(72)	65	66	66	66	0	1	1	1	1	None	None
R3	B(67)	62	63	63	63	1	1	1	0	0	None	None
R4	B(67)	50	51	52	52	1	2	2	1	1	None	None
R5	B(67)	60	61	62	62	1	2	2	1	1	None	None
R6	B(67)	61	62	63	63	1	2	2	1	1	None	None
R7	B(67)	56	57	57	58	1	1	2	0	1	None	None
R8	B(67)	54	55	56	56	1	2	2	1	1	None	None
R9	B(67)	61	62	63	63	1	2	2	1	1	None	None
R10	B(67)	55	56	57	57	1	2	2	1	1	None	None
R11	B(67)	61	62	63	63	1	2	2	1	1	None	None

Notes:

[1] Impact Type: A/E = Approach or Exceed NAC; None = increase is less than 12 dB and noise levels do not approach or exceed the NAC; N/A = not applicable to reference measurements and measurements not in areas of frequent human use.

[2] Measurement point was selected based on accessibility constraints but was not representative of an area of frequent human use.

[3] R1 is at the northwestern façade of Refuge Headquarters building. This location does not include any exterior areas of frequent human use and is considered a Category D land use only. Exterior noise levels are presented in the table.

As shown in Table 2-28, the loudest-hour noise levels at Category B land uses are calculated to range from 50 to 66 dBA L_{eq}(h) under existing conditions, from 51 to 66 dBA L_{eq}(h) under 2045 No Build conditions, and from 52 to 67 dBA L_{eq}(h) under 2045 Build conditions. The loudest-hour noise levels at Category C land uses are calculated to range from 48 to 72 dBA L_{eq}(h) under Existing conditions, from 49 to 73 dBA L_{eq}(h) under 2045 No Build conditions, and from 49 to 73 dBA L_{eq}(h) under 2045 Build conditions. The loudest-hour noise level at the Category D land use was calculated to reach 63 dBA L_{eq}(h) under Existing conditions and 2045 No Build conditions, and 64 dBA L_{eq}(h) under 2045 Build conditions. 2045 Build traffic noise levels are predicted to approach or exceed the NAC at one Category B receptor at 29790 Tolay Creek Road (S2). 2045 Build traffic noise levels are predicted to approach or exceed the NAC at six Category C receptors, including the Tubbs Island Trailhead (S3), 5000 Sears Point Road (S5), Sonoma Creek Trail (S6), Sonoma Creek Wildlife Viewing Point (S7), Skaggs Island Road Trailhead (S8), and the Cullinan Ranch Trailhead (S9).

The noise level at the worst-case exterior façades of the Category D land use identified at the Refuge Headquarters (R1) was calculated to reach 64 dBA L_{eq}(h). Based on observations made and photographs taken at measurement location S1, approximately 180 feet from the structure, the Refuge Headquarters building nearest SR 37 and represented by R1 is equipped with mechanical ventilation, allowing occupants the option of closing windows to control noise. Assuming a minimum exterior-to-interior noise reduction of 20 dB, interior noise levels in the structure are not anticipated to exceed 52 dBA L_{eq}(h).

Noise levels would increase by up to 2 dBA over existing conditions under 2045 No Build conditions. Under Build Alternatives 1, 2, 3A, and 3B, noise levels would increase by 1 to 2 dBA when compared to existing conditions. The project would not result in noise level increases that would be considered substantial according to the Caltrans threshold of 12 dBA.

Short-Term Construction Noise Impacts

Project construction is anticipated to occur over a period of 2 years and would include grubbing/land clearing, grading/excavation/foundation/sheet pile walls, drainage/utilities/ subgrade, and paving. Pile driving is anticipated to be used as a method of construction along segments of the project alignment for structure foundation. Construction noise would primarily result from the operation of heavy construction equipment and arrival and departure of heavy-duty trucks. The types of equipment needed to complete the construction may include, but are not limited to, crawler tractors, excavators, signal boards, cranes, grades, rollers, rubber-tired loaders, scrapers, backhoes, bore/drill rigs, cement and mortar mixers, air compressors, generator sets, plate compactors, pumps, rough terrain forklifts, pavers, and paving equipment.

Although the overall construction schedule is anticipated to occur over a period of 2 years, roadway construction activities typically occur for relatively short periods of time in any specific location as construction proceeds along the project's alignment. Construction noise would mostly be of concern in areas where heavy construction would be concentrated for extended periods of time in areas adjacent to noise-sensitive receptors, where noise levels from individual pieces of equipment are substantially higher than ambient conditions, or when construction activities would occur during noise-sensitive time periods, such as early morning, evening, or nighttime hours. Noise-sensitive receptors typically include residences, hospitals, schools, guest lodging, libraries, and churches.

As indicated through comparison of Table 2-29, most construction phases would generate average noise levels that would exceed ambient daytime noise levels at adjacent land uses by 15 to 20 dBA $L_{eq}(h)$. Except for short periods of pile driving (if used as a method of construction), heavy demolition, and site preparation, construction noise levels would not be expected to exceed the quantitative noise limits established by Caltrans.

Table 2-29 Calculated Noise Measurements by Alternative

Construction Type	Construction Phase	Maximum Noise Level (L_{max}, dBA)		Hourly Average Noise Level ($L_{eq[h]}$, dBA)	
		50 feet	100 feet	50 feet	100 feet
Roadway Construction	Grubbing/Land Clearing	84	78	83	77
	Grading/Excavation	85	79	90	84
	Grading/Excavation/Sheet Pile Walls	101	95	96	90
	Drainage/Utilities/Sub-Grade	85	79	90	84
	Paving	90	84	86	80
Bridge Construction	Grubbing/Land Clearing	84	78	82	76
	Grading/Excavation/Foundation	85	79	88	82
	Drainage/Utilities/Sub-Grade	85	79	88	82
	Paving	90	84	85	79
Impact Pile Driving Alone	–	101	95	94	88

Preliminary Noise Abatement Analysis

Noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. Noise abatement must be predicted to provide at least a 5 dB minimum reduction at an impacted receptor to be considered feasible by Caltrans (i.e., the barrier would provide a noticeable noise reduction). Additionally, the Traffic Noise Analysis Protocol's acoustical design goal states that the noise barrier must provide at least 7 dB of noise reduction at one or more benefited receptors. Noise abatement measures that provide noise reduction of more than 5 dB are encouraged, as long as they meet the reasonableness guidelines.

Noise barriers were considered as noise abatement for exterior land uses in the project area, as shown in Figure 2-19. Each noise barrier has been evaluated for feasibility based on achievable noise reduction. Once a noise barrier achieved the minimum of a 5 dB reduction at a given receptor and achieved the 7 dB acoustical design goal for at least one receptor, the reasonable allowance was determined. Impacted receptors including S2, S3, S8, and S9 are situated along railways that cross SR 37 or roads that are accessed directly from a turn off of the SR 37 mainline. It is not possible to construct one continuous barrier at these receptors. Instead, sets of eastern and western barriers on either side of the railway or road were evaluated, with an estimated reasonable space remaining in between to allow for adequate sightlines. Due to the gap between the eastern and western barriers, little noise reduction was possible. Evaluated barriers 1, 2, 5, 6, and 7 would not feasibly abate traffic noise at any height and/or would not meet the minimum 7 dBA reduction goal, and were not considered further. Barrier 3 would feasibly abate traffic noise at a height of 10 feet and above, but would not meet the 7 dBA minimum reduction goal at any height and was also not considered further.

Barrier 4 would feasibly abate traffic noise at receptor S6 at heights of 10 feet and above and would meet the 7 dB acoustical design goal at heights of 14 feet and above. This barrier would have to be on the edge of the Sonoma Creek Bridge, in the westbound direction, to abate noise at the adjacent trail and parking lot located near Sonoma Creek. For any noise acoustically feasible barrier to be considered reasonable from a cost perspective, the estimated cost of the barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier must include all items appropriate and necessary for construction of the barrier, such as traffic control, drainage modification, retaining walls, landscaping for graffiti abatement, and right-of-way costs. The reasonableness allowance was calculated for the noise barriers that were determined to be acoustically feasible and to meet the Caltrans acoustical design goal. For each noise barrier found to be acoustically feasible, reasonable cost allowances were calculated by multiplying the number of benefited receptors by $107,000.

The engineering estimate for construction of barrier 4 included the costs of adding a soundwall to the westbound edge of the Sonoma Creek Bridge. The cost estimate included the construction of a wall on the bridge, crew mobilization, and other factors specific to this location. The total cost was estimated at approximately $2 million, which is substantially higher than the allowance of $107,000. The relatively high cost is due to the necessary location of the wall on an existing bridge structure. Because the wall exceeded the cost allowance, it was not considered further and not included in the project design.

The results of the noise study would be presented at the public meeting held after the draft environmental document is released for public review, and comments on the noise study would be responded to in the final environmental document. A final decision on noise abatement would be made by Caltrans after the public process is completed.

Vibration Analysis

Construction activities would include grubbing/land clearing, grading/excavation/ foundation/sheet pile walls, drainage/utilities, and paving. Pile driving would be used as a method of construction for structure foundation. Blasting, which has the potential to result in high levels of vibration, would not be used. Traffic, including heavy trucks traveling on a highway, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Construction activities with the greatest potential of generating perceptible vibration levels would include the removal of pavement and soil, the dropping of heavy objects, and the movement of heavy tracked equipment. Table 2-30 presents typical vibration levels that could be expected from representative construction equipment at a reference distance of 25 feet and calculated vibration levels at distances representative of the setbacks from the project to the nearest structures. Vibration levels are highest close to the source, and then attenuate with increasing distance depending on soil conditions.

Caltrans identifies a vibration limit of 0.5 inch per second (in/sec) peak particle velocity (PPV) as the threshold at which there is a potential risk of damage to new residential and modern commercial/industrial structures, 0.3 in/sec PPV for older residential structures, and a conservative limit of 0.25 in/sec PPV for historic and some old buildings.

Table 2-30 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 feet (in/sec)	Vibration Level at Distance Representative of Setbacks to Nearest Structures (in/sec PPV)[1]		
			80 feet	190 feet	260 feet
Pile driver (impact)	Upper range	1.158	0.322	0.124	0.088
	Typical	0.644	0.179	0.069	0.049
Pile driver (sonic)	Upper range	0.734	0.204	0.079	0.056
	Typical	0.170	0.047	0.018	0.013
Clam shovel drop		0.202	0.056	0.022	0.015
Hydromill (slurry wall)	In soil	0.022	0.002	0.001	0.001
	In rock	0.047	0.005	0.002	0.001
Vibratory roller		0.210	0.058	0.023	0.016
Hoe ram		0.089	0.025	0.010	0.007
Large bulldozer		0.089	0.025	0.010	0.007
Caisson drilling		0.089	0.025	0.010	0.007
Loaded trucks		0.076	0.021	0.008	0.006
Jackhammer		0.035	0.010	0.004	0.003
Small bulldozer		0.003	0.001	0.000	0.000

Source: Illingworth & Rodkin, Inc. 2021

Caltrans recommends a vibration limit of 0.5 in/sec PPV for new residential and modern commercial/industrial structures, 0.3 in/sec PPV for older residential structures, and 0.25 in/sec PPV for historic and some old buildings. These limits would only be exceeded at the nearest structures during upper range impact pile driving. The nearest structure represented by the 80-foot setback distance is a building at the Refuge Headquarters (receptor S1). According to project plans, no pile driving would be required west of the SMART railroad crossing. The Refuge Headquarters building is approximately 1 mile west of the crossing, and therefore there are no structures that would be exposed to construction-generated vibration which would have the potential to exceed Caltrans limits. No construction vibration minimization measures would be necessary.

2.3.7.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation is required. The following project features would be implemented as described Table 1-4 in Section 1.5:

- PF-AIR-01. Construction Best Practices for Dust; and
- PF-AIR-02. Construction Best Practices for Exhaust.

2.3.8 Energy

2.3.8.1 Regulatory Setting

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

CEQA Guidelines section 15126.2(b) and CEQA's Appendix G, 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.

2.3.8.2 Affected Environment

This section summarizes the *Energy Technical Report* prepared in November 2021 for the project (AECOM 2021b). The NEPA baseline for comparing environmental impacts is the No Build Alternative.

The transportation sector is the top consumer of energy in California, comprising nearly 40 percent of energy consumption in 2018 (EIA 2018). The State of California relies on both nonrenewable and renewable energy sources. Nonrenewable energy resources used in California include petroleum, natural gas, and nuclear power; renewable energy resources include hydroelectric, biomass, wind, solar, and geothermal heat (heat given off by the Earth). A total of 36 percent of California's electricity comes from renewable sources, and 42 percent of that renewable energy comes from solar, the state's top renewable energy source. Fossil fuels have been the leading transportation fuels in the country and state. Gasoline is the most consumed fuel in California, at approximately 55.79 percent of total fossil fuel consumption for the state's transportation sector. Table 2-31 shows fossil fuel consumption in California for the transportation sector. The amount of fuel used is expressed by British Thermal Unit (Btu). A Btu is the amount of energy required to raise the temperature of 1 pound of water 1-degree Fahrenheit.

Alternatives to fossil fuels for transportation have helped decrease the dependence on gasoline and other fossil fuels. In addition to traditional petroleum fuels, California currently uses the following "alternative" fuels and energy sources:

- Compressed natural gas (CNG)
- Electric (EVC)
- Ethanol, 85 percent (E85)
- Hydrogen
- Liquefied natural gas (LNG)
- Liquefied petroleum gas (LPG)

Table 2-31 Fossil Fuel Consumption in California for the Transportation Sector (2018)

Fuel Type	Trillion Btu	Percent of total California Consumption
Natural Gas	44.8	1.42
Aviation Gasoline	2.2	0.07
Distillate Fuel Oil	483.8	15.30
HGL	0.7	0.02
Jet Fuel	684.8	21.65
Lubricants	13.2	0.42
Motor Gasoline	1,764.4	55.79
Residual Fuel Oil	168.8	5.34
Total	**3,162.7**	**100.00**

Source: EIA 2018

2.3.8.3 Environmental Consequences

Direct Energy Impacts

The direct energy impacts were evaluated based on VMT and average travel speeds.

VMT. Table 2-12 and Table 2-13 in Section 2.2.11 show the estimated VMT for 2025 and 2045. VMT is expected to increase with all the project alternatives (i.e., Build and No Build, relative to the base year conditions [2020]). The increase in VMT is attributed to increased travel demand on SR 37, regardless of the chosen alternative. Additionally, VMT is expected to slightly increase with the Build Alternatives compared to the No Build Alternative. In 2025, daily VMT would increase by 6,346 from No Build Conditions for Alternatives 1 and 2, and by 9,599 for Alternatives 3a and 3b. In 2045, Daily VMT would increase by 31,729 for Alternatives 1 and 2 and by 47,992 in 2045 for Alternatives 3A and 3B.

Energy Use Related to VMT. Energy use factors were calculated as a statistical average to estimate fuel consumption in gallons per mile. To calculate and project the vehicle fuel used by the proposed project, the total VMT (in miles per day) for typical on-road vehicles and the total amount of vehicle fuel (in gallons per day) used in the Bay Area region were obtained from the CARB EMFAC2017 model. EMFAC2011 vehicle categories and aggregated model year and speed were used for the analysis.

Results from the model were calculated for the Base Year, 2025 Opening Year, and the 2045 Design Year for both gasoline and diesel fuel types. Average gallons per mile

were then calculated for each year and each fuel type. Table 2-32 shows the results of calculating the direct energy factors. Though the projected VMT appears to increase over the years, the total gallons consumed per day decrease, which is associated with better energy efficiency and standards that apply as older vehicles are replaced over time by increasingly more fuel-efficient cars and trucks.

Table 2-32 Direct Energy Factors for Energy Consumption

Fuel Types	Year	Fuel-Specific VMT (miles/day)	Fuel Consumption (Gallons/Day)	Average Gallons/Mile	Percent Share VMT
Gasoline	2020 Base Year	160,072,121.51	6,334,019.09	0.0396	93.22%
Gasoline	2025 Opening Year	165,408,573.25	5,653,255.92	0.0342	92.67
Gasoline	2045 Design Year	187,133,077.19	4,985,132.81	0.0266	91.78
Diesel	2020 Base Year	11,634,424.06	1,234,967.26	0.1061	6.78%
Diesel	2025 Opening Year	13,085,992.54	1,231,711.07	0.0941	7.33
Diesel	2045 Design Year	16,752,299.19	1,256,414.43	0.0750	8.22

Source: EMFAC 2017

The average gallons per mile derived in Table 2-32 were multiplied by operational daily VMT to estimate direct energy consumption in gallons of gasoline and diesel consumed by vehicles for each analysis year. Gasoline automobiles were assumed to contribute 93.22, 92.67, and 91.78 percent of daily operational VMT for 2020, 2025, and 2045, respectively. To convert to direct energy consumption in Btu, it is assumed that a gallon of gasoline has an energy content of 120,941 Btu, and a gallon of diesel has 137,320 Btu. Table 2-33 shows the operational fuel consumption for the study area.

Table 2-33 shows that overall energy consumption is anticipated to decrease over time relative to the base year, regardless of the chosen alternative. This is associated with better energy efficiency and standards. Total energy consumption is similar for the Build and No Build Alternatives, with a slight increase in energy consumption for the Build Alternatives. This correlates to the slight increase in VMT anticipated for the Build Alternatives.

Table 2-33 Operational Daily Fuel Consumption for the Study Area

Project Alternatives	Energy Consumption: Automobile-Gasoline (gallons)	Energy Consumption: Truck-Diesel (gallons)	Total Energy Consumption (100,000 Btu)	Change from Base Year (1000,000 Btu)	Percent Change from Base Year	Change from No Build (100,000 Btu)	Percent Change from No Build
2020 Base Year	5,531,410.29	1,078,479.64	8,170,711.16	—	—	—	—
2025 No Build	4,948,897.70	1,078,248.04	7,465,896.57	-704,814.59	-8.63	—	—
2025 Alternatives 1 and 2	4,949,098.69	1,078,291.83	7,466,199.79	-704,511.38	-8.62	303.21	0.00
2025 Alternatives 3A and 3B	4,949,201.72	1,078,314.27	7,466,355.21	-704,355.95	-8.62	458.64	0.01
2045 No Build	4,437,329.32	1,118,350.27	6,902,269.04	-1,268,442.13	-15.52	—	—
2045 Alternatives 1 and 2	4,438,105.14	1,118,545.80	6,903,475.82	-1,267,235.34	-15.51	1,206.79	0.02
2045 Alternatives 3A and 3B	4,438,502.75	1,118,646.01	6,904,094.32	-1,266,616.84	-15.50	1,825.28	0.03

Source: AECOM 2021b and EMFAC 2017.

Evaluation of Energy Consumption Based on Traffic Conditions. In addition to analyzing direct energy consumption based on VMT, direct energy consumption may be inferred from traffic flow for No Build and Build Alternatives. Higher speeds correlate to better fuel economy, and stop-and-go traffic conditions lead to increased fuel consumption. Fuel efficiency for midsize conventional gasoline- and diesel-powered vehicles tends to peak between 35 and 55 mph, after which efficiency steadily declines (United States Department of Energy 2020). VHD are anticipated to increase over time, regardless of the chosen alternative. However, all Build Alternatives are anticipated to reduce VHD relative to the No Build Alternative. Build Alternatives 1 and 2 are anticipated to reduce daily VHD by 2,187 and 10,935 in 2025 and 2045, respectively, when compared to the No Build Alternative (Table 2-34). Alternatives 3a and 3b are anticipated to reduce daily VHD by 3,187 and 15,936 in 2025 and 2045, respectively, when compared to the No Build Alternative. The savings in VHD are representative of improved traffic conditions for the Build Alternatives. Therefore, all Build Alternatives would reduce the potential for wasteful energy use as a consequence of stop-and-go traffic conditions.

Table 2-34 Daily Vehicle Hours of Delay in the Traffic Study Area

Project Alternatives	Daily VHD	Change from Base Year	Percent Change from Base Year	Change from No Build	Percent Difference – Build Versus No Build
2020 Base Year	5,523,543	—	—	—	—
2025 No Build	6,501,187	977,644	0.18	—	—
2025 Alternatives 1 and 2	6,499,000	975,457	0.18	2,187	0.03
2025 Alternatives 3A and 3B	6,498,000	974,457	0.18	3,187	0.05
2045 No Build	10,411,762	4,888,219	0.89	—	—
2045 Alternatives 1 and 2	10,400,827	4,877,284	0.89	10,935	0.11
2045 Alternatives 3A and 3B	10,395,826	4,872,283	0.89	15,936	0.15

MTC Travel Model One (TM1) V6, AECOM 2021b

Energy Use for Construction. Project construction would be a temporary commitment of energy needed for any infrastructure improvement project. Energy consumption during construction would be conserved and minimized to the maximum extent feasible. Energy conservation in construction activities is assumed because the construction contractor would have a financial incentive and statutory mandate to minimize waste and externalities, respectively. Regulations that stipulate the reduction of energy-related externalities include CARB Title 13, Section 2485 of California Code of Regulations. This regulation limits the idling time of diesel construction equipment to 5 minutes.

Energy use for construction was calculated based on the project-specific results of the RCEM, as reported in the project's Air Quality Report (AECOM 2021g). The project would involve standard construction techniques and require large-scale construction equipment and labor-intensive activities. Project construction is anticipated to begin in 2023 and last 3 years, with several overlapping phases. Emission factors for construction equipment for the project were based on OFFROAD2011 and EMFAC2017. The analysis conservatively assumes that 100 percent diesel equipment would be used for construction (Caltrans 2021c). The RCEM results were used to determine short-term energy usage for construction, by converting construction-related CO_2 emissions to gallons of diesel consumed, and subsequently converting gallons of diesel to Btu.

The analysis of direct energy use for construction accounted for the Safer Affordable Fuel-Efficient (SAFE) Vehicles rule, by applying the appropriate EMFAC2017 off-model adjustment factor issued by CARB in their June 26, 2020, memorandum (CARB

2020c). Based on a construction year of 2023, an adjustment factor of 1.0126 was applied to projected CO_2 emissions from worker commute vehicles, which were output by the RCEM. The SAFE rule in this context applies to light duty vehicles, such as those driven by construction crews to commute to the job site. The SAFE-adjusted CO_2 emissions were converted to gallons of gasoline consumed by using the U.S. EPA conversion factor of 8,887 grams of CO_2 per gallon of gasoline consumed (U.S. EPA 2021a). Other CO_2 emissions were converted to gallons of diesel consumed by using the U.S. EPA conversion factor of 10,180 grams of CO_2 emissions per gallon of diesel consumed. Gallons of diesel consumed were then converted to energy use in Btu, by the assumption that a gallon of gasoline has an energy content of 120,941 Btu and a gallon of diesel has 137,320 Btu.

Construction emissions and energy use are summarized in Table 2-35.

Table 2-35 Construction CO_2 Emissions/Energy Usage

Emissions Scenario	CO_2 (Tons)	SAFE Adjusted[1] CO_2 (Metric Tonnes)	Fuel Consumed[2] (Gallons)	Energy Usage (100,000 Btu)
Build Alternative (Gasoline)	4,207.18	3,816.69	429,469.04	519,404.15
Build Alternative (Diesel)	2,295.90	2,082.81	204,597.84	280,953.76
Total	**6,503.08**	**5,899.50**	**634,066.88**	**800,357.91**

AECOM 2021b, RCEM 9.0.0.

1 Uses an adjustment factor of 1.0126.

2 10,180 grams of CO_2/gallon of diesel = 10.180×10^{-3} metric tons CO_2/gallon of diesel. 8,887 grams of CO_2/gallon of gasoline = 8.887×10^{-3} metric tons CO_2/gallon of gasoline.

Through this analysis, it is anticipated that construction of the Build Alternative would require a one-time energy commitment of more than 80 billion Btu.

Indirect Energy Impacts

Indirect energy use is primarily associated with project maintenance, such as fuel use by equipment for periodic maintenance of the system. Energy use from maintenance would be periodic and is expected to be minimal.

2.3.8.4 Avoidance, Minimization, and/or Mitigation Measures

Aside from construction BMPs, no avoidance, minimization, or mitigation is proposed. The proposed project would not lead to impacts stemming from energy use. Therefore, no avoidance, minimization, or mitigation is required.

2.4 Biological Environment

2.4.1 Natural Communities

The analysis summarized in this section is from the *Natural Environment Study* (NES) prepared in September 2021.

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, 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. Sensitive natural communities considered here include specific marsh and wetland vegetation communities (salt marsh bulrush marshes, pickleweed mats, and California cordgrass marsh), valley oaks (*Quercus lobata*), fish passage at previously unassessed crossings, and trees.

Regulations relevant to the natural communities discussed include EO 11990 Protection of Wetlands, SB 857, and CFGC Section 5981, which provide fish passage protections for anadromous streams (i.e., streams that support fish migration upstream from the sea to spawn); and State Senate Concurrent Resolution No. 17 – Oak Woodlands.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed below in Section 2.4.5, Threatened and Endangered Species. Wetlands and other waters are discussed in Section 2.4.2. A discussion on fish passage as it pertains to listed species is included under Section 2.4.1, Natural Communities. Landcover types and biological environmentally sensitive areas are shown in the map book included as Appendix A.

The Biological Study Area (BSA) shown in the Map Set (Appendix A) represents the area that was studied to evaluate all potential direct and indirect project effects on existing sensitive natural resources (such as noise, lighting, and downstream water quality). It includes the physical limits of proposed construction, including all temporary and permanent impact areas, i.e., all construction access and staging areas, traffic staging, parking areas, turnouts, borrow/disposal/stockpile sites, and utility relocation areas. The BSA includes the area of project impacts and a 50-foot buffer from those impacts. The BSA was expanded beyond the project footprint to include areas that were biologically relevant or may be used by Caltrans in the future for restoration purposes (including tree planting).

Natural communities and other land cover types were mapped to listed-species-specific habitats and vegetation communities to quantify potential impacts to biological

resources in technical studies and for use in consultation with resource agencies. For this environmental document, landcover types are generalized in the project mapbook to show marsh and wetland communities, riparian communities, surface waters, upland forested communities, upland grassland/shrubland communities, and other land cover types, including upland disturbed, and landscaped vegetation communities (Appendix A).

The classification system of vegetation referred to when discussing plant communities was created by the California Native Plant Society (CNPS), based on alliance qualifications (CNPS 2020). Each alliance is given a global (G) and state (S) ranking. The G ranking indicates the alliance's rarity and threat globally, whereas the S ranking indicates the alliance's rarity and threat in California (CNPS 2020). Alliances marked with G1 through G3 codes indicate rare and threatened throughout their ranges (CNPS 2020). A G3 S3 ranking describes a sensitive natural community with 21 to 100 viable occurrences worldwide and statewide, and/or more than 2,590 to 12,950 hectares (CNPS 2020). In the BSA, the sensitive natural communities that are considered vulnerable (G3 or S3) include ashy ryegrass – creeping ryegrass turfs; California cordgrass marsh; pickleweed mats; salt marsh bulrush marshes; and valley oak woodland.

2.4.1.1 Affected Environment

Sensitive Marsh and Wetlands

Marsh and wetland communities in the BSA were defined using the botanical nomenclature provided in the *Manual of California Vegetation* online database (CNPS 2020). The manual categorizes natural communities based on plant species composition. Sensitive marsh and wetland communities in the BSA include salt marsh bulrush marshes (G4S3), pickleweed mats (G4S3), and California cordgrass marsh (G3S3.2). These sensitive marsh and wetland communities are all associated with either brackish tidal waters or seasonally inundated areas with saline soils.

Wetland communities are spread across the length of the project area, and impacts would occur in narrow strips adjacent to existing disturbed road shoulders and developed roadways. At least one of these natural communities is present in nearly every segment of the BSA, including (from west to east): Tolay Creek channel, Upper Tolay Lagoon, the western halves of Lower and Upper Tubbs Island, Sonoma Creek channel, the Refuge, West End Land Club, Detjen-Fleishhacker Club, NSMWA Ponds 1 and 1A, Strip Marsh, Cullinan Ranch, Cullinan Ranch East, and Mare Island Strait Interchange. The only segments of the BSA lacking any of these communities are upland areas and wetlands with only freshwater inputs; they include the SR 121

Interchange, Sonoma Raceway, Paradise Vineyards, the eastern halves of Lower and Upper Tubbs Island, and Kenwood-BPSC Hunt Club.

Fish Passage

The proposed project must comply with Section 156.3 of California Streets and Highways Code. The proposed project footprint overlaps three stream crossings, all of which have entries in the CDFW Passage Assessment Database (PAD). In addition to the crossings that overlap with the BSA, CDFW requested in a comment letter on the Notice of Preparation (NOP) (dated August 20, 2020) that a fish passage assessment also be completed for PAD ID 732818 (38.137781, 122.470225). This crossing is outside of both the project footprint and BSA for the project. Relevant information from the PAD on each crossing assessed for the proposed project is included in Table 2-36.

Table 2-36 Crossing Information in the PAD

PAD ID	Stream Name	Site Name	Barrier Status	Coordinates
732818*	Unnamed	Culvert SR 37	Unknown	38.137781, -122.470225
761446	Water Tank Cattle Pass	SR 37 Crossing	Unassessed	38.144704, -122.45881
762954	Tolay Creek	SR 37 Crossing	Not a Barrier	38.151707, -122.446944
761318	Sonoma Creek	SR 37 Crossing	Unassessed	38.155632, 122.406787

Notes
* PAD ID 732818 is outside of the project footprint and BSA and is included here at the request of CDFW

During field surveys for the proposed project, the preliminary assessment of the unknown and unassessed barriers was conducted. None of the above structures provided a barrier to anadromous fish, since they are either absent or can pass freely through the structure. A detailed discussion of each of these crossings and the potential for fish passage can be found in Section 2.4.4.2.

Trees

A total of 329 trees were recorded in the BSA. Trees were mapped if they occurred in or immediately adjacent to the BSA (to account for trees that may have root systems extending into the BSA). The project area is dominated by landscaped California native and nonnative ornamentals. The most common species are Monterey pine (*Pinus radiata*) and red gum (*Eucalyptus camaldulensis*). Nine tree species observed in the BSA are native to California; however, many of the California-native species are not native to the counties where the project is located, including Monterey cypress (*Hesperocyparis macrocarpa*) and Monterey pine. A total of 32 of the surveyed trees are native riparian trees (occurring adjacent to riverine features or wetlands).

Valley Oaks

State Senate Concurrent Resolution No. 17 – Oak Woodlands is legislation that requests state agencies having land use planning duties and responsibilities to assess and determine the effects of their decisions or actions in any oak woodlands containing Blue, Englemann, Valley, or Coast Live Oak. The measure requests those state agencies to preserve and protect native oak woodlands to the maximum extent feasible or provide replacement plantings where designated oak species are removed from oak woodlands.

Presence of valley oaks in the project area consists of four scattered valley oaks on roadsides of Lower Tubbs Island.

2.4.1.2 Environmental Consequences

Sensitive Marsh and Wetlands

The project would have direct permanent effects on sensitive marsh and wetland communities (Table 2-37) through ground disturbance during construction. Temporary effects on these communities would include direct and indirect impacts, such as vegetation removal and soil disturbance. All temporarily disturbed areas would be restored, such as through hydroseeding and replanting. Some areas would not be replanted because of conversion of natural vegetation communities to paved road. Vegetation removal would be determined during final design.

Table 2-37 Estimated Permanent Effects on Sensitive Marsh and Wetland Communities

Community Type	Global and State Ranking	Alternative 1 (acres)	Alternative 2 (acres)	Alternative 3A (acres)	Alternative 3B (acres)
Salt marsh bulrush marshes	G4S3	0.03	0.04	0.11	0.11
Pickleweed mats	G4S3	1.65	3.04	7.19	7.19
California cordgrass marsh	G3S3.2	0.23	0.21	0.29	0.29
Total		**1.91**	**3.29**	**7.59**	**7.59**

All sensitive marsh and wetland vegetation communities are mostly within state and federally regulated waters jurisdictions. Further discussion of impacts to wetlands and other waters of the U.S. and state is provided in Section 2.4.2.

Fish Passage

Culvert SR 37 on Unnamed Drainage (PAD ID 732818) and SR 37 Crossing on Water Tank Cattle Pass (PAD ID 761446)

There are no California Natural Diversity Database (CNDDB) occurrences of anadromous fish in either of the drainages that lead to Culvert SR 37 on Unnamed Drainage (PAD ID 732818) and SR 37 Crossing on Water Tank Cattle Pass (PAD ID 761446), nor are there historical or current records of anadromous fish in these drainages in published literature (Leidy et al. 2005, SRCD 2015, NMFS 2016b). In addition, there is no mention of steelhead or other anadromous fish currently or historically occurring in these drainages in the Coastal Conservancy land acquisition recommendation for the North Point Joint Venture Acquisition, in which the drainages are located, despite the recommendation listing special-status species found on the property (Coastal Conservancy 2004). The parcel that drains to the crossings was acquired by the Sonoma Land Trust in 2005 and is now called Sears Point Ranch. The Sonoma Land Trust describes Sears Point Ranch as containing wetlands and seasonal creeks and discusses other special-status species occurrences but does not mention historical or current anadromous fish occurrences in Sears Point Ranch (Sonoma Land Trust 2021).

Based on the lack of any historical or current occurrence records of anadromous fish in the drainages in which Culvert SR 37 on Unnamed Drainage (PAD ID 732818) and SR 37 Crossing on Water Tank Cattle Pass (PAD ID 761446) are located, there is no evidence that anadromous fish are, or historically were, found in these drainages. Therefore, SB 857 does not require Caltrans to complete a fish passage assessment at these crossings.

SR 37 Crossing on Tolay Creek (PAD ID 762954)

The SR 37 Crossing on Tolay Creek (PAD ID 762954) is not a barrier; therefore, an additional fish passage assessment at this crossing is not necessary.

SR 37 Crossing on Sonoma Creek (PAD ID 761318)

A site visit was conducted at the Sonoma Creek crossing (PAD ID 761318) on September 3, 2020. Based on this site visit and a review of aerial imagery, a green-gray-red first-phase fish passage evaluation was completed following the methods described in Part IX: Fish Passage Evaluation at Stream Crossings of the California Salmonid Stream Habitat Restoration Manual (Taylor and Love 2003).

There appears to be fine substrate throughout the channel under the bridge. The active channel width is approximately 395 feet, measured using aerial imagery

approximately 2,000 feet downstream of the bridge. The inlet width (i.e., bridge length) is approximately 1,830 feet. Because there is streambed substrate throughout the channel under the bridge and the inlet width is greater than the active channel width, the first-phase fish passage evaluation filter results in a green classification, meaning it is considered passable for all salmonid life stages.

A Fish Passage Incidental Report (First Pass Data Sheet) for SR 37 Crossing on Sonoma Creek would be submitted by Caltrans to the PAD.

Trees

The project would have direct and indirect permanent effects on 125 trees (118 nonnative and seven native trees) including removal of some trees. An area with a radius of approximately 10 feet may be impacted around each tree that would be removed. Any paving in the critical root zone of the tree would be considered a permanent impact to the tree because this action may result in tree mortality. Temporary effects would result from minor tree trimming or staging of equipment in the critical root zone.

Areas subject to paving would not be replanted and some trees would not be replanted because of the need to maintain a clear recovery zone near the shoulders for driver safety. All trees in areas that are permanently impacted presumably would be removed; however, trees in and adjacent to temporarily impacted areas may not need to be removed. The exact number of trees to be removed would depend on field conditions, such as the geology of the area where cut slopes are excavated, condition of trees, location of supporting roots, and other considerations to ensure the post-construction stability of permanent structures. Tree removal would be determined during final design.

Valley Oaks

Four valley oak trees (*Quercus lobata*) occur along the eastbound roadside of SR 37 on Tubbs Island. Project activities may cause direct and indirect impacts on valley oaks in the project footprint. Temporary impacts include pruning of less than 30 percent of the canopy, removal of less than 25 percent of the roots (within the drip line of the tree), or soil compaction to less than 30 percent of the critical root zone. Any paving in the critical root zone of the tree would be considered a permanent effect on the tree. Temporary effects would result from minor tree trimming or staging of equipment in the critical root zone.

Trees in and adjacent to temporarily affected areas may not need to be removed. The exact number of trees to be removed would depend on field conditions and would be determined during final design phase.

2.4.1.3 Avoidance, Minimization, and/or Mitigation Measures

Sensitive Marsh Wetlands

General and specific AMMs would be implemented for all considered Build Alternatives to avoid and minimize potential impacts to sensitive marsh and wetlands. Additional specific measures proposed to address potential impacts to water quality in Section 2.3.2 and to wetlands and other waters in Section 2.4.2 would also serve to avoid and minimize impacts to sensitive marsh wetlands. Measures that would avoid and minimize impacts to sensitive marsh wetlands include:

BIO-01: Wetlands Protection – Invasive Plants. To prevent the introduction of NNIP species such as smooth cordgrass (*Spartina alterniflora* and hybrids), stinkwort (*Dittrichia graveolens*), and prickly Russian thistle (*Salsola tragus*) into areas of tidal vegetation during construction and restoration activities, the following measures will be implemented:

- The project biologist will conduct a NNIP assessment of areas subject to construction activities and will recommend specific measures to minimize the spread of NNIP species.
- Wetland areas that are temporarily disturbed will be monitored. All NNIP infestations discovered in the project area in wetland habitats will be controlled and removed upon discovery.
- A long-term (5 years after project completion) vegetation monitoring plan for post-disturbance impacts in wetlands will be developed in coordination with USFWS and CDFW and implemented by Caltrans.

BIO-02: Wetland Protection. The following measures will be implemented in and adjacent to delineated wetland environmentally sensitive areas in the project area:

- Work in and adjacent to delineated wetlands where flooding has potential to occur will be scheduled outside of the wet-weather season.
- Work in and adjacent to delineated tidal wetlands will not occur within 2 hours before or after extreme high-tide events (6.5 feet above mean lower low water elevation or greater, as determined from the nearest National Oceanic and Atmospheric Administration tidal gage station to the activity) when the marsh plain is inundated.

Fish Passage

All crossings assessed in the BSA and the additional crossing assessed outside of the proposed project area do not present barriers to fish passage. No measures or mitigation for fish passage are proposed.

Trees

BIO-03: Tree Replacement, Landscaping, and Revegetation Plan. During final design, Caltrans will develop a landscaping plan that will identify the location and number of trees that will be replanted in the right-of-way. Locally appropriate native species will be used to the maximum extent possible, and trees, shrubs, and groundcover will be selected for drought tolerance and disease resistance. Mulch will be applied to planted areas to reduce weed growth, conserve moisture, and minimize maintenance operations. A 3-year plant establishment period will be included in the final revegetation plan. Caltrans will develop and implement a 5- to 10-year post-construction vegetation monitoring plan for planted areas.

Valley Oaks

The same measures proposed for trees would also protect valley oak trees in the project area, and no additional measures or mitigation are proposed.

2.4.2 Wetlands and Other Waters

2.4.2.1 Regulatory Setting

Wetlands and other waters are protected under several laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the CWA (33 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 nontidal 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 USACE with oversight by 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 CFR Part 230 [available at https://www.epa.gov/cwa-404/cwa-section-404b1-guidelines-40-cfr-230]), and whether permit approval is in the public 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 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 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 SWRCB, the RWQCBs and CDFW. In certain circumstances, the Coastal Commission (or BCDC or the Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of CFGC 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 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 and Stormwater Runoff section for more details.

The analysis in this section relies on draft Caltrans Aquatic Resource Delineation Report from July 2021 and draft NES (AECOM 2021i) from June 2021 to determine the extent of jurisdictional waters and wetlands and potential impacts in the project BSA for each considered alternative.

2.4.2.2 Affected Environment

The analysis summarized in this section is from the NES prepared in September 2021.

An estimated total of 75.17 acres of tidal wetlands, tidal other-waters, and nontidal wetlands and nontidal other-waters were identified in the BSA. Wetlands and waters that occur in the project's BSA are shown generally in Appendix A. Wetlands observed in the BSA include brackish marsh, tidal marsh, freshwater emergent marsh, forested/ shrub wetland, and seasonal wetland. Other waters in the BSA include intermittent streams, perennial streams, tidal creeks, tidal ponds, tidal sloughs, and tidal ponds.

Most of the BSA has been constructed over historical tidal wetlands, which are defined as wetlands and aquatic areas open to tidal influence below the topographic contour that corresponds to the maximum possible extent of the tides; the tidal boundary that would be observed during the highest tide of the current tidal epoch, if there were no levees, dikes, flood gates, or other unnatural obstructions to the landward flow of tidal water (SFEI 2011). Types of tidal wetlands in the BSA include brackish marsh, salt flats, and mud flats. In tidal wetlands, brackish open-water features were observed, including brackish tidal ponds and salt ponds. Open water features were delineated as other waters of the United States. Freshwater emergent wetlands observed in the BSA include cattail channels and freshwater marsh, isolated to agricultural areas. Freshwater marshes are nontidal, flooded, depressional wetlands. Vegetation dominating these areas include annual and perennial emergent species, such as cattails, bulrush, and sedges.

Named creeks and wetland features in the BSA include Tolay Creek and Sonoma Creek. Named creeks and wetland features adjacent to the BSA include the Napa River as it turns into the Mare Island Strait. All of these waterways flow south toward San

Pablo Bay. Named confluences that occur north of the BSA and flow generally east and west, depending on tidal influence, are Dutchman Slough, South Slough, China Slough, and Napa Slough. Unnamed sloughs meander naturally through the marshes along the southern side of SR 37; unnamed marsh sloughs along the northern side of SR 37 are all artificially altered by dikes, levees, and excavated channels.

Riparian scrub and forest (or mixed riparian forest) habitat is a multi-alliance assemblage of wetland and riparian trees and shrubs that narrowly line the western edge of the marsh depression of the historic Tolay Creek channel, running north along railroad tracks parallel to SR 121. This community also occurs along several other riverine features in the BSA. The willow riparian habitat is characterized by willows (*Salix* sp.) in the shrub or tree canopy (CNPS 2020). These vegetation communities occur along stream banks and benches, slope seeps, and stringers along drainages with plants such as coyote brush (*Baccharis pilularis*) and black elderberry (*Sambucus nigra*) (CNPS 2020). These communities are state-jurisdictional under Section 401 of the CWA and are considered sensitive habitat by CDFW. The sensitive habitat status is due to the high value of riparian habitat to wildlife and the relatively limited (and declining) distribution of this habitat at the local and statewide level.

Ten potentially jurisdictional culverted waters of the U.S. were observed during field surveys and from aerial imagery. These features are potentially jurisdictional due to connectivity to jurisdictional wetlands and other waters. There are no anticipated impacts to these features, and they are not discussed further in this analysis.

2.4.2.3 Environmental Consequences

The project is anticipated to have permanent impacts from placement of permanent fill for road widening, retaining walls, sheet piles, rock slope protection, and placement of guard rails. Under Alternative 3B, additional permanent impacts to wetlands and waters would be realized through bridge widening work at Sonoma Creek and would permanently shade additional areas below the widened bridge. The primary permanent impact under all scenarios is associated with road widening; the alternatives with greater shoulder widths added directly correlate to an increase in permanent impacts on wetlands and waters. Temporary impacts are associated with construction access, staging areas, and temporary dewatering activities with potential to temporarily impact wetlands and waters.

The wetlands and other waters that are potentially impacted under all build alternatives are spread across the length of the project area, and most impacts would occur in narrow strips adjacent to existing disturbed road shoulders and developed roadways. The potentially impacted areas border thousands of acres of tidal waters and wetlands, and are anticipated to be relatively low when considered in this greater

context. Alternative 3B has a substantially greater area of impact because of the proposed bridge widening at Sonoma Creek, and the substantially wider roadway proposed under that alternative. Although the project would cause temporary and permanent impacts to the intertidal areas, it has been designed to minimize fill and turbidity to the greatest extent feasible. Preliminary estimates of permanent and temporary fill impacts for all alternatives, as well as shading impacts from Alternative 3B, are shown in Table 2-38 and Table 2-39, respectively.

Table 2-38 Preliminary Estimated Permanent Impacts to Wetland and Other Waters

Habitat Type	Alternative 1 Permanent fill (Acres)	Alternative 2 Permanent fill (Acres)	Alternative 3A Permanent fill (Acres)	Alternative 3 B Permanent fill (Acres)	Alternative 3B Shading (Acres)
Tidal wetlands	1.52	3.2	3.75	7.33	0.52
Nontidal wetlands	0.45	0.11	0.27	0.44	0
Subtotal Wetlands	*1.97*	*3.31*	*4.02*	*7.77*	*0.52*
Tidal Other-Waters	0.03	0.16	0.24	1.23	0.17
Nontidal Other-Waters	0.03	0.02	0.02	0.02	0.01
Subtotal Other-Waters	*0.06*	*0.18*	*0.26*	*1.25*	*0.18*
Total Wetlands and Other Waters	**2.03**	**3.49**	**4.28**	**9.02**	**0.70**

Note: All values were rounded up to the nearest 0.01 acre.

Table 2-39 Preliminary Estimated Temporary Impacts to Wetlands and Other Waters

Habitat Type	Alternative 1 Temporary Impacts (Acres)	Alternative 2 Temporary Impacts (Acres)	Alternative 3A Temporary Impacts (Acres)	Alternative 3B Temporary Impacts (Acres)	Alternative 3 B Shading (Acres)
Tidal wetlands	3.3	5.59	6.29	6.61	0.87
Nontidal wetlands	1.19	0.97	0.85	0.98	0
Subtotal Wetlands	*4.49*	*6.56*	*7.14*	*7.59*	*0.87*
Tidal Other-Waters	1.43	3.35	3.09	4.98	0.87
Nontidal Other-Waters	0.42	0.11	0.12	0.19	0.02
Subtotal Other-Waters	*1.85*	*3.46*	*3.21*	*5.17*	*0.89*
Total Wetlands and Other Waters	**6.34**	**10.02**	**10.35**	**12.76**	**1.76**

Note: All values were rounded up to the nearest 0.01 acre.

2.4.2.4 Avoidance, Minimization, and/or Mitigation Measures

All proposed measures under Section 2.4.1 for Sensitive Marsh and Wetland Communities (**BIO-01: Wetlands Protection – Invasive Plants**; and **BIO-02: Wetland Protection**) would also serve to protect wetlands and other waters for all Build Alternatives considered. All measures proposed for Water Quality in Section 2.3.2.4 would also serve to protect wetlands and other waters.

In addition to those measures, the following measures and compensation are proposed:

BIO-04: Estuarine Dewatering Work Window. In-water work requiring dewatering in tidal waters will be scheduled to occur between June 1 and November 30. Other work below MHHW (excluding impact pile driving) may be done year-round.

BIO-05: Turbidity Control. During the expansion of the Tolay Creek Bridge abutments and at other locations where ground disturbance would be conducted below MHHW, a silt-curtain, sheet pile or gravel-bag cofferdam, or other equivalent means will be installed as needed to minimize the generation of turbidity plumes in nearby tidal waters. Such cofferdams would be installed when there is no surface water present (i.e., at low tide). This requirement does not apply to in-water pile driving.

Proposed Compensation to Offset Loss of Wetlands and Other Waters

Caltrans proposes to compensate for permanent losses to wetlands and waters for the selected alternative at a 3:1 restoration/enhancement to impact ratio through a project specific compensation plan. This would include the use of an available conservation bank to the extent that credits are applicable and available, support of off-site restoration projects and programs, and restoration of onsite resources that are temporarily impacted by project construction.

Near the project area, there is currently one approved conservation bank, Burdell Ranch Wetland Mitigation Bank, with credits available for approximately 0.8 acre of non-tidal wetlands (1 credit=0.10 acre) impacts only (no tidal wetland credits are available). Each Alternative has different estimated permanent impact areas to non-tidal wetlands, and only Alternative 2 (which has the lowest anticipated impact area to non-tidal wetlands) would provide a feasible pathway for compensation through this bank (assuming a 3:1 ratio). Alternatives 1, 3A, and 3B would impact more non-tidal wetlands area than are available credits in the area with the same assumed ratio. No banks for tidal wetlands and tidal other waters are available near the project area.

Additionally, there are no approved in-lieu fee programs to compensate for impacts to wetlands and other waters.

Caltrans proposes to offset impacts and losses to wetlands and other waters through a project specific compensation plan that would fund nearby tidal restoration and enhancement efforts within the project's watershed(s). This would be achieved through coordination with specific restoration project owners, state and federal environmental regulators with jurisdiction to determine appropriate funding targets, define appropriate endowments, and develop an in-lieu-fee program specific to the project. Caltrans has identified several potential projects that could be funded to offset and compensate for loss of wetlands and other waters from the selected alternative. These include efforts in the Refuge (Mare Island, Cullinan Ranch, Strip Marsh, Skaggs Island, or Tolay Lagoon), or efforts being conducted through the Sonoma Creek Baylands Strategy (Sonoma Creek Restoration at Detjen and West End) sponsored by the Sonoma Land Trust. Funding and transfers could be established through a co-operative agreement with the California State Coastal Conservancy.

Caltrans would restore temporarily disturbed wetlands and other water areas to pre-project conditions on site at a 1:1 ratio.

The following measures summarize Caltrans commitment to offset impacts to wetlands and other waters from the selected alternative:

BIO-07: Wetlands and Other Waters Compensation. Caltrans will offset permanent loss and habitat degradation of wetlands and other waters in the project area at a 3:1 restoration/enhancement to impact ratio. Compensation will be provided through a project-specific plan that would provide in-lieu funding to a nearby restoration program or restoration project that would create, restore, or enhance resources adversely affected by the project. Appropriate compensation will be determined in coordination with state and federal environmental regulatory agencies with jurisdiction.

Caltrans will offset temporary impacts during construction to wetlands and other waters by restoring disturbed areas to pre-project conditions at a 1:1 ratio.

2.4.3 Plant Species

2.4.3.1 Regulatory Setting

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 FESA and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species section 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 (SSC), USFWS candidate species, and CNPS rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at CFGC, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at CFGC, Section 1900-1913, and CEQA, found at California PRC, Sections 21000-21177.

2.4.3.2 Affected Environment

Information analysis provided in this section is based on the Caltrans September 2021 draft NES to identify protected plant species in the area.

In addition to literature and desktop reviews of potential resources in the project area, Caltrans conducted extensive site surveys to determine species presence and potential to occur in the BSA, as summarized in Table 2-40.

Table 2-40 Plant Survey Dates

Survey Type	Personnel and Agency/Firm	Survey Dates
Rare Plant Survey and Vegetation Community Mapping	Danny Slakey (AECOM botanist) Sunshine Lopez (AECOM botanist) Saana Deichsel (AECOM ecologist)	September 23, 24, 26, and 27, 2019; December 17, 2019, March 13, 2020; and March 19, 2021
Rare Plant Reference Population Site Visit	Danny Slakey Sunshine Lopez	October 4, 2019

A complete list of special-status plants considered and a summary of the determinations on their potential occurrence or potential to occur is presented in Appendix I. Three special-status plant species—soft bird's-beak (*Chloropyron molle* ssp. *molle*), San Joaquin spearscale (*Extriplex joaquinana*), and saline clover (*Trifolium hydrophilum*)—were determined to have at least a moderate potential to occur in the BSA. The federally listed soft bird's-beak is also discussed under Section 2.4.5.

Some special-status plants may not have been detected if present in the BSA because floristic surveys were conducted in September and December 2019, after the blooming periods for some potentially occurring special-status plants. The potential for occurrence of these species and potential effects the project may have on them are discussed in this section. Other special-status species were evaluated for their potential to occur in the BSA, as discussed in Appendix I, but are not discussed here because either (1) they would have been identifiable at the time of the rare plant survey and were not detected or (2) they have a very low potential to occur in the BSA, or both.

One rare plant species, the holly-leaved ceanothus (*Ceanothus purpureus*), was observed in the BSA. Although holly-leaved ceanothus was tentatively identified in the BSA, it is not treated as a special-status plant because it is a landscape planting outside of its known habitat and geographic range. One special-status plant, small spikerush (*Eleocharis parvula*) was observed in the BSA. Its rare plant ranking indicates that it is a watch list species with a low threat level (less than 20 percent of occurrences threatened). The plant was locally common in pickleweed mats and the upper edges of mud flats over a 1.8-mile stretch of the Cullinan Ranch segment north of SR 37, with more than 1,000,000 plants likely present. Because of its abundance in the BSA, the lack of impacts of the project to this species, its low threat level in California, and its widespread distribution beyond California, it is not further discussed in this analysis. No other natural populations of special-status plants were identified on floristic surveys of the BSA.

Soft Bird's-Beak

Soft bird's-beak was not observed during rare plant surveys conducted in the BSA in late September 2019. Because its flowering period extends into November, it would likely have been observed during the rare plant survey if there were populations present in the BSA. There are no CNDDB occurrences of this plant in the BSA.

Soft bird's-beak is a federally endangered, California State Rare, and California Rare Plant Rank (CRPR) 1B.2 herbaceous annual plant in the broomrape family (Orobanchaceae) (CNPS 2021). Soft bird's-beak is hemiparasitic (i.e., it gets its water and nutrients from the roots of another plant, but also makes food through photosynthesis) and grows with a broad range of host plants that are actively growing during its flowering and fruiting stages. Known hosts include common pickleweed, salt grass, and fleshy jaumea. Soft bird's-beak is restricted to coastal salt marshes habitats, where it occurs in colonies or subpopulations that can shift from year to year (USFWS 2013a).

The CNDDB occurrences of soft bird's-beak nearest to the BSA are about 1 mile from the BSA, but both are considered to no longer exist at those locations. The nearest extant occurrence is about 5 miles north of the BSA. Although the species is considered absent from nearby locations where it was previously known, coastal salt marsh habitats in the BSA with high cover of suitable host species could support soft bird's-beak. This community occurs in nearly all segments of the BSA east of the SR 121 interchange, including the Tolay Creek channel, Upper Tolay Lagoon, Upper and Lower Tubbs Island, Sonoma Creek channel, West End Land Club, Detjen-Flyshacker, State Land Commission (SLC)-leased Refuge, NSMWA Ponds 1 and 1a, Cullinan Ranch, Cullinan Ranch East, Strip Marsh, and the Mare Island Strait Interchange.

San Joaquin Spearscale

No occurrence of San Joaquin spearscale was observed in the BSA during floristic surveys, nor are there any recorded CNDDB occurrences of this species in the BSA. Most suitable habitat for this species in the BSA occurs outside of areas where direct construction impacts would occur

San Joaquin spearscale is a CRPR 1B.2 herbaceous annual plant in the goosefoot family (Chenopodiaceae) (CNPS 2021). This plant typically flowers from April through October and usually occurs in uplands, but it can occasionally occur in wetlands. San Joaquin spearscale grows in areas with alkaline soils, including chenopod scrub, meadows and seeps, playas, and valley and foothill grassland habitats (CNPS 2021).

Two CNDDB occurrences are known from approximately 3 miles north of the BSA. One of these was last observed in 1991 along the upper edges of a pickleweed marsh (CDFW 2019). In the BSA, seasonal wetlands with alkaline soils, and areas transitional between brackish marshes and uplands could support populations of San Joaquin spearscale. Transitional areas between brackish pickleweed marshes and uplands are common throughout the BSA but are often highly disturbed and dominated by nonnative invasive poison hemlock and fennel. Seasonal alkaline wetlands are found in several areas in the BSA, such as at the Mare Island Strait Interchange on the eastern end of the BSA. Species commonly associated with San Joaquin spearscale, such as salt grass, alkali heath, and pickleweed (CDFW 2019) are common in both seasonal alkaline wetlands and marsh/upland transition areas in the BSA.

Based on the presence of potentially suitable habitat in much of the BSA (except areas with only upland ruderal vegetation) San Joaquin spearscale has a moderate potential to be present. Given that rare plant surveys were conducted in late September, toward the end of the plant's known flowering period, San Joaquin spearscale may have been

present in the BSA but not detected during the rare plant survey. The small plants, if present, may have been undetectable at the time the survey was conducted.

Saline Clover

Saline clover was not observed in the BSA during floristic surveys, nor are there any recorded occurrences of this species in the BSA found in the CNDDB. Most suitable habitat in the BSA for this species occurs outside of areas where direct construction impacts would occur. If present, saline clover would not have been detected during botanical surveys, because the surveys were conducted well after the plant's known flowering period (April to June).

Saline clover is a CRPR 1B.2 annual herb in the pea family (Fabaceae) (CNPS 2021). Saline clover occurs in marshes and swamps, vernal pools, and mesic grasslands, and sometimes in areas with alkaline soils (CDFW 2019, CNPS 2021). Most occurrences of this plant are known from seasonally inundated habitats, such as mesic grasslands and vernal pools. Saline clover flowers from April to June (CNPS 2021).

The nearest recorded CNDDB occurrence of saline clover is approximately 1 mile west of the BSA and approximately 250 feet north of SR 37. There are three additional occurrences of saline clover within 5 miles of the BSA. Some existing habitat in the BSA could support this species, particularly at the upper edge of marshes where they transition to salt grass flats, coyote brush scrub, or ruderal habitats.

2.4.3.3 Environmental Consequences

The project is unlikely to have any direct or indirect impacts on San Joaquin spearscale, or Saline clover because most potentially suitable habitat in the BSA for these plants occurs outside of areas likely to be impacted by the project. Botanical surveys were conducted for this project covering all areas proposed for construction and were not detected. There is a small potential for both of these species to occur because there is a low risk they may not have been observed during the floristic surveys conducted for the project or they have the opportunity to occur between the time of surveys and start of construction. Construction activities could have adverse effects in the unlikely event that individual plants of either species are present in the project footprint.

2.4.3.4 Avoidance, Minimization, and/or Mitigation Measures

To avoid and minimize potential impacts to special-status plant species, the following measures are proposed:

BIO-08: Targeted Pre-Construction Plant Survey. During final project design, an experienced botanist will conduct a final floristic survey in the project area during the appropriate blooming period for all special-status plant species that have potential to occur but were not surveyed for previously. The survey does not need to cover the flowering period for species adequately surveyed for during the September 2019 surveys. Surveys should be conducted following the same protocols from the September 2019 surveys, *Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities,* prepared by CDFW, dated March 20, 2018. If special-status plant species are discovered, they will be included as an environmentally sensitive area in project plans and specifications. If any listed species are discovered that could be impacted by project activities, Caltrans will consult with state and federal regulators with jurisdiction, as appropriate.

BIO-09: Special-Status Plant Monitoring. If a special-status plant is discovered during construction monitoring in an area where ground-disturbing activities are proposed, it will be marked or fenced for avoidance with a 10-foot buffer. Ground-disturbing work near special-status plant species will proceed under the supervision of a project biologist.

2.4.4 Animal Species

2.4.4.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. USFWS, NMFS, and 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 FESA or CESA. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species Section 2.4.5 below. All other special-status animal species are discussed here, including CDFW fully protected species and SSCs, and USFWS or NMFS candidate species.

Federal laws and regulations relevant to wildlife include the following:

- NEPA
- Migratory Bird Treaty Act (MBTA)
- Fish and Wildlife Coordination Act
- Marine Mammal Protection Act

State laws and regulations relevant to wildlife include the following:

- CEQA
- Sections 1600 – 1603 of CFGC
- Sections 4150 and 4152 of CFGC

CDFW has administratively designated certain species that are not CESA-listed with special status for greater consideration during CEQA review. According to CDFW, a SSC is a species, subspecies, or distinct population of an animal (i.e., fish, amphibian, reptile, bird, and mammal) native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria (criteria for fishes are similar except that federally listed taxa are not defined as SSCs):

- is extirpated from the state or, in the case of birds, is extirpated in its primary season or breeding role;
- is listed as federally but not state-threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

CDFW SSC that are not listed under FESA are reviewed in this section.

2.4.4.2 Affected Environment

The analysis summarized in this section is from the NES prepared in September 2021.

All special-status wildlife species with potential to occur in the project area are summarized in this section. Although no protocol-level surveys were conducted, biologists conducted assessments to determine the suitability of the habitat in the BSA to host the wildlife species listed in Appendix I, and to confirm their potential to occur determinations. American peregrine falcon, California least tern, northern harrier, western snowy plover, and white-tailed kite are known to occur or have a high potential to occur but do not have potential to nest in the BSA due to lack of suitable nesting habitat. Though they may fly through and/or forage inside or in the vicinity of the BSA, direct and indirect effects on these species from project activities

are not anticipated or would be negligible, and are not discussed further in the document. Protected species that are not listed under FESA or CESA, their habitat requirements, and potential impacts of the project are discussed in detail in this section. CESA- and FESA-listed species with potential to occur in the project area are noted here, and potential impacts are discussed in Section 2.4.5.

Six SSCs by CDFW have some potential to occur in the BSA: pallid bat, Saltmarsh Common Yellowthroat, San Pablo song sparrow, Sacramento Splittail, Suisun shrew, and Western Burrowing Owl. California red-legged frog and North American green sturgeon are also state SSCs; however, these three species are also listed under the FESA and are discussed in Section 2.4.5. All remaining species that are known to occur in the region were determined to be absent from the BSA due to the lack of suitable habitat; local range restrictions; regional extirpations; lack of connectivity between areas of suitable or occupied habitat; and/or incompatible land use and habitat degradation or alteration of onsite or adjacent lands.

Marine mammals with potential to occur in the BSA include California sea lion (*Zalophus californianus*), northern elephant seal (*Mirounga angustirostris*), and Pacific harbor seal (*Phoca vitulina*). None of these species are federally or state-listed as threatened or endangered; however, all marine mammals are protected under the Marine Mammal Protection Act of 1972. These species may infrequently occur in or immediately adjacent to the BSA near Sonoma Creek and Tolay Creek.

2.4.4.3 Environmental Consequences

Migratory Birds

All migratory birds in the BSA are protected by the MBTA and Sections 3503, 3503.5, and 3513 of CFGC. Many species of migratory birds may inhabit the BSA at any given time and would typically use similar nesting locations. Migratory birds comprise many different bird species, including many common species. Potential nesting locations for migratory birds in the BSA include trees, dense shrubs, vegetated wetlands, grasslands and human-made structures. Nesting birds near the project limits would likely be tolerant of the disturbances and noise associated with the existing high traffic environment. Migratory birds could nest in the BSA during construction.

State Species of Special Concern

Pallid Bat

The pallid bat (*Antrozous pallidus*) is an SSC. It is most common in open, dry habitats such as grassland, shrublands, brushy terrain, rocky canyons, open farmland, desert, nonconiferous woodlands, and mixed coniferous forests with rocky areas for roosting (Bolster 1998; CDFW 1988). Pallid bats most often roost in rock crevices, old

buildings, caves, mines, and hollow trees, and are one of the bat species most predictably associated with bridges (Bolster 1998). This species roosts alone, in small groups (two to 20 bats), or in colonies (hundreds of individuals, which form in March-May and stay together until October (Bolster 1998; CDFW 1988).

No pallid bats were observed roosting or nesting in the BSA. There is one CNDDB occurrence of the pallid bat within 5 miles of the BSA; this occurrence is from a barn. Other CNDDB occurrences within 10 miles are from buildings and on bridges. Pallid bat has moderate to high potential to roost on the Tolay Creek and Sonoma Creek Bridges, as well in crevices in trees in the BSA at West End Land Club, Upper and Lower Tubbs Island, Tolay Creek channel, Raceway Sonoma, Paradise Vineyards, Sears Point Ranch, and the Refuge. Bat urine stains were observed on the underside of Tolay Creek Bridge. This species has no potential to occur in the remainder of the BSA due to a lack of roosting structures and unsuitable surrounding habitat.

Construction-related vegetation removal and replacement of Tolay Creek and Sonoma Creek Bridges may impact roosting pallid bats.

Saltmarsh Common Yellowthroat

The Saltmarsh Common Yellowthroat (*Geothlypis trichas sinuosa*) is an SSC whose range is restricted to woody swamps, and brackish and freshwater marshes in San Francisco Bay. It is commonly found in the transition zone between moist and upland habitats. In brackish and saline tidal marsh habitat around San Francisco Bay, yellowthroat abundance is positively associated with a high percent cover of rushes (*Scirpus* spp., *Juncus* spp.) and peppergrass (*Lepidium latifolium*). Nests are typically built near the ground in herbaceous vegetation (cattails, tule, and coyote brush) (Shuford and Gardali 2008). Breeding occurs from mid-March to late July.

There are 36 CNDDB occurrences of this species within a 5-mile radius of the BSA. Three occurrences of documented breeding pairs overlap the BSA. Numerous eBird occurrences have been reported in the vicinity of the BSA, and AECOM biologists observed this species foraging at multiple locations in the BSA during site surveys. Previous surveys in the area have shown that a majority of Saltmarsh Common Yellowthroat territories are in brackish marsh habitat (Jones and Stokes 2004). There is suitable breeding habitat in the vicinity of the BSA at the Mare Island overpass and Cullinan Ranch East. There are portions of moderately suitable breeding and foraging habitat in the BSA at Cullinan Ranch, NSMWA Pond 1A, Detjen-Flyshacker Club, West End Land Club, Upper and Lower Tubbs Island, Tolay Creek channel, SLC-leased Refuge, and Strip Marsh.

Vegetation removal may impact nesting Saltmarsh Common Yellowthroat. If a nonbreeding Saltmarsh Common Yellowthroat is present in the areas surrounding the project footprint, it is likely to be habituated to a high level of human disturbance and noise from the traffic on SR 37, and the bird would not likely be affected by the noise level produced by project activities.

Western Burrowing Owl

The Western Burrowing Owl (*Athene cunicularia*) is an SSC. Breeding habitat for this species consists of open areas with mammal burrows and includes native prairie, pastures, fallow fields, road and railway rights-of-way, and urban habitats (Klute et al. 2003). Burrowing owls require mammal burrows or natural cavities surrounded by sparse vegetation (Klute et al. 2003). Foraging habitat includes cropland, pastures, fallow fields, and areas with vegetation greater than 3 feet tall.

There are eight CNDDB occurrences of this species within a 5-mile radius of the BSA. The nearest CNDDB occurrence is approximately 0.3 mile north of the BSA. Other CNDDB records document owls foraging on levees and overwintering in grazed annual grassland west of Tolay Creek. Numerous eBird occurrences have documented wintering owls in the vicinity of the BSA. There is suitable nesting, foraging, and overwintering habitat, and grasslands with mammal burrows, adjacent to the BSA. The last confirmed breeding in Sonoma County (on Skaggs Island) was in 1986 (Center for Biological Diversity 2003), though surveys conducted between 2011 and 2016 documented one possible breeding pair near the Pacific Coast (Madrone Audubon Society 2020). There is a moderate potential for owls to be overwintering or foraging in grazed annual grassland habitat immediately adjacent to the BSA west of Tolay Creek during the winter months.

Western Burrowing Owl is unlikely to nest in or adjacent to the project footprint. It has the potential to overwinter or forage in grazed annual grasslands and agricultural habitats immediately adjacent to the BSA. If a burrowing owl is present in the areas surrounding the project footprint, it is likely to be habituated to a high level of human disturbance from SR 37, and thus it would not be likely to be affected by the project.

Suisun Shrew

The Suisun shrew is an SSC. This species is restricted to the tidal and brackish marshes along the northern shore of San Pablo and Suisun Bays, from Sonoma Creek to Grizzly Island (Bolster 1998). They prefer areas of low, dense vegetation which provide adequate cover (Bolster 1998). Most surveys for the species detect individuals at the junction between pickleweed marshes and upland levees vegetated with coyote bush (*Baccharis* spp.) and grasses (Bolster 1998). Because of its restricted range, this species is highly susceptible to habitat fragmentation (Jones and Stokes 2004).

There are eight CNDDB occurrences within a 5-mile radius of the BSA; two occurrences overlap the BSA. These occurrences are at Sonoma Creek and adjacent marshes, and near Cullinan Ranch East. Suisun shrew has often been detected during saltmarsh harvest mouse surveys conducted in the area. There is low- to moderate-quality tidal marsh habitat in Cullinan Ranch, Sonoma Creek channel, the SLC-leased Refuge, Strip Marsh, and NSMWA Intake Ponds 1 and 1A, where pickleweed is present.

As a result of project activities, impacts to foraging habitat in Cullinan Ranch, Sonoma Creek channel, the SLC-leased Refuge, Strip Marsh, and NSMWA Intake Ponds 1 and 1A are expected. Construction along the shoulders of SR 37 would result in the removal of vegetation.

Construction activities might result in the injury or mortality of Suisun shrew because of equipment use (e.g., grading), vehicle traffic, and worker foot traffic. Noise, vibrations, and visual disturbance associated with grading, vegetation removal, and bridge construction activities may disturb Suisun shrew inhabiting adjacent marsh habitat. Individuals that vacate the area because of increased levels of noise and disturbance might be exposed to increased competition from conspecifics already occupying the area to which they were displaced, and may experience increased levels of predation because they are unfamiliar with the new area or lack sufficient cover. If project construction were to occur during a flooding event that inundates the adjacent wetlands, Suisun shrew could potentially take refuge in the upland transitional habitat along the roadway in the project footprint until the flooding recedes. Thus, project activities that occur in this habitat during an extreme flooding event may result in the injury or mortality of individual Suisun shrew due to equipment use (e.g., grading), vehicle traffic, and/or worker foot traffic.

Sacramento Splittail

The Sacramento Splittail (*Pogonichthys macrolepidotus*), a endemic fish that inhabits brackish and fresh waters, is an SSC. In the San Francisco Bay Area, this species is primarily found in the Sacramento-San Joaquin Delta, Suisun Bay, Suisun Marsh, lower Napa River, and lower Petaluma River (Moyle et al. 2004). Migration to spawning areas occurs between late November and early January, with breeding occurring if the floodplain maintains appropriate depths and temperatures (Moyle et al. 2004). Juveniles occur throughout the estuary from April to August (Moyle et al. 2004). Sacramento Splittail prefer fresh water, though are tolerant of moderate salinities (USFWS 1996).

There are six CNDDB occurrences of the species within 5 miles of the BSA. Many of these occurrences document Sacramento Splittail using tidal channels. Presence of this species in the BSA would be seasonal because Sacramento Splittail migrate from

estuaries to spawn in fresh water. No spawning habitat is present in the BSA. A moderate potential exists for the species to occur in all tidally influenced the open-water portions of the BSA. However, there is a low potential of occurrence due to relatively low seasonal presence at Tolay and Sonoma Creek, low tidal exchange at Tolay Creek, and likely prohibitively high salinities in the tidal channels in the BSA during the in-water work periods.

Potential permanent impacts to suitable foraging habitat for Sacramento Splittail may occur under all Build Alternatives from placement of solid fill below the MHHW of tidal waters for roadway expansion. Roadway fills would result in loss of intertidal marsh or mudflat areas, and the placement of rock slope protection to protect expanded roadways from erosion would change some areas of the intertidal zone from soft-substrate to hard-substrate habitat. Potentially impacted habitat would be limited to shallow intertidal areas, the majority of which are not easily accessible to Sacramento Splittail and are not expected to be frequently used by them. There is potential for temporary increases in turbidity during construction. No impacts from entrapment are anticipated. No spawning habitat would be affected by the project.

Placement of permanent piles in Sonoma Creek for bridge expansion are proposed under Alternative 3B. Placement of piles in the waterway at Sonoma Creek would permanently reduce the amount of available foraging habitat. Underwater sound pressure levels have the potential to alter the behavior of Sacramento Splittail and, if sufficiently intense, can cause temporary shifts in hearing ability or injury to internal organs. The project would include the vibratory installation of steel pipe piles at Tolay Creek and Sonoma Creek Bridge. Vibratory driving would not cause injury or temporary hearing threshold shifts for Sacramento Splittail. Impact pile driving may also be used to place piles in Sonoma Creek to expand the existing bridge and would have potential to cause injury or mortality to individual Sacramento Splittail, if the species is present. Shading impacts from bridge widening at Sonoma Creek Bridge under Alternative 3B would be realized as a temporary impact from installation of a temporary access trestle during construction and as an increase in permanent shading caused by widening of the Sonoma Creek Bridge. Shade impacts are not expected to have any meaningful effect on habitat for this species.

Marine Mammals

Marine mammals with potential to occur in the BSA include California sea lion, northern elephant seal, and Pacific harbor seal. None of these species are federally or state-listed as threatened or endangered; however, all marine mammals are protected under the Marine Mammal Protection Act of 1972. These species may infrequently occur within or immediately adjacent to the BSA near Sonoma Creek and Tolay Creek.

Potential impacts to marine mammals are anticipated under Build Alternative 3B only. Marine mammals exposed to noise from vibratory and/or impact pile driving may experience masking of other environmental noises and change their behaviors in response to the noise, such as moving away from the pile driving activity, startle responses, and changes to underwater vocalizations. Such noise masking and behavioral effects would be temporary, localized, and not expected to result in harm. If vibratory or impact pile driving is included in the selected alternative, Caltrans would complete and submit an application to the NMFS Office of Protected Resources for an Incidental Harassment Authorization (IHA) for the year(s) when in-water construction with potential to harass marine mammals. Under an IHA, no take beyond behavioral harassment is allowed for Marine Mammal Protection Act species. Any impacts that would exceed behavioral harassment would be avoided.

2.4.4.4 Avoidance, Minimization, and/or Mitigation Measures

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

Raptors and other Migratory Birds

Under all Build Alternatives, nesting or foraging has the potential to be impacted by the project. Project features summarized in Table 1-4 would also serve to protect birds protected by the MBTA. The following additional measures are proposed to avoid and minimize potential impacts to raptors and other migratory birds. No compensation for raptors and migratory birds is anticipated.

BIO-10: Nesting Bird Protection. The following measures would be implemented to reduce and avoid impacts to nesting birds in the project area:

- During the bird nesting season (typically February 1 to August 31; as early as January 1 for raptors), a project biologist will conduct pre-construction surveys for active bird nests no more than 7 days prior to the start of ground or vegetation disturbance events and every 14 days during project activities.
- Tree and/or shrub removal or trimming will be conducted outside of bird nesting season.
- Tree trimming and/or shrub trimming/removal will be performed with hand tools.
- If an active nest is identified during construction that may be impacted by project activities, a no-disturbance buffer of 250 feet for raptors and 50 feet for nonraptors will be established immediately, and the project biologist will be notified. A reduced or enlarged buffer and other protection measures will be

implemented in accordance with project permit requirements, defined during final design, or in consultation with the appropriate wildlife agency.

Pallid Bat

Tree removal under all alternatives would have potential to impact pallid bats. Project features and measures proposed for trees under Section 2.4.1.3 as BIO-03 would also serve to protect pallid bats. No compensation is anticipated under any alternative. The following measures are proposed for all Build Alternatives to avoid and minimize impacts to the pallid bat.

BIO-11: Pre-Construction Bat Surveys and Avoidance Measures. The project biologist will conduct a visual inspection and habitat assessment for potentially suitable bat roosting habitat within 200 feet of where planned work on existing structures, tree trimming, or tree removal will occur. Assessments of bridges will include inspection of all open crevices and expansion joints. The pre-construction bat survey must be conducted during one of two time periods, either from March 1 to April 1, or from August 31 to October 15. The results of the survey will guide the following measures:

- If the habitat assessment reveals suitable roosting habitat for bats, then the appropriate exclusionary measures will be implemented prior to construction during the period between March 1 and April 15 or between August 31 and October 15.
- If the habitat assessment reveals suitable bat habitat in trees and tree removal is scheduled from April 16 through August 30 and/or October 16 through February 28, then presence/absence surveys will be conducted 2 to 3 days prior to any tree removal or trimming.
    - If presence/absence surveys are negative, then tree removal may be conducted by following a two-phased tree removal system.
    - If presence/absence surveys indicate bat occupancy, then the occupied trees will only be removed from March 1 through April 15 and/or August 31 through October 15.

Potential avoidance measures for roosting bats will be implemented as determined necessary by the project biologist in coordination with the Resident Engineer. Potential measures include visual monitoring, seasonal avoidance, enticements, and appropriate exclusion measures.

- Avoidance Measures: Avoidance measures may include seasonal avoidance, phased construction, and enticements away from the work area (e.g., providing temporary and/or permanent bat housing nearby).

- Exclusion Measures: Exclusion netting will not be used. Other measures to exclude bats from accessing potential roost sites may be implemented at the direction and with the oversight of the project biologist.

BIO-12: Bat Monitoring Protocols. Construction activities will stop within 150 feet of a roosting bat or bat colony that could be harmed until a qualified biologist develops a site-specific bat avoidance plan to implement at the roosting site. Once the plan is implemented, project activities may recommence with project biologist oversight at that location.

Salt Marsh Common Yellowthroat

The measures proposed for migratory birds would successfully serve to avoid and minimize potential impacts to the salt marsh common yellowthroat. No additional measures are proposed for this species. With implementation of the proposed measures for migratory birds, there are no impacts to this species that would require compensation.

Western Burrowing Owl

The measures proposed for migratory birds would successfully serve to avoid and minimize potential impacts to the Western Burrowing Owl. Additional measures are proposed to protect Western Burrowing Owl. With implementation of the proposed measures, there are no impacts to this species that would require compensation.

BIO-13: Western Burrowing Owl Pre-Construction Surveys. Pre-construction surveys will be conducted where Western Burrowing Owl nesting habitat has potential to occur within 500 feet of work. Survey protocol will include:

- Conduct four survey visits.

- An initial visit must occur between February 15 and April 15.

- A minimum of three subsequent surveys will be conducted with at least 3 weeks between visits, with at least one visit to occur after June 15.

- Conduct an additional take avoidance survey no less than 14 days prior to initiating ground-disturbing activities where work will occur.

BIO-14: Western Burrowing Owl Nest Avoidance. If an active Western Burrowing Owl nest is discovered during pre-construction surveys or biological monitoring, the following initial buffers will be implemented:

- From April 1 to October 15, establish a 660-foot (200-meter) no-work buffer from the active nest site.
- From October 16 to March 31, establish a 164-feet (50-meter) no-work buffer from the active nest site.
- Buffers and minimization measures (e.g. blinds or screens) may be adjusted or implemented after coordination with CDFW.

Suisun Shrew

Measures proposed for the FESA-listed and state fully protected salt marsh harvest mouse in Section 2.4.5 would serve to protect the Suisun shrew. With implementation of those measures, no compensation is anticipated for this species.

Sacramento Splittail

Measures proposed for the FESA- and CESA-listed fish species in Section 2.4.5 would also serve to protect the Sacramento Splittail. With implementation of those measures, no compensation is anticipated for this species.

Marine Mammals

No impacts are anticipated to marine mammals under Alternatives 1, 2, or 3A. Alternative 3B includes the only scenario with potential to impact marine mammals. Alternative 3B has potential to harass marine mammal species, but impacts would be limited to behavioral effects only, and compensation would not be required.

2.4.5 Threatened and Endangered Species

2.4.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is FESA: 16 USC Section 1531, et seq. See also 50 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 FHWA (and the Department, as assigned), are required to consult with the USFWS and NMFS 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, CESA, CFGC 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. CDFW is the agency responsible for implementing CESA. Section 2080 of CFGC prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of CFGC 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 CFGC.

CFGC defining species with a "Fully Protected" status in Sections 3511, 4700, 5050, and 5515 are the state's first attempt to identify and provide additional protection to those animals that were considered rare or faced possible extinction. Lists were created for fish, mammals, birds, amphibians, and reptiles. However, this listing/review process was not as rigorous as required under CESA, and several Fully Protected species in California are common. Fully Protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collection associated with scientific research and relocation of bird species to protect livestock. Under the state definition, "take" is an action that directly or indirectly kills species. The state definition does not include the terms "harass" and "harm," which are included in the FESA take definition.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA), 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.

Endangered species consultation with USFWS and NMFS is necessary when a project has the potential to affect a federally listed species and/or destroy or adversely modify designated critical habitat.

In July 2012, President Obama signed the Moving Ahead for Progress in the 21st Century Act (MAP-21) into law, as Public Law 112-141. Section 1313 of MAP-21 amends 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program, allow any state to participate, and allow a state to renew its participation in the program. Through the NEPA Assignment Memorandum of Agreement, Caltrans is authorized to handle the FHWA's responsibilities under NEPA and other federal environmental laws, such as the FESA. Therefore, Caltrans is authorized to consult with USFWS and NMFS under section 7 of FESA when a project may affect federally listed species. Caltrans has prepared individual biological assessments pursuant to section 7 for USFWS and NMFS to assess and determine potential effects to listed species for the project. Caltrans included in the NMFS biological assessment an assessment of potential impacts to essential fish habitat (EFH) pursuant to a concurrent consultation under the MSA.

The BSA supports bird, mammal, fish, and plant species that are listed under the FESA and/or CESA. Three species—the salt marsh harvest mouse, the Ridgway's rail, and California black rail—are also considered Fully Protected species under CFGC.

Areas within the project's BSA where listed species habitat generally occurs is shown in Appendix A. Specific species habitat is not included with this document to avoid divulging potential locations of species that are targeted by poachers. Species are presented by their listing status (FESA; or FESA and CESA listed species first, then CESA-only species) in this document. The following listed species with potential to occur in the BSA are arranged here in the order that they are presented in this document.

- California red-legged frog (federally listed as threatened [FT]; and state SSC)
- Ridgway's rail (federally listed as endangered [FE]; state-listed as endangered [SE]; and state Fully Protected species [FP])
- Salt marsh harvest mouse (FE; SE; and FP)
- Chinook Salmon Central Valley Spring-Run evolutionarily significant unit (ESU) and Sacramento River Winter-Run ESU (FT; and state-listed as threatened [ST])
- Steelhead Central California Coast and California Central Valley distinct population segments (DPSs) (FT)

- North American Green Sturgeon Southern DPS (FT; SSC)
- Delta smelt (FT; and SE)
- Soft bird's-beak (FE)
- Longfin smelt (ST)
- California black rail (state threatened [ST]; and FP)
- Swainson's hawk (ST)

2.4.5.2 Affected Environment: California Red Legged Frog

The analysis summarized in the Threatened and Endangered Species sections are from the NES prepared in September 2021; the draft Biological Assessment for USFWS prepared on October 2021; and the draft Biological Assessment for NMFS prepared in September 2021.

California red-legged frogs breed between November and April in aquatic habitats, such as pools, ponds, marshes, springs, sag ponds, dune ponds, and lagoons, and in artificial impoundments, such as stock ponds (USFWS 2002). Adults prefer "deep (greater than 2 feet) still or slow-moving water and dense, shrubby riparian or emergent vegetation" (USFWS 2002). Such habitat generally includes freshwater marshes, streams, ponds, and other permanent and temporary water sources dominated by dense riparian scrubby vegetation (e.g., willows, cattails, and bulrushes).

Salinity of the water is also a determinant of whether California red-legged frogs have the potential to occur. The maximum salinity tolerance by adults is near 9 parts per thousand (ppt), and embryonic stages have an even lower tolerance (less than 5 ppt) (Jennings and Hayes 1990). Upland dispersal habitats with dense vegetation may be important sheltering habitat during winter. During the dry season, California red-legged frogs may live in small-mammal burrows and moist leaf litter (Jennings and Hayes 1994), as well as under boulders or rocks, organic debris, and agricultural features (USFWS 2002). During dry periods, this species is seldom found far from water. However, during wet weather, individuals may make overland excursions through upland habitats (Tatarian 2008). The average dispersal distance for California red-legged frog is 1 mile; the maximum dispersal distance is nearly 2 miles (USFWS 2010).

There are two California red-legged frog CNDDB occurrences within 1 mile of the BSA, a distance understood to be the species dispersal distance (USFWS 2005). Both occurrences are in the vicinity of Sears Point, and closest includes one adult California

red-legged frog that was observed in 2006 along an incised channel about 0.8 mile north of the BSA. There are several natural and artificial wildlife crossings in the BSA that may be used by dispersing California red-legged frogs to cross under SR 37, including culverts carrying streams and drainage channels under the road.

Habitat assessments were conducted in the field to determine the presence of potential dispersal, foraging, aestivation, and breeding habitat of California red-legged frog in the BSA. A review of previous habitat assessments for nearby projects was also considered. The aquatic habitat in the BSA east of Tolay Creek is too saline to support California red-legged frogs. The segment of the BSA west of SR 121 contains some of the elements necessary to meet the physical habitat requirements for California red-legged frog dispersal and aestivation habitat. The survey results determined that there is no suitable breeding habitat present in the BSA. Several factors make aquatic features in the BSA less suitable for breeding: brackish conditions; extreme dense growth of cattails and other in-channel vegetation; lack of permanent deep water; degraded water quality; and the long history of human disturbance. No California red-legged frogs were observed during the biological surveys that were conducted to assess habitats in the BSA.

Critical habitat for the California red-legged frog was designated by USFWS in April 2006 and revised in March 2010 (USFWS 2010). There is no critical habitat for California red-legged frog in the BSA. The closest critical habitat is on either side of I-80 in Napa and Solano Counties, about 4.1 miles to the northeast.

2.4.5.3 Environmental Consequences: California Red-Legged Frog

Direct Effects

All Build Alternatives would directly affect suitable California red-legged frog habitat that occurs west of the railroad line near the intersection of SR 121 and SR 37; no suitable habitat occurs east of that point in the BSA (see Map Book, included before the appendices). Potential impacts to California red-legged frog would include permanent and temporary loss of upland dispersal, foraging, and refugia habitat; and loss of aquatic dispersal habitat. Conversion of habitat from vegetated to developed would result in a permanent loss of habitat. Ground disturbance activities from staging, clearing, grubbing, etc., could temporarily impact potential upland dispersal, foraging, and refugia habitat. The proposed modifications to California red-legged frog habitat may have a potential adverse impact on the behavioral patterns of some individuals of this species, including foraging, migration, and aestivation. Anticipated permanent fill impacts to California red-legged frog habitat for each project alternative are summarized in Table 2-41. Table 2-42 summarizes the estimated temporary impacts to California red-legged frog habitat in the BSA.

Table 2-41 Estimated Permanent Fill Impacts to California Red-Legged Frog Habitat in the BSA

Habitat Type	Alternative 1 and 2 (Acres)[2]	Alternative 3A (Acres)[2]	Alternative 3B (Acres)[2]
Nonbreeding Aquatic Dispersal/Foraging[1]	0	0.17	0.17
Upland Dispersal/Foraging/Refugia	0.01	1.34	1.35
Total	**0.01**	**1.51**	**1.52**

Notes:

[1] Aquatic habitat not suitable for breeding.
[2] Acreages are rounded to the nearest hundredth of an acre before summing.

Table 2-42 Estimated Temporary Impacts to California Red-Legged Frog Habitat in the BSA

Habitat Type	Alternative 1 and 2 (Acres)[2]	Alternative 3A (Acres)[2]	Alternative 3B (Acres)[2]
Nonbreeding Aquatic Dispersal/Foraging[1]	—	0.1	0.1
Upland Dispersal/Foraging/Refugia	0.11	0.65	0.68
Total	**0.11**	**0.75**	**0.78**

Notes:

[1] Aquatic habitat not considered suitable for breeding.
[2] Acreages are rounded to the nearest hundredth of an acre before summing.

Based on nearby occurrences and suitable habitat in the BSA, there is potential for this project to result in the "take" of California red-legged frog as defined by section 7 of the ESA. The project could affect frogs dispersing through the project footprint during construction, where they could come into direct contact with construction equipment and/or personnel and be harmed or harassed. In addition, construction-related disturbances such as increased levels of human activity and increased noise and vibration levels could result in alteration of normal behavior (such as invoking an escape response or alteration of normal dispersal routes), resulting in increased chances of predation or other harm.

One freshwater wetland complex southwest of the SR 121 intersection where California red-legged frog may be dispersing or foraging. Construction activities there have the potential to harm or harass individuals. Permanent and temporary impacts to this wetland would occur because of shoulder widening. Work in this wetland would occur during the dry season, and no water diversion would be required. Any work in this wetland associated with removing vegetation would be considered a temporary impact to nonbreeding aquatic habitat because the wetland would be returned to pre-project conditions.

Activities associated with access, staging, storage, and disposal, in addition to activities associated with construction of the project (e.g., shoulder widening, and cut and fill) have the potential to contribute sediment and increase turbidity in riverine waters above those levels generally found under existing conditions. California red-legged frog would not experience any effects associated with sedimentation and turbidity because grading activities in suitable California red-legged frog habitat would occur in the dry season. The potential for construction activities to increase sedimentation or turbidity in creeks would be minimized. Based on the direct permanent and temporary impacts to upland dispersal habitat, foraging, and refugia habitat, and aquatic nonbreeding dispersal and foraging habitat, there is potential for take of individual California red-legged frogs.

Indirect Effects

No indirect effects are anticipated for any of the Build Alternatives. No new barriers to California red-legged frog dispersal would occur because of project components, and the areas planned for construction would not be between aquatic, upland, or dispersal habitats. The planned project activities are not anticipated to affect long-term California red-legged frog mobility in the area.

2.4.5.4 Avoidance, Minimization, and/or Mitigation Measures: California Red-Legged Frog

Previously described measures, including **BIO-03: Tree Replacement, Landscaping, and Revegetation Plan**, would also serve to avoid and minimize potential impacts to California red-legged frog.

All Build Alternatives are anticipated to have unavoidable impacts that would affect California red-legged frog. General and specific measures are summarized here that would avoid and minimize potential impacts to this species. Compensation to offset impacts to California red-legged frog habitat for the selected Build Alternative are proposed at the end of this section.

General Measures for All Threatened and Endangered Species

The following measures are included for all threatened and endangered species with potential to occur in the project area under all Build Alternatives:

BIO-15: Stop-Work Authority. Through the Resident Engineer or their designee, the project biologist(s) shall have the authority to stop project activities to minimize take of listed species or if he/she determines that any permit requirements are not fully implemented. If the project biologist(s) exercises this authority, the appropriate resource regulatory agencies shall be notified by telephone and email within 48 hours.

BIO-16: Worker Environmental Awareness Training. Before the onset of construction and within 3 days of any new worker arrival, a project biologist will conduct this training for all construction personnel. At a minimum, the training will include a description of all special-status species and their habitats; the potential occurrence of these species in the project area; an explanation of the status of these species and protection under FESA, CESA, and all other federal, state, and local regulatory requirements; the measures to be implemented to conserve listed species and their habitats as they relate to the work site; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction crews and project personnel entering the project footprint. Upon completion of the program, personnel will sign a form stating that they attended the program and understand all AMMs and implications of the FESA, CESA, and all other federal, state, and local regulatory requirements.

BIO-17: Discovery of Injured or Dead Special-Status Species. Immediately upon discovery of any dead, injured, or entrapped special-status species regulated by USFWS, NMFS, or CDFW, Caltrans will provide appropriate notifications to agency(s) with jurisdiction.

BIO-18: Wildlife Species Relocation. When listed wildlife species (that do not have state fully protected status) are present and it is determined that they could be injured or killed by construction activities, the project biologist in coordination with the appropriate state and federal wildlife agencies will identify appropriate methods for capture, handling, exclusion, and relocation of individuals that could be affected. Where listed species cannot be captured, handled, excluded, or relocated, actions that could injure or kill individuals will be avoided or delayed until the species leaves the affected area. Actions that could harm or kill individual state fully protected species that are in the project area will be avoided or delayed until the species leaves the affected area.

BIO-19: Construction Noise. Operation of pile drivers, dozers, large excavators, and other heavy equipment that generates vibration and noise impacts that could harm wildlife will be limited to daylight hours when a project biologist is present.

California Red-Legged Frog Species-Specific Measures

The following measures are proposed specifically for California red-legged frog for all Build Alternatives.

BIO-20: California Red-Legged Frog Habitat Work Window. These work windows are applicable only to those portions of the project area where suitable California red-legged frog habitat occurs.

- Initial ground disturbance in California red-legged frog upland dispersal habitat, as identified by a USFWS-approved project biologist, will be timed to occur between April 15 and October 15.

- All work in suitable aquatic habitat for California red-legged frog, as identified by a USFWS-approved project biologist, will only occur once the aquatic feature no longer holds water, or between June 15 and October 15 after installation of WEF.

BIO-21: California Red-Legged Frog Pre-Construction Surveys. Pre-construction surveys for the California red-legged frog will be conducted by the project biologist within 14 calendar days of the initiation of project activities in suitable upland and aquatic habitat prior to ground-disturbing activities, vegetation removal, and WEF installation. Surveys will be conducted as outlined in the 2005 USFWS species survey guidelines for California red-legged frog. Pre-construction surveys will include:

- Conduct foot surveys of potential frog habitat within the project limits and accessible adjacent areas (within at least 50 feet of project limits).

- Investigate potential cover sites (burrows, rocks, soil cracks, vegetation, and other potential refuge habitat); and any areas of disturbed soil for signs of California red-legged frog.

- Native vertebrates found in cover sites within the project limits will be documented and, if handling is allowed, relocated to an adequate cover site in the vicinity. Species that cannot be relocated due to special protection status will be addressed in coordination with the appropriate agency(s) with jurisdiction.

BIO-22: California Red-Legged Frog Monitoring Protocols. During construction in and near potential California red-legged frog habitat, the following protocols will be observed by the project biologist during construction monitoring:

- WEF installed in California red-legged frog habitat will be checked regularly for potential frog presence, to ensure that it is functioning as intended, and is appropriately maintained. WEF issues will be reported to the Resident Engineer for immediate resolution.

- Within 24 hours prior to initial ground-disturbing activities, portions of the project footprint where potential California red-legged frogs habitat has been identified will be surveyed by a project biologist(s) to clear the site of frogs moving above ground, or taking refuge in burrow openings or under materials that could provide cover.

- A project biologist(s) will be present during all initial ground-disturbing activities and vegetation removal in suitable refugia habitats for the California red-legged frogs to monitor the removal of the top 12 inches of topsoil.
- If potential aestivation burrows are discovered, the burrows will be flagged for avoidance.
- After a rain event, and prior to construction activities resuming, a qualified biologist will inspect the work area and all equipment/materials for the presence of California red-legged frog.
- Upon discovery of a California red-legged frog individual(s) in an active construction area, all work will cease within a 50-foot radius of the frog. The frog will be allowed to leave the site on its own; if the frog(s) does not leave on its own, it will be relocated within 0.25 mile of the construction site and placed in a natural burrow by a project biologist with the appropriate USFWS 10(a)1(A) handling permit.
- USFWS will be notified by phone and email within one working day of any California red-legged frog discovery in the project area.

Proposed Compensation to Offset Habitat Loss

Caltrans proposes to mitigate for permanent losses of California Red Legged Frog upland dispersal habitat at a 2:1 restoration to impact ratio; and non-breeding aquatic dispersal/foraging habitat at a 3:1 ratio for the selected alternative. Upland dispersal habitat is not suitable for breeding and is abundant in the surrounding area; therefore, a reduced ratio for this habitat type is proposed.

Caltrans identified four approved mitigation banks in the Bay with available credits for California red-legged frog. These banks include the North Bay Highlands Conservation Bank (Marin County), Ohlone West Conservation Bank (Alameda County), Oursan Ridge Conservation Bank (Contra Costa County), and Ridge Top Ranch Wildlife Conservation Bank (Solano County). There currently are enough available credits to compensate for loss of California red-legged frog through purchase of credits at available banks. Caltrans anticipates enough available credits would remain available before the project is complete.

Caltrans would restore temporarily disturbed California red-legged frog habitat areas to pre-project conditions on site at a 1:1 ratio.

The following measures summarizes Caltrans commitment to offset impacts to California red-legged frog habitat from the selected alternative:

BIO-23. Compensation for California Red-Legged Frog Habitat Effects. Caltrans will offset permanent loss of California red-legged frog habitat through the purchase of credits from an approved conservation bank in the project's service area. Credits will be purchased as follows:

- Loss of upland dispersal habitat area will be compensated through credit purchase at a 2:1 ratio
- Loss of non-breeding aquatic dispersal/forage habitat will be compensated through credit purchase at a 3:1 ratio

Caltrans will offset temporary impacts during construction to California red-legged frog habitat by restoring disturbed areas to pre-project conditions at a 1:1 ratio.

2.4.5.5 Affected Environment: Ridgway's Rail

This species occurs primarily in tidal salt and brackish marshes that have consistent tidal flows, and access to tidal channel networks, nesting and cover habitat, and prey supply of invertebrates. This species' current range is restricted to the tidal salt and brackish marshes surrounding San Francisco Bay, which includes the South and Central Bay, San Pablo Bay, and Suisun Marsh. Along the perimeter of San Pablo Bay, rails typically inhabit salt marshes dominated by pickleweed and California cordgrass (USFWS 2013a). Breeding season begins in February, with peak nesting period lasting from April through May (USFWS 2013a). Nesting habitat must include sloughs to provide invertebrate prey items and escape from predators (USFWS 2013a). Nests are built on elevated structures surrounded by vegetative cover at an elevation that does not become completely inundated during high tides. Small tidal channels with dense vegetation are important foraging areas (USFWS 2013a).

A total of 22 CNDDB occurrences of Ridgway's rail have been documented within 5 miles of the BSA; one occurrence overlaps the BSA at Tolay Creek and another at Sonoma Creek, both documented breeding behavior. The species has also been documented at Dutchman Slough and Sonoma Creek. The Ridgway's rail is a year-round resident of tidal marsh in the Refuge. Use of brackish marshes by Ridgway's rail in San Pablo Bay is largely restricted to the major sloughs and rivers (USFWS 2013b). Individuals have been documented in the vicinity of the BSA at Cullinan Ranch, Dutchman Slough, Guadalcanal Village, Upper Tolay Lagoon, Sonoma Creek, and at NSMWA Intake Ponds 1 and 1A, but where these locations overlap the BSA there is no suitable habitat present.

Ridgway's rail has a moderate potential to occur at Tolay Creek, Upper Tolay Lagoon, Sonoma Creek, and in portions of SLC-leased Refuge and Strip Marsh (Marriott, M., per. comm, 2020). These locations contain portions of suitable foraging and dispersal

tidal marsh habitat. Dense vegetation coverage is largely absent from the BSA. Most vegetated areas do not provide the higher marsh vegetation necessary for cover, retreat, and breeding; though narrow strips of vegetation are present along the waterward sides of SR 37, these areas likely do not provide enough cover for this cryptic species. Although the area to the east of Sonoma Creek, on the southern side of SR 37, has not been surveyed, the species is assumed to be present in the dense marsh habitat south of SR 37. This species has low to no potential to occur in the remainder of the BSA.

Critical habitat for this species has not been designated by USFWS.

2.4.5.6 Environmental Consequences: Ridgway's Rail

Direct Effects

All Build Alternatives would directly affect suitable Ridgway's rail habitat along the edge of the project footprint. Permanent effects include fill of brackish marshes at SLC-leased Refuge, Sonoma Creek, Strip Marsh, Tolay Creek, and Upper Tolay Lagoon. Table 2-43 summarizes the anticipated permanent fill impacts to Ridgway's rail habitat for each project alternative. Table 2-44 summarizes temporary impact areas to Ridgway's rail habitat from construction access, staging, vegetation clearing, and temporary soil disturbance.

Table 2-43 Estimated Permanent Fill Impacts to Ridgway's Rail Habitat in the BSA

Habitat Type[1]	Alternative 1 (Acres)[2]	Alternative 2 (Acres)[2]	Alternative 3A (Acres)[2]	Alternative 3B (Acres)[2]
Marginal Foraging/Dispersing	0.34	0.79	1.02	1.65

Notes:

1 Ridgway's rail and salt marsh harvest mouse habitats are almost entirely in the same area.
2 Acreages rounded to the nearest hundredth of an acre.

Table 2-44 Estimated Temporary Impact Areas to Ridgway's Rail Habitat in the BSA

Habitat Type[1]	Alternative 1 (Acres)[2]	Alternative 2 (Acres)[2]	Alternative 3A (Acres)[2]	Alternative 3B (Acres)[2]
Marginal Foraging/Dispersing	0.42	1.90	2.02	3.11

Notes:

1 Ridgway's rail and salt marsh harvest mouse habitats are almost entirely in the same area.
2 Acreages rounded to the nearest hundredth of an acre.

Accidental spills or runoff from the project footprint could potentially enter and degrade the brackish marsh habitat. Construction activities in or adjacent to the tidal wetlands

may affect this species. Effects on Ridgway's rail occurring in or near the project footprint may include an alarm response on the part of the bird, causing it to flush, run away from the source of disturbance, or wait out the disturbance. Other construction noise that may be generated by the project would be similar in magnitude to ongoing roadway noise, as described in Section 2.3.7. Ridgway's rail is a CFGC fully protected species; no take can be authorized under CESA. Project activities are anticipated to result in harassment only, which would require take authorization under FESA but is not considered take as defined in the CFGC and under CESA.

Under Alternative 3B only, there would be an increase in overwater shading due to the widening of the Sonoma Creek Bridge from its current width of 50 feet to 66 feet. In addition, a 36-foot wide falsework temporary trestle installed on the southern side of the bridge during construction would temporarily shade potential foraging habitat. Both the temporary and permanent shading are not expected to affect the productivity of open waters in the BSA because river flow, tidal, and wind-wave circulation would move water continuously through the narrow area of the daily and seasonally shifting shadow. Currently, there is approximately 20 feet of vertical clearance between the bridge and the water surface. The widened bridge and temporary trestle would have a similar amount of vertical clearance to the existing bridge. Shading may have some effect on the composition of benthic organisms in the affected area, but such changes are not expected to substantially alter the value of habitat for this species in the BSA. The creek would continue to provide hydrology to support the vegetation in the adjacent wetland communities. The pickleweed wetland under and immediately adjacent to the bridge is not dense or tall, and so does not currently provide nesting or high quality foraging habitat due to the lack of cover. Additionally, public use in these wetland habitats is relatively high; foot traffic is common through these areas to access Sonoma Creek for fishing and recreation. The frequent human disturbance and low quality vegetation present at these locations limit the use of the wetlands in the project area for this sensitive marsh-bird species. Estimated impacts from shading are summarized in Table 2-45.

Table 2-45 Alternative 3B Shading Impacts to Ridgway's Rail Habitat in the BSA

Habitat Type[1]	Temporary Shading (Acres)[2]	Permanent Shading (Acres)[2]
Marginal Foraging/Dispersing	0.86	0.52

Notes:

[1] Ridgway's rail and salt marsh harvest mouse habitats are almost entirely in the same area.
[2] Acreages rounded to the nearest hundredth of an acre.

Indirect Effects

Under all build alternatives, the project would not create new barriers to dispersal for this species. The planned activities are not anticipated to affect long-term mobility in the area for this species. Therefore, indirect effects on Ridgway's rail are not anticipated and are considered discountable.

2.4.5.7 Avoidance, Minimization, and/or Compensation: Ridgway's Rail

Under all Build Alternatives, the following previously described measures to protect wetland habitat and birds in the project area would also serve to avoid and minimize potential impacts on Ridgway's rail: **BIO-01: Wetlands Protection – Invasive Plants**; **BIO-02: Wetland Protection**; **BIO-03: Tree Replacement, Landscaping, and Revegetation Plan**; **BIO-04: Estuarine Dewatering Work Window**; **BIO-05: Turbidity Control**; **BIO-10: Nesting Bird Protection**; **BIO-15: Stop-Work Authority**; **BIO-16: Worker Environmental Awareness Training**; **BIO-17: Discovery of Injured or Special-Status Species**; and **BIO-19: Construction Noise**.

The following specific measures are proposed for all Build Alternatives to avoid and minimize potential impacts to Ridgway's rail:

BIO-24: Ridgway's Rail and California Black Rail Pre-Construction Survey. If Ridgway's rail or California black rail habitat are present within 700 feet of the immediate project area and work would occur during the rail nesting season (February 1 through August 31), a pre-construction survey by a USFWS 10(a)1(A) permit holder for Ridgway's rail will be conducted to determine whether the species are present. Survey requirements and timing would be determined in consultation with USFWS and CDFW.

If Ridgway's rail and/or California black rail are detected during pre-construction surveys, then project activities will not occur within 700 feet of an identified detection (or smaller distance if approved by USFWS and CDFW) during the rail nesting season. If rail activity is detected within the 700-foot buffer, immediate consultation with USFWS and CDFW is required.

BIO-25: Ridgway's Rail and California Black Rail Monitoring. The following monitoring protocols for Ridgway's rail and California black rail will be implemented where appropriate:

- A USFWS- and CDFW-approved biological monitor shall be present on site to monitor for Ridgway's rail and California black rail during the operation of large equipment within 300 feet of brackish marsh areas.

- The project biologist will be on site at Tolay Creek, Upper Tolay Lagoon, Sonoma Creek, the SLC-leased Refuge, and Strip Marsh during installation of WEF and vegetation removal. A project biologist will periodically inspect the fencing and site to verify that habitat protection measures remain effective.

- Prior to hand removal of vegetation, a project biologist will mark the limit of potentially suitable California black rail and Ridgway's rail habitats with signage or markers, such as colored posts or flagging tape. The signage or site markers will be maintained for the duration of work activities to ensure their continued visibility.

Proposed Compensation to Offset Ridgway's Rail Habitat Loss

Caltrans proposes to offset permanent losses of Ridgway's rail habitat at a 2:1 restoration/enhancement to impact ratio through purchase of credits at an approved bank. A relatively lower ratio is proposed because the habitat impacted is of marginal quality (i.e., low vegetation stature and high human disturbance in the affected habitat); the usage of the habitat by this species is limited to foraging only; and the rail's use of the habitat is likely relatively low in comparison to the expansive wetland habitats available to this sensitive marsh bird adjacent to the project area.

There are no current Ridgway's rail approved conservation banks for the project area. However, a conservation bank for Ridgway's rail in Alameda County, Newark Slough Conservation Bank, is in the approval process and is estimated to release credits in 2022. The project is within the anticipated service area for Ridgway's rail for this bank and the bank is expected to have credits available to meet compensatory needs for all project alternatives.

The following measure summarizes Caltrans commitment to offset impacts to Ridgway's rail habitat from the selected alternative:

BIO-26. Compensation for Ridgway's Rail Habitat Effects. Caltrans will purchase credits from an approved conservation bank in the project's service area to offset permanent loss and degradation of Ridgway's rail habitat at a 2:1 impact to restoration/enhancement area ratio.

Caltrans will offset temporary impacts during construction to Ridgway's rail habitat by restoring disturbed areas to pre-project conditions at a 1:1 ratio.

2.4.5.8 Affected Environment: Salt Marsh Harvest Mouse

The salt marsh harvest mouse (*Reithrodontomys raviventris*) is endemic to the marshes of San Francisco Bay (USFWS 2013a). The northern subspecies of salt marsh harvest mouse is found in marshes in San Pablo and Suisun Bays (USFWS

2013a). Salt marsh harvest mouse usually is restricted to saline or brackish marsh habitat. The largest population of the northern subspecies is found in the tidal marshes along northern San Pablo Bay (Petaluma River to Mare Island Strait). Preferred habitat includes pickleweed-dominated vegetation, as well as high-tide/flood refugia, seasonal use of terrestrial grassland, and mixed salt marsh vegetation habitat (USFWS 2013a). Recent trapping efforts have detected the species in significant numbers in brackish marshes and in marshes dominated by plants other than pickleweed, such as alkali bulrush (*Bolboschoenus maritimus*) and tri-corner bulrush (*Schoenoplectus americanus*) (Smith et al. 2018), in the grasslands adjoining marshes—at least 328 feet from the marsh edge, and in disturbed and diked marshes (Smith and Kelt 2019). As a result, managed wetlands are recognized as important habitat for the persistence of this species (Smith 2019). Activities are primarily nocturnal, with some activity identified at sunset and sunrise. The breeding season of salt marsh harvest mice, based on the female cycle, is from September to December in the San Pablo Bay area (Bias 1994).

A total of 16 occurrences have been documented within a 5-mile radius of the project alignment; one occurrence overlaps the BSA at SLC-leased Refuge and Strip Marsh. There is a BSA-adjacent occurrence under the Sonoma Creek Bridge. The tidal marshes along the northern San Pablo Bay, from the Petaluma River to Mare Island Strait, support the largest population of salt marsh harvest mouse (USFWS 2013a) and includes most of the project footprint. Trapping conducted at Tolay Creek and Cullinan Ranch resulted in capture of salt mash harvest mice in grassy, diked areas and on levees, indicating that salt marsh harvest mice use areas other than thick pickleweed, regardless of tidal flooding causing them to escape upland. Therefore, levees and grassy areas adjacent to pickleweed habitats cannot be dismissed as nonhabitat for the salt marsh harvest mouse (Hulst et al. 2001). There are portions of suitable tidal marsh habitat at Tolay Creek, Detjen-Flyshacker Club, Sonoma Creek, SLC-leased Refuge, Strip Marsh, and Cullinan Ranch.

Salt marsh harvest mice may forage in the pickleweed-dominated marsh habitat present throughout much of the BSA and may forage and seek refuge in most adjacent vegetated habitats. However, the immediate roadside ruderal vegetation in the BSA does not provide suitable cover and foraging opportunities for small mammal species and is not suitable as upland escape habitat for salt marsh harvest mice. The swaths of pickleweed adjacent to the road are less likely to be used than areas farther away from disturbance, unless high tide pushes the mice to these areas. Although mice have been observed in disturbed construction sites inside WEF, this is a very rare occurrence, and the likelihood for them to occur in active construction areas is low.

USFWS has not designated critical habitat for the salt marsh harvest mouse.

2.4.5.9 Environmental Consequences: Salt Marsh Harvest Mouse

Direct Effects

All Build Alternatives would fill in suitable salt marsh harvest mouse foraging habitat in the BSA near Tolay Creek, Detjen-Flyshacker Club, Sonoma Creek, the SLC-leased Refuge, Strip Marsh, and Cullinan Ranch. Table 2-46 summarizes anticipated permanent impacts from fill for each project alternative to salt marsh harvest mouse habitat. Table 2-47 summarizes anticipated temporary impacts from construction access, temporary structures, staging, vegetation, and other soil-disturbing activities in salt marsh harvest mouse habitat. Both permanent and temporary impacts would occur in narrow areas spreads out along the project footprint. In most of the of the habitat areas that would be impacted, the habitat quality is marginal due to ongoing disturbance associated with SR 37.

Table 2-46 Estimated Permanent Fill Impacts to Salt Marsh Harvest Mouse Habitat in the BSA

Habitat Type[1]	Alternative 1 (Acres)[2]	Alternative 2 (Acres)[2]	Alternative 3A (Acres)[2]	Alternative 3B (Acres)[2]
Foraging	0.37	0.69	0.92	1.67

Notes:

[1] Ridgway's rail and salt marsh harvest mouse habitats are almost entirely in the same area.
[2] Acreages rounded to the nearest hundredth of an acre.

Table 2-47 Estimated Temporary Impact Areas to Salt Marsh Harvest Mouse Habitat in the BSA

Habitat Type[1]	Alternative 1 (Acres)[2]	Alternative 2 (Acres)[2]	Alternative 3A (Acres)[2]	Alternative 3B (Acres)[2]
Foraging	0.70	2.01	2.14	3.24

Notes:

[1] Ridgway's rail and salt marsh harvest mouse habitats are almost entirely in the same area.
[2] Acreages rounded to the nearest hundredth of an acre.

Construction along the shoulders of SR 37 would result in the removal of ruderal and wetland vegetation, and ground disturbance. These areas may experience increased erosion, resulting in the deposition of sediments in surrounding wetlands and waters. Any work in paved areas adjacent to wetlands and waters would require implementation of standard Caltrans BMPs to reduce erosion and sedimentation, and to prevent construction debris from entering the wetlands and waters downslope.

Salt marsh harvest mouse is a CFGC fully protected species; the project must completely avoid any take impacts to individual salt marsh harvest mouse greater than harassment; and no take (as defined under the CFGC) can be authorized under CESA for this species. Project activities are anticipated to result in harassment only, which would require take authorization under FESA but is not considered take under CESA.

The project is proposing measures that would ensure that salt marsh harvest mice are not injured during construction. Construction activities would create visual and noise disturbance that might result in the harassment of salt marsh harvest mice. Disturbance may be generated during equipment use (e.g., grading), vehicle traffic, and other work activities in areas adjacent to the species' habitat. Increased levels of noise and disturbance may also force individuals to move into new territories. These individuals might be exposed to increased competition from conspecifics in these new areas and increased levels of predation because of unfamiliarity with the area or lack of sufficient cover.

If project construction were to occur during a flooding event that inundates the adjacent wetlands, salt marsh harvest mice could potentially take refuge in the upland transitional habitat along the roadway in the project footprint until the flooding recedes. Project activities that occur in this habitat during an extreme flooding event may result in the harassment of individual salt marsh harvest mice.

For Alternative 3B, there would be an increase in permanent shading over potential salt marsh harvest mouse forage habitat due to the widening of the Sonoma Creek Bridge from its current width of 50 feet to 66 feet (Table 2-48). In addition, temporary shading of salt marsh harvest mouse foraging habitat would occur while a 36-foot-wide falsework temporary trestle is installed on the southern side of the bridge during construction. Shading impacts are not expected to substantially alter the value of habitat in the BSA.

Table 2-48 Alternative 3B Shading Impacts to Salt Marsh Harvest Mouse Habitat in the BSA

Habitat Type[1]	Temporary Shading (Acres)[2]	Permanent Shading (Acres)[2]
Foraging	0.86	0.52

Notes:

[1] Ridgway's rail and salt marsh harvest mouse habitats are almost entirely in the same area.
[2] Acreages rounded to the nearest hundredth of an acre.

Indirect Effects

No new barriers to salt marsh harvest mouse dispersal would occur from project components under all Build Alternatives, and the areas planned for construction are not between patches of pickleweed. The planned activities are not anticipated to affect

long-term salt marsh harvest mouse mobility in the area. Therefore, indirect project effects on salt marsh harvest mouse are considered discountable.

2.4.5.10 Avoidance, Minimization, and/or Compensation: Salt Marsh Harvest Mouse

Under all Build Alternatives, the following previously described measures to protect wetland habitat and wildlife in the project area would also serve to avoid and minimize potential impacts on salt marsh harvest mouse: **BIO-01: Wetlands Protection – Invasive Plants**; **BIO-02: Wetland Protection**; **BIO-03: Tree Replacement, Landscaping, and Revegetation Plan**; **BIO-04: Estuarine Dewatering Work Window**; **BIO-05: Turbidity Control**; **BIO-15: Stop-Work Authority**; **BIO-16: Worker Environmental Awareness Training**; **BIO-17: Discovery of Injured or Special-Status Species**; and **BIO-19: Construction Noise**.

The following specific measures are proposed for all Build Alternatives to avoid and minimize potential impacts to salt marsh harvest mouse.

BIO-27: Salt Marsh Harvest Mouse Pre-Construction Surveys. A USFWS- and CDFW-approved project biologist(s) will conduct pre-construction surveys no less than 7 days prior where suitable or potentially suitable habitat for salt marsh harvest mouse occurs and could be disturbed by construction activities in the project area. If salt marsh harvest mouse is discovered, immediate consultation with USFWS and CDFW is required before work near the discovery can proceed.

BIO-28: Salt Marsh Harvest Mouse Exclusion Fencing. The following requirements for salt marsh harvest mouse WEF will be implemented:

- All supports for the WEF shall be placed on the inside of the work area to prevent salt marsh harvest mouse from climbing the stakes into the work area.
- The salt marsh harvest mouse-proof WEF shall be at least 2 feet high but no higher than 4 feet.
- The fencing shall be made of a heavy plastic sheeting material that is too smooth for salt marsh harvest mouse to climb.
- The toe of the fence shall be buried approximately 6 or 8 inches in the ground to prevent salt marsh harvest mouse from crawling or burrowing underneath it.
- A 4-foot buffer shall be maintained free of vegetation around the exclusion fencing and work areas.

- The final design and proposed location of the fencing shall be reviewed and approved by USFWS prior to placement.

BIO-29: Salt Marsh Harvest Mouse Monitoring Protocols. The following protocols will be followed during biological monitoring at project locations where salt marsh harvest mouse identified in pre-construction surveys may occur:

- A project biologist with previous salt marsh harvest mouse experience will be on site during all construction activities.
- Salt marsh harvest mouse is a fully protected species under CFGC and may not be handled or captured at any time.
- If any small mouse is discovered during construction, work will cease in the immediate vicinity of the individual until CDFW and USFWS are contacted or the individual(s) leave the work area on their own.
- The project biologist will oversee installation of WEF for salt marsh harvest mouse.
- Salt marsh harvest mouse WEF will be checked daily to ensure that it has no holes and its base remains buried; the fence will be inspected to ensure that no mice are trapped. If a mouse is trapped by the fence, work will stop within 50 feet of the discovery, and the project biologist will monitor the individual(s) until they move away from the immediate work area.
- During vegetation removal in wetlands covered with pickleweed and/or salt grass (or other potential mouse habitat, as determined by project permits or the project biologist), the project biologist will mark and inspect areas to be cleared immediately prior to vegetation removal, and oversee removal work to ensure that salt marsh harvest mice and nests are clear of the work area.
- All vegetation removal will proceed away from the work area and toward contiguous areas of suitable habitat to allow any salt marsh harvest mice in the exclusion area to passively relocate into adjacent habitat.
- Initial removal of pickleweed, salt-grass, and other vegetation in the marked areas will be done using hand tools exclusively. Initial removal may commence until topsoil is visible.
- After initial removal is complete and once topsoil is visible, mowing with a string trimmer or mower may proceed (if necessary), with the project biologist walking in front of the mower and stopping work as needed to allow mice to relocate.

Proposed Compensation to Offset Salt Marsh Harvest Mouse Habitat Loss

Caltrans proposes to mitigate for permanent loss of salt marsh harvest mouse habitat at a 3:1 restoration/enhancement to impact area ratio through a project specific compensation plan. Salt marsh harvest mouse habitat that would be lost in the project area is limited to forage habitat adjacent to the roadway and fringe salt marsh adjacent to Sonoma Creek that experience consistent human disturbance from foot traffic accessing the creek. Salt marsh harvest mouse habitat adjacent to the project area is relatively high in abundance and experiences less disturbance compared to habitat next to the roadway. The measure proposed here also applies to the California black rail that uses the same habitat as the salt marsh harvest mouse.

There are no conservation banks with salt marsh harvest mouse credits available in the project's service area. Additionally, there are no approved in-lieu fee programs to compensate for impacts to salt marsh harvest mouse.

Caltrans proposes to offset impacts and losses to salt marsh harvest mouse and California black rail habitat through a project specific compensation plan that would fund nearby tidal restoration and enhancement efforts within the project's watershed(s). This would be achieved through coordination with specific restoration project owners, USFWS, and CDFW to determine appropriate funding targets, define appropriate endowments, and develop an in-lieu-fee program specific to the project. Caltrans has identified several potential projects that could be funded to offset and compensate for loss of salt marsh habitat from the selected alternative. These include efforts in the Refuge (Mare Island, Cullinan Ranch, Strip Marsh, Skaggs Island, or Tolay Lagoon), or efforts being conducted through the Sonoma Creek Baylands Strategy (Sonoma Creek Restoration at Detjen and West End) sponsored by the Sonoma Land Trust. Funding and transfers could be established through a co-operative agreement with the California State Coastal Conservancy.

Caltrans would restore temporarily disturbed salt marsh harvest mouse/California black rail habitat to pre-project conditions on site at a 1:1 ratio.

The following measures summarizes Caltrans commitment to offset impacts to salt marsh harvest mouse and California black rail habitat from the selected alternative:

BIO-30. Compensation for Salt Marsh Harvest Mouse and California Black Rail Habitat Effects. Caltrans will offset permanent loss and degradation of salt marsh harvest mouse and California black rail habitat in the project area at a 3:1 impact to restoration/enhancement ratio. Compensation will be provided through a project-specific plan that provides in-lieu funding to a nearby restoration program or restoration project that would create, restore, or enhance resources adversely affected

by the project. Appropriate compensation will be determined in coordination with state and federal environmental regulatory agencies with jurisdiction.

Caltrans will offset temporary impacts during construction to salt marsh harvest mouse and California black rail habitat by restoring disturbed areas to pre-project conditions at a 1:1 ratio.

2.4.5.11 Affected Environment: Chinook Salmon

The Chinook Salmon Central Valley Spring-Run ESU spawns in the upper Sacramento River and its larger tributaries (NMFS 2014). Adult Central Valley Spring-Run Chinook Salmon return from the ocean to begin their upstream migration in late January and early February (CDFW 1998) and enter the Sacramento River between March and September, primarily in May and June (Moyle 2002; Yoshiyama et al. 1998). Spawning normally occurs between mid-August and early October, peaking in September (Moyle 2002). Spring-run fry emerge from the gravel from November to March (Moyle 2002). Juveniles may reside in freshwater for 12 to 16 months, but some migrate to the ocean as young-of-the-year in the winter or spring months within 8 months of hatching (CALFED 2000). Studies in Butte Creek (Ward et al. 2003) found most spring-run migrants to be moving downstream primarily from December to February, and that these movements appeared to be influenced by flow.

The Chinook Salmon Sacramento River Winter-Run ESU adults migrate into San Francisco Bay and up the Sacramento River starting in November (Fukushima and Lesh 1998). They complete their upstream migration by May, with spawning occurring from April to August. Incubation of the eggs is from April to October, with fry emergence in June through October. Juveniles remain in the Delta until they are 5 to 10 months of age. Emigration to the ocean begins as early as November and continues through May (Fisher 1994; Myers et al. 1998).

Adult Chinook salmon of both ESUs may occasionally use San Pablo Bay as a migratory corridor to and from their spawning areas. However, adult Chinook salmon are not likely to occur in Sonoma Creek, Upper Tolay Lagoon, or the other tidal wetlands of the BSA because these waters do not lie along a migratory pathway, and migrating adults typically follow the deeper channels in the estuary during migration. Migrating adults could be seasonally present in the Mare Island Strait (Jones and Stokes 2004), outside of and east of the BSA.

NMFS-designated critical habitat for Chinook Salmon Central Valley Spring-Run ESU (NMFS 2005) and Chinook Salmon Sacramento River Winter-Run ESU (NMFS 1993) in the BSA includes all tidal waters of San Pablo Bay west of the Carquinez Bridge;

and all tidal waters of San Francisco Bay north of the San Francisco–Oakland Bay Bridge, from San Pablo Bay to the Golden Gate Bridge.

2.4.5.12 Environmental Consequences: Chinook Salmon

Direct Effects

All build scenarios have a low potential to affect Chinook salmon. Chinook are unlikely to occur in the project footprint because in-water work would be limited to the shallow margins of intertidal habitat. Additionally, the project schedule proposed to adhere to an in-water work window that would avoid the primary juvenile out-migration period of April and May. The fill required under all Build Alternatives for the project in tidal wetlands and waters would affect potential foraging habitat for anadromous fish species.

All project Build Alternatives would place fill in foraging habitat that is marginal for this species due to poor water quality resulting from limited tidal exchange and limited accessibility for fish from the Bay. Under Alternative 3B, fill also would be placed to widen the existing bridge in the open waters of Sonoma Creek which provides high quality foraging habitat. However, the BSA is not in the likely migratory pathway for Chinook salmon.

The project Build Alternatives have been designed to reduce potential impacts to intertidal habitats and prevent injury to fish from pile-driving activities, to avoid unnecessary turbidity increases from disturbances to intertidal areas, and to use BMPs to maintain water quality standards during in-water construction activities. Table 2-49 summarizes estimated permanent impacts to habitat that supports Chinook salmon in the BSA. Table 2-50 summarizes estimated temporary impacts to habitat that supports Chinook salmon in the BSA.

Table 2-49 Estimated Permanent Fill Impacts to Anadromous Fish Habitat in the BSA

Habitat Type	Alternative 1 (Acres)	Alternative 2 (Acres)	Alternative 3A (Acres)	Alternative 3B (Acres)
Tidal Waters	0.02	0.05	0.06	1.7
Tidal Wetlands	1.03	1.43	1.49	2.08
Total	**1.05**	**1.48**	**1.55**	**3.78**

Note:
All acreages are rounded up to the nearest 0.01 acre before summing.

Table 2-50 Estimated Temporary Impact Areas to Anadromous Fish Habitat in the BSA

Habitat Type	Alternative 1 (Acres)	Alternative 2 (Acres)	Alternative 3A (Acres)	Alternative 3B (Acres)
Tidal Waters	1.37	1.93	1.71	3.00
Tidal Wetlands	2.44	2.79	2.17	1.98
Total	**3.81**	**4.72**	**3.88**	**4.98**

Note:
All acreages are rounded up to the nearest 0.01 acre before summing.

Direct Effects Exclusive to Alternative 3B: Impact Pile Driving

On July 8, 2008, the Fisheries Hydroacoustic Working Group, whose members include the Southwest and Northwest Divisions of NMFS; the California, Washington, and Oregon Departments of Transportation; CDFW; and FHWA—issued an agreement for establishment of interim threshold criteria to determine the effects of high-intensity sound on fish. Although these criteria are not formal regulatory standards, they are generally accepted as viable criteria for underwater sound pressure effects on fish. The agreed-on threshold criteria for impulse-type sound pressure to harm fish have been set at a 206 dB peak for fish of all weights, 187 dB cumulative sound exposure level (cSEL) for fish greater than 2 grams, and 183 dB cSEL for fish less than 2 grams.

The Fisheries Hydroacoustic Working Group determined that sound pressure at or above the 206 dB peak level can cause barotrauma to auditory tissues, the swim bladder, or other sensitive organs. Sound pressure levels above the accumulated sound exposure level (SEL) may cause temporary hearing threshold shifts in fish. Behavioral effects are not covered under these criteria but could occur at these levels or lower. Behavioral effects may include fleeing and the temporary cessation of feeding or spawning behaviors. There are no formal SEL thresholds established for nonimpulsive sound pressure, such as vibratory pile driving because implementation of such methods is an accepted impact minimization measure. Therefore, vibratory driving of sheet piles and steel pipe piles proposed for the project are not considered impacts because the underwater noise generated with that method that would not cause take of listed fish species and are not analyzed here.

Under Alternative 3B, pile driving scenarios required at Sonoma Creek Bridge and Tolay Creek Bridge would include:

- At Tolay Creek Bridge, impact pile driving may be used to drive steel pipe piles for support of the enlarged bridge abutments. Water levels at this location are

assumed to be less than 2 feet, and attenuation using conventional methods is assumed to be effectively infeasible.

- At Sonoma Creek Bridge, widening of the navigational fendering underneath the bridge would require replacement of existing fender piles. A portion of the navigational fendering would first need to be removed, requiring vibratory extraction of existing wooden and steel piles that would be replaced with steel pipe piles. Installation of these piles is not anticipated to have impacts on fish species.

- Widening of the Sonoma Creek Bridge would require placement of temporary steel pipe trestle piles along the bridge alignment to support construction. Most of these piles would be installed into the marsh plain on either side of the Sonoma Creek Channel. A portion of these piles would be installed at locations that are near or below MHHW. Installation of these piles are not anticipated to have impacts on fish species.

- Widening of the Sonoma Creek Bridge would require placement of large permanent steel pipe piles along the bridge alignment. Most of these piles would be installed into the marsh plain on either side of the Sonoma Creek Channel. Some piles would be installed below MHHW, where water may be present, depending on the tidal stage

For listed fish species in the BSA, exposure to underwater sound that exceeds the 206 dB peak or 187 dB cSEL thresholds during impact pile driving that would be required to widen the Sonoma Creek Bridge and to do abutment work at Tolay Creek Bridge. Underwater pressure levels would be sufficient to cause injury if fish were to occur near impact pile driving activities. Source information from the project's conceptual design and pressure measurement taken from previous Caltrans pile driving activities were used to estimate distance to fish injury criteria. All values provided are preliminary estimates based on conceptual assumptions; actual distance would be refined if Alternative 3B is the selected Build Alternative. Table 2-51 summarizes preliminary estimated distances for the proposed impact pile driving that would be require for Alternative 3B.

Table 2-51 Alternative 3B Estimated Underwater Sound Pressure Effects on Fish Habitat from Impact Pile Driving

Assumed Pile and Work Description	Pile Driving Method	Distance To 187 dB cSEL Criterion (feet)	Distance to 206 dB Peak Criterion (feet)
Medium steel pipe piles at Tolay Creek Bridge	Impact	95	10
Pile proofing of small (12-inches or less) steel shell piles at Sonoma Creek Bridge for temporary access trestle construction	Impact (limited and with attenuation)	15	0
Large steel shell piles at Sonoma Creek Bridge	Impact (with attenuation)	12,631	112

Notes:

All estimated distances are based on conceptual-level assumptions and considered to be preliminary and conservative for use in this effect analysis.

Direct Effects Exclusive to Alternative 3B: Shading

For Alternative 3B, there would be an increase in overwater shading due to the widening of the Sonoma Creek Bridge from its current width of 50 feet to 66 feet (Table 2-52). In addition, a 36-foot-wide falsework temporary trestle installed on the southern side of the bridge during construction would add temporary shading. Both the temporary and permanent shading are not expected to affect the productivity of open waters in the BSA because river flow, tidal, and wind-wave circulation would move water continuously through the narrow area of daily and seasonally shifting shadow. There is no submerged aquatic vegetation in the vicinity of the Sonoma Creek Bridge. Currently, there is approximately 20 feet of vertical clearance between the bridge and the water surface. The widened bridge and temporary trestle would have a similar amount of vertical clearance to the existing bridge. Shading may have some effect on the composition of benthic organisms in the affected area, but such changes are not expected to substantially alter the value of habitat in the BSA.

Table 2-52 Alternative 3B Shading Impacts to Anadromous Fish Habitat in the BSA

Habitat Type	Temporary Shading (Acres)	Permanent Shading (Acres)
Tidal Waters	0.29	0.17
Tidal Wetlands	0.09	0.10
Total	**0.38**	**0.27**

Note: All acreages are rounded up to the nearest 0.01 acre before summing.

Indirect Effects

No new barriers to dispersal for Chinook salmon would occur because of project components. The planned activities are not anticipated to affect the long-term mobility of Chinook salmon in the area. Therefore, indirect project effects on Chinook salmon are considered discountable.

2.4.5.13 Avoidance, Minimization, and/or Compensation: Chinook Salmon

Under all Build Alternatives, the following previously described measures to protect wetland habitat and wildlife in the project area would also serve to avoid and minimize potential impacts on salt marsh harvest mouse: **BIO-01: Wetlands Protection – Invasive Plants**; **BIO-02: Wetland Protection**; **BIO-04: Estuarine Dewatering Work Window**; **BIO-05: Turbidity Control**;; **BIO-15: Stop-Work Authority**; **BIO-16: Worker Environmental Awareness Training**; and **BIO-17: Discovery of Injured or Special-Status Species**.

With implementation of the measures proposed here, compensation for impacts to Chinook salmon and other anadromous fish species with potential to occur in the project area would be limited to the permanent fill impacts in fish habitat for each Build Alternative. Compensation to offset permanent unavoidable loss of Chinook salmon and other anadromous fish habitat is proposed in this section.

Measures for all Build Alternatives

The following measures would be implemented to avoid and minimize potential impacts to anadromous fish in the project area under all Build Alternatives:

BIO-31: Vibratory Pile Driving. Whenever possible, piles will be installed and removed using a vibratory hammer or direct push methods. All sheet piles will be installed with a vibratory driver or direct-push methods. In upland areas out of waters and wetlands, an impact hammer may be used if the vibratory hammer cannot adequately install the pile.

BIO-32: In-Water Sheet Pile Fish Entrapment Avoidance. When sheet piles are installed below MHHW, they will be installed in a way that avoids fish entrapment (e.g., by closing off pile walls during low tide) The NMFS-approved project biologist will be present during any sheet pile installation below MHHW.

BIO-33: Fish Monitoring. During dewatering where fish may be present and impact pile-driving work, a NMFS-approved project biologist will be on site to observe work for conformance with permits and authorizations, and to monitor for any potential fish take.

BIO-34: Fish Relocation. At least 90 days prior to the start of in-water work with potential to strand or entrap fish, Caltrans will develop a fish relocation plan and submit it to NMFS for approval. If NMFS provides no comments on the proposed plan within 60 days, it will be considered approved and implemented as submitted. All biologists monitoring dewatering actions will be qualified and approved by NMFS to conduct fish collections in a manner that minimizes all potential risks to listed fish. The NMFS-approved project biologist(s) will be on-site to observe dewatering activities and to capture/rescue any fish that are observed in isolated areas during dewatering activities.

Proposed Compensation to Offset Habitat Loss to Listed Anadromous Fish Species

Caltrans proposes to mitigate for permanent loss of anadromous fish habitat in marginal habitat at a 2:1 restoration/enhancement to impact ratio; and at a 3:1 ratio for areas where habitat has greater tidal exchange and accessibility for anadromous fish. A relatively lower ratio is proposed for fish habitat in the project area because it is of marginal quality. Potentially affected marginal habitat occurs primarily at the tidal margins of the Caltrans right of way for SR 37. The project would place fill in mostly shallow intertidal areas that are not easily accessible to anadromous fish. Additionally these areas have limited tidal exchange with the Bay and likely experience higher water temperatures, decreased dissolved oxygen, and greater salinity fluctuations, particularly during the summer months. These factors reduce habitat suitability for anadromous fish species where these conditions occur.

The tidal areas in the project footprint with more consistent tidal exchange and greater accessibility to anadromous fish that would be mitigated at a 3:1 ratio are limited to:

- A small portion of the margin of Upper Tolay Lagoon, on the southern side of SR 37
- Sonoma Creek Channel, where it is crossed by SR 37
- Small portions of the 1.25-mile-long tidal slough that parallels SR 37 to the south, just east of the Sonoma Creek Bridge; and
- The southern margin of the NSMWA Intake Ponds 1 and 1A, and Cullinan Ranch Ponds, to the north of SR 37.

There are no species-specific conservation banks in the project service area with credits available for Chinook, steelhead, green sturgeon, or Delta smelt. One private conservation bank, Liberty Island Conservation Bank, with credits available for longfin smelt was identified. No approved in-lieu fee programs to compensate for impacts to

listed anadromous fish species were identified in the Service Area. Caltrans believes that a single approach to offset habitat impacts for all special status anadromous fish would provide greater benefits to these species than splitting compensation efforts between a project specific plan and purchase of conservation bank credits because the habitat impacted provides some benefit to all anadromous fish species in the project area.

Caltrans proposes to offset habitat impacts and losses to special status anadromous fish species through a project specific compensation plan that would fund nearby tidal restoration and enhancement efforts within the project's watershed(s). This would be achieved through coordination with specific restoration project owners, NMFS, USFWS, and CDFW to determine appropriate funding targets, define appropriate endowments, and develop an in-lieu-fee program specific to the project. Caltrans has identified several potential projects that could be funded to meet compensatory offset for loss of special status anadromous fish habitat from the selected alternative. These include efforts in the Refuge (Mare Island, Cullinan Ranch, Strip Marsh, Skaggs Island, or Tolay Lagoon), or efforts being conducted through the Sonoma Creek Baylands Strategy (Sonoma Creek Restoration at Detjen and West End) sponsored by the Sonoma Land Trust. Funding and transfers could be established through a co-operative agreement with the California State Coastal Conservancy.

The following measure summarizes Caltrans commitment to offset impacts to state and federally listed anadromous fish habitat from the selected alternative:

BIO-35. Compensation for Chinook Salmon, Steelhead, Green Sturgeon, Longfin Smelt and Delta Smelt Habitat. Caltrans will offset permanent loss of state and/or federally listed anadromous fish species (Chinook salmon, steelhead, green sturgeon, longfin smelt and Delta smelt) habitat through a 3:1 restoration/enhancement to impact ratio where permanent loss or degradation of habitat occurs at:

- Upper Tolay Lagoon
- Sonoma Creek
- The 1.25-mile-long tidal slough east of Sonoma Creek Bridge that is parallel to and south of SR 37
- NSMWA Intake Ponds 1 and 1A
- Cullinan Ranch Ponds

All other permanent loss or degradation of anadromous fish habitat from the project will be compensated at a 2:1 restoration/enhancement to impact ratio.

Caltrans will offset temporary impacts during construction to anadromous fish habitat by restoring disturbed areas to pre-project conditions at a 1:1 ratio.

Measures for Alternative 3B

Alternative 2B is anticipated to have greater in-water impacts during construction associated with in-water impact pile driving, which would require additional measures to avoid and minimize potential impacts to anadromous fish species. These would include

BIO-36: In-Water Impact Pile-Driving Work Window. Impact pile driving in wetlands and waters will be limited to June 1 through November 30 during daylight hours; vibratory pile driving will not be limited to a work window.

BIO-37: In-Water Impact Pile-Driving Attenuation. All in-water impact pile driving in water depths greater than 2 feet at any time during work will use an underwater sound pressure attenuation system (e.g., a dewatered cofferdam or a bubble curtain system).

BIO-38: Hydroacoustic Monitoring. During all impact pile-driving events, Caltrans will monitor in-water sound pressure levels relative to the 187 dB cSEL and 206 dB peak pressure level. A hydroacoustic monitoring plan for impact pile driving will be developed and provided at least 90 days prior to impact pile driving for review and approval by NMFS. If NMFS provides no comments on the proposed plan within 60 days, it will be considered approved and implemented as submitted. Vibratory pile driving will not be monitored.

BIO-39: Pile Proofing: Under Alternative 3B, Caltrans may propose a minimal amount of attenuated pile proofing to construct the proposed temporary trestle at Sonoma Creek that would occur during fish migration periods (e.g., outside of the proposed impact pile driving work window). Pile proofing outside of the impact pile-driving work window would be consistent with accepted guidance from USACE and NMFS (USACE Proposed Additional Procedures and Criteria for Permitting Projects under a Programmatic Determination of Not Likely to Adversely Affect Select Listed Species in California [the 2018 NLAA Program]) (USACE 2018). Pile proofing, if necessary, will be limited to the following.

- All temporary trestle piles must be driven using vibratory methods to the greatest extent possible.
- Steel pipe piles (or H piles) of 12-inch diameter or less will be used.
- No more than 20 piles per day will be driven.

- A marine attenuation system (e.g., bubble curtain or similarly effective methods) will be used in water depths greater than 2 feet.
- Piles driven in intertidal areas where water is less than 2 feet will only be proofed during low-tide or low-low tide events.
- A hammer that is 3,000 pounds or smaller will be used.
- A plastic or wood cushion block will be used between the hammer and the pile.
- Only a single hammer will be used per day.

Impacts to fish are anticipated to be less than adverse with implementation. If Caltrans elects to implement Alternative 3B and this measure, it will provide a complete analysis and impact assessment for state and federally listed fish species impacts during its final design phase and obtain all necessary permits and authorizations prior to construction.

2.4.5.14 Affected Environment: Steelhead Central California Coast and California Central Valley Distinct Population Segments

The range of Central California Coast steelhead is defined by the NMFS as all naturally spawned steelhead populations from the Russian River south to Aptos Creek in Santa Cruz County, including drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island at the confluence of the Sacramento and San Joaquin Rivers. NMFS defines the range of Central Valley steelhead as all populations of steelhead that spawn in the basins of the Sacramento and San Joaquin Rivers (inclusive of and downstream of the Merced River) in California's Central Valley. Steelhead typically prefers steeper gradient stream reaches, farther upstream and farther up tributaries than Chinook or Coho salmon, and the species can spawn in either the mainstem rivers or farther up into tributaries.

Adult steelhead typically begin returning to San Francisco Bay in late fall, and immigration mostly occurs from December through February. Spawning takes place from January through April in freshwater streams. Juvenile steelhead are found in all habitat types, and habitat preferences change with seasonal changes in stream conditions. Estuaries often are an important rearing area for juvenile steelhead on their way to the ocean. Adult steelhead abundance in San Francisco Bay increases from late fall through February. Juvenile steelhead migrate as smolts to the ocean from January through May, with peak outmigration occurring in March and April (Fukushima and Lesh 1998). Estuarine habitat present in the BSA has limited connectivity to San Pablo Bay, reducing the accessibility of those areas to out-migrating juveniles.

There are two occurrences of adults of this species within 5 miles of the BSA in North Slough, approximately 3.5 miles north of the BSA. The Napa River, Petaluma River, and Sonoma Creek are in the vicinity of the BSA and support Central California Coast steelhead runs (Jones and Stokes 2004). Of these, only Sonoma Creek would be impacted by the project. The Tolay Creek floodplain would be affected the project, but Tolay Creek lacks the hydrology and cold-water habitat characteristics needed for freshwater spawning and rearing.

Adult steelhead are known to use the San Pablo Bay and the Sonoma Creek channel as a migratory corridor to and from their spawning areas (Jones and Stokes 2004) but are likely to quickly move along the deeper channels of these water bodies. Juvenile steelhead may also pass through these areas during outmigration and may spend more time in estuarine waters than adults, foraging as they move to the ocean. Juvenile steelhead also go through the smoltification process (physiological changes to adapt from living in freshwater to living in seawater) during this time and may linger in the Sonoma Creek Channel and San Pablo Bay. In general, adult steelhead pass through San Francisco Bay during the winter months and out-migrating smolts typically pass through during April and May (NMFS 2016a).

Preliminary tagging studies conducted with steelhead smolts found the average residence time between Rio Vista and the Golden Gate to be 8.5 days, but variation is large, with some individuals spending a month in the estuary (Klimey et al. 2010). Deep water and channels can serve as migration corridors (Klimey et al. 2010), but the only portion of the BSA with such features is the Sonoma Creek channel under Sonoma Creek Bridge. Central California Coast steelhead are known to occur seasonally in Sonoma Creek, which supports a spawning population of the species. Elsewhere, a moderate potential exists for the species to occur in the tidally connected estuarine waters of the BSA, including the tidally influenced reaches of sloughs and waters associated with San Pablo Bay. However, the species is not expected to be seasonally present during the estuarine in-water work window.

Critical habitat was designated for these DPSs of steelhead in 2005 (NMFS 2005). Because the designated critical habitat for steelhead includes San Francisco Bay and the tidally influenced reaches of tributaries of the Bay, the BSA is in designated critical habitat. Critical habitat for steelhead includes freshwater spawning areas, freshwater rearing and migration areas, and estuarine rearing and migration areas. All tidally influenced surface waters accessible to steelhead that overlap the BSA are considered to be in critical habitat for these species.

2.4.5.15 Environmental Consequences: Steelhead

The environmental consequences for steelhead are the same as those described for Chinook salmon in Section 2.4.5.12.

2.4.5.16 Avoidance, Minimization, and/or Compensation: Steelhead

The AMMs and compensation to offset permanent unavoidable effects from the project Build Alternatives are the same as those described for Chinook salmon in Section 2.4.5.13. No additional measures are proposed for steelhead.

2.4.5.17 Affected Environment: North American Green Sturgeon

Green sturgeon are nocturnal benthic feeders and in estuaries may feed on amphipods, shrimp, clams, or anchovies. San Francisco Bay serves as an important habitat for all life stages of green sturgeon, supporting rearing and serving as an important migratory/connectivity corridor between the Sacramento River system and nearshore coastal marine waters (Moyle et al. 1992).

Subadult green sturgeon (4 to 15 years old) are known to range along the Pacific Coast and move into estuaries like San Pablo Bay during periods of cold water upwelling off the coast, apparently to avoid the cold water. Juvenile green sturgeons move throughout the Delta and San Francisco Bay during their first 3 to 4 years of life, before they move into the ocean as subadults. During this early life stage, they may be found in the Bay throughout the year. Because of known life-history patterns, the species is assumed to have moderate potential to occur in the tidally influenced open-water portions of the BSA.

Designated critical habitat includes all tidally influenced areas of San Francisco Bay, San Pablo Bay, and Suisun Bay, up to the elevation of the mean high water mark, including but not limited to areas upstream from the head of tide endpoint in numerous creeks (NMFS 2009). All tidally influenced waters and marshland below the mean high water elevation in the BSA are considered to be in critical habitat for this species.

2.4.5.18 Environmental Consequences: Green Sturgeon

The environmental consequences for green sturgeon are the same as those described for Chinook salmon in Section 2.4.5.12.

2.4.5.19 Avoidance, Minimization, and/or Compensation: Green Sturgeon

The AMMs and compen.sation to offset permanent unavoidable effects from the project Build Alternatives are the same as those described for Chinook salmon in Section 2.4.5.13. No additional measures are proposed for steelhead.

2.4.5.20 Affected Environment: Delta Smelt

Delta smelt (*Hypomesus transpacificus*) is found in open waters of bays, tidal rivers, channels, and sloughs of the San Francisco Bay-Delta (USFWS 1996). Delta smelt typically occupy open surface water habitat with salinities lower than 12 ppt, most often at salinities less than 2 ppt, and they move toward the shallow edge waters and slow-moving sloughs to spawn (CDFW 2019; USFWS 1996). When not spawning, Delta smelt are found where saltwater and freshwater mix. Adults migrate to freshwater areas to spawn between January and July (USFWS 1996; Merz et al. 2011). During their spawning migration, adults move into freshwater channels and sloughs between December and January (USFWS 1996). Spawning occurs between January and July (USFWS 1996). Recent survey data have shown evidence of spawning adults in the Lower Napa River, as well as juveniles and adults in San Pablo Bay (Merz et al. 2011).

There are five occurrences within 5 miles of the BSA, one of which overlaps the BSA. Two occurrences outside of the BSA are in in tidal channels that overlap the BSA. A third occurrence in 1998 was one fish taken from a man-made tidal channel approximately 500 feet south of SR 37. Water column surveys in the open waters of San Pablo Bay have detected all Delta smelt life stages, except for pre-spawning and spawning adults (CDFW 2019; Merz et al. 2011). A moderate potential exists for the species to occur in all tidally influenced open water portions of the BSA. However, during the in-water work window of June 1 through November 30, there is a low potential of occurrence due to relatively low population numbers, low tidal exchange at Tolay Creek and Sonoma Creek, and likely prohibitively high salinities in tidal channels during this time frame (Murphy and Hamilton 2013).

The BSA does not overlap with designated critical habitat for Delta smelt (USFWS 1994) The nearest unit is located 4.8 miles southeast of the BSA in the Carquinez Strait.

2.4.5.21 Environmental Consequences: Delta Smelt

The environmental consequences for Delta smelt are the same as those described for Chinook salmon in Section 2.4.5.12. However, there would be no effect to Delta smelt Critical Habitat because it is outside of the BSA.

2.4.5.22 Avoidance, Minimization, and/or Compensation: Delta Smelt

The AMMs and compensation to offset permanent unavoidable effects from the project Build Alternatives are the same as those described for Chinook salmon in Section 2.4.5.13. No additional measures are proposed for Delta smelt.

2.4.5.23 Affected Environment: Soft Bird's-Beak

Soft bird's-beak is a federally endangered, California State Rare, and CRPR 1B.2 herbaceous annual plant in the broomrape family (Orobanchaceae) (CNPS 2021). Soft bird's-beak is hemiparasitic and grows with a broad range of host plants that are actively growing during its flowering and fruiting stages. Known hosts include many include common pickleweed, salt grass, and fleshy jaumea. Winter annual species and many nonnative annual grasses and forbs are generally not suitable host plants, because they are often dying by the time soft bird's-beak is flowering and fruiting (USFWS 2013a). Soft bird's-beak is restricted to coastal salt marshes habitats, where it occurs in colonies or subpopulations that can shift from year to year (USFWS 2013a). Occurrences are distributed along San Pablo Bay, Grizzly Bay, and the delta regions of their tributaries, including the Napa and Sonoma Rivers. There are currently 27 known occurrences of this plant, with 19 of them presumed to be extant (CDFW 2019). Soft bird's-beak is known to flower from June to November (CNPS 2021).

Soft bird's-beak was not observed during rare plant surveys conducted in the BSA in late September 2019. Because its flowering period extends into November, it would likely have been observed during the rare plant survey if there were populations present in the BSA.

Critical habitat for soft bird's-beak was designated by USFWS in April 2007 (USFWS 2007). There is no critical habitat for this species in the BSA. The closest critical habitat is along Interstate 780 in Solano County, approximately 5 miles southeast.

2.4.5.24 Environmental Consequences: Soft Bird's-Beak

The proposed project is unlikely to have any direct or indirect impacts to soft bird's-beak because most potentially suitable habitat in the BSA for this plant occurs outside of impact areas. Because additional pre-construction surveys would be conducted prior to construction during the plant's blooming period in the BSA, soft bird's-beak, if present, would be detected prior to ground-disturbing activities. No substantial impacts to soft bird's-beak are anticipated.

2.4.5.25 Avoidance, Minimization, and/or Compensation: Soft Bird's-Beak

Previously described measures for special-status plant species, particularly **BIO-08: Targeted Pre-Construction Plant Survey; and BIO-09 Special Status Plant Monitoring** would serve to avoid and minimize potential impacts to soft bird's-beak.

2.4.5.26 Affected Environment: Longfin Smelt

The longfin smelt (*Spirinchus thaleichthys*) is listed as state threatened and is a federal candidate for listing. This species is historically found in the San Francisco Estuary,

Sacramento-San Joaquin Delta, Humboldt Bay, and the estuaries of the Eel and Klamath Rivers (USFWS 1996). Adult longfin smelt occur in bays, estuaries, and nearshore coastal areas, and migrate into freshwater rivers to spawn from January through March (USFWS 1996). Adult and juvenile longfin smelt primarily use the middle or bottom of the water column in salt or brackish water; larval smelt concentrate near the surface of brackish waters (USFWS 1996). Spawning takes place in freshwater, with high outflows dispersing larvae and juveniles into rearing habitat in Suisun and San Pablo Bays (USFWS 1996).

There are three CNDDB occurrences of longfin smelt within 5 miles of the BSA. Water column surveys in the open waters of San Pablo Bay and Mare Island Strait have detected longfin smelt (CDFW 2019), and surveys in open water areas north of the BSA have detected all life stages (Merz et al. 2013). Sonoma Creek has deep, cool waters that provide spawning habitat for the species, but individuals are likely to quickly move along the deeper channels. A moderate potential exists for the species to occur in all tidally influenced open water portions of the BSA. However, during the in-water impact pile driving work window of June 1 through November 30, there is a low potential of occurrence due to relatively low seasonal presence at Tolay and Sonoma Creek, low tidal exchange at Tolay Creek, and likely prohibitively high salinities in tidal channels during this time frame (Murphy and Hamilton 2013).

2.4.5.27 Environmental Consequences: Longfin Smelt

The environmental consequences for longfin smelt are the same as those described for Chinook salmon in Section 2.4.5.12.

2.4.5.28 Avoidance Minimization and/or Compensation: Longfin Smelt

The AMMs and compensation to offset permanent unavoidable effects from the project Build Alternatives are the same as those described for Chinook salmon in Section 2.4.5.13. No additional measures are proposed for longfin smelt.

2.4.5.29 Affected Environment California Black Rail

California black rail is a state threatened and state fully protected species. California black rail habitat generally includes salt marshes, freshwater marshes, and wet meadows. Most California populations are nonmigratory, and these habitat types provide areas for breeding, foraging, and overwintering. Near tidal areas, the rails also require a dense cover of upland vegetation to provide protection from predators when the birds must leave marsh habitats during high tides. Typical associated vegetation includes pickleweed and bulrush. California black rail forages in the same habitats that it uses for breeding. This species begins breeding in February; nesting occurs from

March to June. Nests often are concealed in dense vegetation, often pickleweed, near the upper limits of tidal flooding.

There are 14 occurrences of the California black rail within a 5-mile radius of the BSA, two of which overlap the BSA at Tolay Creek channel, the SLC-leased Refuge, and Strip Marsh. California black rail has a moderate potential to occur at Tolay Creek, Upper Tolay Lagoon, Sonoma Creek, and in portions of SLC-leased Refuge and Strip Marsh (Marriott, M., per. comm, 2020). These locations contain portions of foraging and dispersal tidal marsh habitat. This species has low to no potential to occur in the remainder of the BSA.

2.4.5.30 Environmental Consequences: California Black Rail

The environmental consequences for California black rail are the same as those described for Ridgway's rail in Section 2.4.5.6 because these sensitive marsh birds share the same habitat.

2.4.5.31 Avoidance, Minimization, and/or Compensation: California Black Rail

The avoidance and minimization measures proposed for all threatened and endangered species in Section 2.4.5.10, for Ridgway's rail in Section 2.4.5.7, and for the salt marsh harvest mouse in Section 2.4.5.4 would also server to project California black rail. Specific compensation is proposed for loss of potential California black rail habitat as **BIO-30 Compensation for Salt Marsh Harvest Mouse and California Black Rail Habitat Effects**. No additional measures are proposed for California black rail.

2.4.5.32 Affected Environment: Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is listed as state threatened. It is breeding resident adapted to open grasslands and prairies (CDFW 2016). Swainson's hawk would also forage in managed wetlands during dry summer months (CDFW 2016). They often nest at the edge of riparian corridors with access to foraging habitat, but lone trees in agricultural fields and roadsides trees are often used as well (CDFW 2016). Valley oak, Fremont cottonwood (*Populus fremontii*), walnut (*Juglans* spp.), and willow are the tree species most commonly used for nesting (CDFW 2016). Breeding generally occurs from late March to late August (CDFW 2016).

There are no CNDDB occurrences within 5 miles of the BSA; however, AECOM biologists observed this species foraging in the BSA during field surveys. There are trees suitable for nesting in and adjacent to the BSA at Upper Tubbs Island and west of Tolay Creek. Swainson's hawk have been observed east of Tubbs Island, but because there is no nesting habitat, they would likely only be using this area for

foraging. Swainson's hawk has a moderate potential to nest at Upper Tubbs Island and west of Tolay Creek.

2.4.5.33 Environmental Consequences: Swainson's Hawk

Under all Build Alternatives considered, vegetation removal may impact nesting Swainson's hawks. Non-nesting Swainson's hawk individuals may also be present though these individuals are less likely to be directly affected by project activities because of existing ambient conditions that include a high level of traffic and human disturbance along the 37 corridor. Implementation of pre-construction nesting bird surveys during the nesting season (early March to July) would minimize impacts to breeding birds.

2.4.5.34 Avoidance, Minimization, and/or Mitigation Measures: Swainson's Hawk

Previously described measures to protect tree and oak woodland communities, and migratory birds, would also serve to substantially avoid and minimize any potential effects to Swainson's hawk. These include **BIO-03: Tree Replacement, Landscaping, and Revegetation Plan**; **BIO-10: Nesting Bird Protection**; **BIO-15: Stop-Work Authority**; **BIO-16: Worker Environmental Awareness Training**; **BIO-17: Discovery of Injured or Special-Status Species**; and **BIO-19: Construction Noise**.

No compensation to offset impacts to Swainson's hawk is anticipated. The following specific measure is proposed for Swainson's hawk to avoid and minimize potential impacts during construction:

BIO-40: Swainson's Hawk Pre-Construction Surveys. Pre-construction surveys will be conducted within a 0.25-mile radius of Swainson's hawk nesting or forage habitat during the nesting season of February 1 through August 31. Surveys will be conducted in the following manner:

- Surveys will be conducted in accordance with The Swainson's Hawk Technical Advisory Committee's May 31, 2000, *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley.*
- Caltrans will conduct surveys during two survey periods immediately prior to initiating any project-related construction activity.
- If an active Swainson's hawk nest is discovered during surveys or monitoring, Caltrans will immediately contact CDFW to determine requirements on nest impact avoidance measures and work buffer distances.

2.4.6 Essential Fish Habitat

2.4.6.1 Regulatory Setting

Section 305(b)(2) of the MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104 267), requires federal agencies to consult with the NMFS on activities that may adversely affect EFH for federally managed fish species. These species include commercial fishes with established Fisheries Management Plans (FMPs) as managed by regional fisheries management councils. EFH includes those waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity. In the definition of EFH, “waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle (NMFS 2016b).

2.4.6.2 Affected Environment

San Francisco Bay, including tidal areas in the BSA, is classified as EFH under the MSA and serves as habitat for at least 14 species of commercially important fish and sharks that are federally managed under two FMPs: the Pacific Groundfish FMP and the Coastal Pelagic FMP. The Coastal Pelagic FMP is designed to protect habitat for a variety of fish species that are associated with open coastal waters. Fish managed under this plan include plankton-feeding fish and their predators. The Pacific Groundfish FMP is designed to protect habitat for more than 90 species of fish, including rockfish, flatfish, groundfish, some sharks and skates, and other species that associate with both hard and soft substrates.

The entire San Francisco Bay is also classified as EFH for species managed under the Pacific Coast Salmon FMP, which includes Chinook salmon. The Pacific Salmon FMP is designed to protect habitat for commercially important salmonid species. Chinook salmon is the only one of these species that may be seasonally present in the BSA. Although evidence suggests that migrating salmonids move along the deeper channels of San Francisco Bay, migration behavior in estuaries is poorly understood. Outmigrating juveniles may forage in estuaries during migration, and they are more likely than migrating adults to enter shallow tidal areas.

In addition to EFH designations, San Francisco Bay is designated as a Habitat Area of Particular Concern for various fish species in the Pacific Groundfish and Coastal Pelagic FMPs because this estuarine system serves as breeding and rearing grounds important to these fish stocks.

2.4.6.3 Environmental Consequences

All Build Alternatives may affect EFH through impacts to water quality, and a the relatively small amount of permanent habitat loss resulting from the placement of fill in tidal waters and wetlands. The project has been designed to avoid unnecessary turbidity increases from channel bed disturbance, to avoid debris falling into open water, and to use BMPs to maintain water quality standards during in-water construction activities.

Hydroacoustic impacts and overwater shading would affect EFH under Build Alternative 3B.

The project would impact EFH under all Build Alternatives by placing permanent fill into EFH. The impacted areas would be spread out along the alignment of SR 37, which borders thousands of acres of tidal waters and wetlands. These fill materials would also result in temporary effects to and loss of intertidal marsh or mudflat areas. Placement of rock slope protection may modify some intertidal areas from soft substrate to hard substrate habitat. This change in substrate may improve habitat for groundfish species associated with rocky substrate but decrease habitat suitability for others associated with soft substrate.

2.4.6.4 Avoidance, Minimization, and/or Mitigation Measures

Measures proposed to protect special-status fish species would also serve to protect EFH, and no additional measures are proposed. No compensation is required for impacts to EFH.

2.4.7 Invasive Species

2.4.7.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed 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.

2.4.7.2 Affected Environment

A high abundance and diversity of NNIP species were observed throughout the BSA, particularly in upland areas adjacent to the elevated roadway. A total of 52 California

Invasive Plant Council (Cal-IPC)-rated NNIP species occur in the BSA (Cal-IPC 2019). Of these, Cal-PIC rates eight species as “high,” 23 species are rated “moderate,” and 21 are rated “limited.” The most abundant moderate and high-rated NNIPs and those with the greatest potential to spread in the BSA are discussed in this section.

All the upland semi-natural communities present in the project’s BSA area are dominated by NNIP species. Although NNIP mapping was not conducted for this project, most of the large and dense infestations of high and moderate species are in upland semi-natural communities. Dominant NNIP species are found in each of these semi-natural communities. Smaller and lower-density patches of NNIP species are also found in both upland and wetland communities throughout the BSA. A complete list of moderate- and high-rated species is included in Table 2-53. No CDFA A- through C-rated noxious weeds (species that are considered pest species with known economic or environmental detriment) were observed in the BSA.

The most highly invaded areas in the BSA are the flats and sloped banks immediately adjacent to the paved roadway. This NNIP-dominated roadside buffer is at least 3 feet wide in most of the BSA but can extend up to about 10 feet wide in some areas. The roadside NNIPs are mostly restricted to uplands above the MHHW elevation. The most abundant NNIP in these areas is fennel, followed by poison hemlock, black mustard, and hoary mustard (all Cal-IPC Moderate species). Some NNIP grass species are also found in this area along the roadway, including Cal-IPC Moderates slender wild oat and Bermuda grass, as well as foxtail brome (Cal-IPC High). The highly invaded roadsides occur in all segments of the BSA.

Cal-IPC High-rated species are of concern because they can have severe ecological impacts as well as high rates of dispersal and establishment. Most of these species occur in the BSA in small isolated patches, or as infrequent associates in communities dominated by other species. Three communities dominated by Cal-IPC High-rated species were identified in the BSA: fields dominated by yellow-star-thistle, perennial pepper weed patches, and Himalayan blackberry. Yellow star-thistle and Himalayan blackberry were observed in the areas where the corresponding upland semi-natural communities were mapped. Perennial pepper weed patches were only mapped in one segment of the BSA at the Sonoma Raceway, but perennial pepper weed occurs as a common associate in freshwater wetland areas throughout the BSA, especially at the Sears Point Restoration Project North and South, SR 121 Interchange, and other portions of the Sonoma Raceway.

Table 2-53 Cal-IPC High- and Moderate-Rated Species Observed in the BSA

Scientific Name	Common Name	Cal-IPC Rating
Atriplex semibaccata	Australian saltbush	Moderate
Avena barbata	slender wild oat	Moderate
Brassica nigra	black mustard	Moderate
Bromus diandrus	ripgut brome	Moderate
Bromus madritensis ssp. *rubens*	foxtail brome	High
Carduus pycnocephalus	Italian thistle	Moderate
Carpobrotus edulis	iceplant	High
Centaurea calcitrapa	purple star thistle	Moderate
Centaurea solstitialis	yellow star-thistle	High
Cirsium vulgare	bullthistle	Moderate
Conium maculatum	poison hemlock	Moderate
Cortaderia jubata	Andean pampas grass	High
Cotoneaster sp.	unknown cotoneaster	Moderate
Cynara cardunculus	cardoon	Moderate
Cynodon dactylon	Bermuda grass	Moderate
Cynosurus echinatus	dogtail grass	Moderate
Dipsacus sativus	Indian teasel	Moderate
Dittrichia graveolens	stinkwort	Moderate
Festuca perennis	Italian rye grass	Moderate
Foeniculum vulgare	fennel	Moderate
Genista monspessulana	French broom	High
Hedera helix	English ivy	High
Hirschfeldia incana	hoary mustard	Moderate
Holcus lanatus	common velvetgrass	Moderate
Hypochaeris radicata	hairy cats ear	Moderate
Lepidium latifolium	perennial pepperweed	High
Mentha pulegium	pennyroyal	Moderate
Phalaris aquatica	Harding grass	Moderate
Rubus armeniacus	Himalayan blackberry	High
Salsola soda	alkali Russian thistle	Moderate
Torilis arvensis	field hedge parsley	Moderate

Source: Cal-IPC California Invasive Plant Inventory

2.4.7.3 Environmental Consequences

NNIPs occurring adjacent to the roadway have the greatest potential to spread in response to construction activities from the project, due to their proximity to work locations. Some NNIP species may be less dominant in the BSA currently but have potential to spread because of disturbance, such as the construction of the project. The project alternatives would expand the width of the highway, and the shoulders and cleared areas next to the roadway would likely transition to more ruderal vegetation similar to the habitat that is currently adjacent to SR 37. The contractor would be subject to construction contract requirements applied to all roadway projects, that minimize spread of invasive species through cleaning of equipment, use of clean fill, and revegetation of cleared areas with appropriate seed and vegetation species.

2.4.7.4 Avoidance, Minimization, and/or Mitigation Measures

Previously described measures for plant species and sensitive habitat would effectively avoid and minimize effects from NNIP. With implementation of already proposed measures, no substantial impacts from NNIP species is anticipated, and no new measures are proposed here. Measures that would address NNIP species include **BIO-01: Wetlands Protection – Invasive Plants**; **BIO-03: Tree Replacement, Landscaping, and Revegetation Plan**; and **BIO-07: Wetlands and Other Waters Compensation**;. No compensation is anticipated to be required for invasive species.

2.5 Cumulative Impacts

2.5.1 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. 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 NEPA can be found in 40 CFR Section 1508.7.

2.5.2 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. Present and reasonably foreseeable future projects include land use developments, infrastructure, and other transportation improvements that are planned and funded and would be near the proposed Build Alternatives' improvements.

The No Build Alternative would not include improvements to SR 37. It would not require construction and would not contribute to cumulative environmental effects in combination with other projects.

Table 2-54 lists transportation corridor projects along or near the SR 37 corridor. These projects are in various stages of project development, from early conceptual planning and feasibility study to projects planned for approval.

Future planned land use developments within approximately 1 mile of the project area are described below in Table 2-55. The information in Table 2-54 was obtained from CEQAnet (2020); the planning departments for the counties of Solano, Napa, and Sonoma; and the City of Vallejo. The land uses in Solano, Napa, and Sonoma Counties adjacent to SR 37 are generally not designated for development; development proposals are therefore limited to the incorporated City of Vallejo and Mare Island at the eastern extent of the project corridor. For this reason, only current and planned development in City of Vallejo and Mare Island are presented in Table 2-55.

Table 2-54 Current and Proposed Planned Developments within One Mile of the Project Area

Project Name/Description	Expenditure Authorization Number	County	Post Miles	Sponsor	Status
SR 37 Pavement Rehabilitation PM R11.2/14.6 – Capital Preventive Maintenance. Pavement rehabilitation along highway mainline and ramps, replace guardrails, upgrade curb ramps.	2K740	Marin	R11.2/14.6	Caltrans	Delivery 2024
SR 37 (U.S. 101 to SR 121) SR 37 Flood Reduction Project (U.S. 101 to SR 121) – to address flooding and SLR between the present and 2045.	4Q320	Marin/ Sonoma	R11.2/14.6; 0.0/3.9	Caltrans	Delivery 2025
SR 37 Ultimate SLR Resilience Design Alternatives Assessment (U.S. 101 to SR 121)	Not Identified	Marin/ Sonoma	R11.2/14.6; 0.0/3.9	MTC	Feasibility Study
SR 37 Petaluma River Bridge Preservation. Resurface the bridge deck, replace bridge fender system, mitigate bridge scour, and upgrade bridge railings.	2Q500	Marin	14.5/15.0	Caltrans	Delivery 2024
Reconstruct Intersection of SR 37 and SR 121. Considering roundabout and “T” intersection design alternatives.	1Q480	Sonoma	3.8/4.0	Caltrans	Delivery 2024
SR 37 Lane Extension and Railroad Crossing at Tolay Creek. This project would extend the lane in the eastbound direction in the vicinity of SR 121 to the SMART railway crossing area.	2Q200	Sonoma	3.9/4.1	Caltrans	Delivery 2024
SR 37 Alternatives Assessment Report for the Ultimate Project (SR 121 to Mare Island Interchange) (completed)	Not Identified	Sonoma/ Solano	3.5/6.2; 0.0/R7.4	MTC	Feasibility Study
SR 37 Corridor SLR and Complete Streets (U.S. 101 to SR 29)	4Q960	Marin/ Sonoma/ Napa/ Solano	R11.2/14.6; 0.0/6.2; 0.0/R9.6	Caltrans	Feasibility Study
SR 37 Corridor PEL Study (U.S. 101 to I-80)	Not Identified	Marin/ Sonoma/ Napa/ Solano	R11.2/14.6; 0.0/6.2; 0.0/R11.4	Caltrans	Pre-Planning
SR 37 Pedestrian Enhancements at Wilson Avenue and Fairgrounds Drive, and other regional locations. Would include warning beacons, high visibility crosswalk markings, signs.	0P760	Solano	Various	Caltrans	Delivery 2024
Fairgrounds Drive Interchange Improvements	4A441	Solano	10.6/11.2	STA	Delivery 2021

Table 2-55 Current and Proposed Planned Developments within One Mile of the Project Area

Project Name	Project Description	Location
City of Vallejo/Waterfront Project	175 single-family detached residences, commercial areas, and two parks. EIR certified in 2005.	Between Mare Island Way and Mare Island Causeway (approximately 1 mile southeast)
City of Vallejo/North Mare Island	Film production, wine and beverage manufacturing, office, and retail use.	Adjacent to SR 37 to the south
City of Vallejo/Mare Island	Mixed-use development.	South of G Street (approximately 1 mile south)

2.5.3 Resource Areas with No Contribution to Cumulative Effects

The resources considered in the cumulative effects analysis follow Caltrans' Eight Step Guidance for identifying and assessing cumulative impacts (Caltrans 2016). No cumulative effects are anticipated for the following resource areas (there would be no adverse effects from each of these individual resource areas; therefore, no incremental effects would be cumulatively considerable for these topic areas):

- Existing and future land use
- Consistency with state, regional, and local plans and programs
- Parks and recreational facilities
- Growth
- Relocations and real property acquisition
- Environmental justice
- Utilities/emergency services
- Cultural resources
- Geology/soils/seismic/topography
- Paleontology
- Hazardous waste/materials
- Air quality
- Noise
- Energy
- Invasive species
- Hydrology/floodplain
- Water quality

2.5.4 Resources Considered for Contribution to Cumulative Effects

2.5.4.1 Biological Resources

Interim

Several other Caltrans projects being considered in the corridor propose changes to roadway elevations, bridge rail replacements, lane extensions, intersection operational improvements, culvert upgrades, and bridge replacements in different parts of the corridor that could affect similar biological resources and habitat types impacted by the proposed Build Alternatives. These projects include the SR 37 Flood Reduction Project, the Petaluma Bridge Preservation Project, SR 37/SR 121 intersection, and the SR 37 Lane Extension project. These projects would involve temporary impacts for construction, and permanent impacts where permanent project features are proposed. If the SR 121 intersection improvement project and eastbound lane extension projects move forward to construction, they could be included in this project's plans, specifications, and estimates package, which could reduce the temporary repetitive disturbance along the corridor associated with construction staging. The aforementioned projects are at varying stages of development, and Caltrans would produce environmental documents for each project. Therefore, this discussion is not meant to preempt those future public documents.

In the shorter term, through this project and other interim projects listed in Table 1-1, infrastructure needs are being defined to limit environmental impacts. Caltrans is consulting with federal and state agencies on this and other projects in the corridor. It is expected that compensation for permanent biological impacts would be limited to each project's permanent biological impacts and requirements, including those of this project. Consequently, there would be no cumulative impacts to biological resources in conjunction with other future foreseeable projects.

Long-Term

The contiguous environmental setting of the corridor means that we cannot segment the environmental analysis based on the project limits of any one project, including the Highway 37 Sears Point to Mare Island Improvement Project, especially in light of trends toward SLR. Caltrans' longer-term studies, such as the PEL study and the Design Analysis Assessment, which are currently underway, are being used to address SLR and other corridor needs prior to project-level planning and design. Through the PEL, Caltrans is consulting with federal and state resource agencies to ensure that the scope of the environmental setting from U.S. 101 to I-80 is being considered. Although the Design Analysis Assessment studies a portion of the corridor from U.S. 101 to SR 121, Caltrans is likewise including federal and state agencies in its development.

The SR 37 Ultimate SLR project would require substantial investment to address future SLR up to 2100 and beyond. No alignment or alternatives have been identified for the entire corridor, and it is currently not funded. The Highway 37 Sears Point to Mare Island project considered in this EIR/EA is intended to provide traffic congestion relief as described in Section 1.2. Biological impacts under a long-term, corridor-wide project would therefore not coincide in time or duration with the Highway 37 Sears Point to Mare Island Improvement Project. When the ultimate project is ready for the environmental phase, the impacts and mitigation would be identified in their own project-level environmental document.

2.5.4.2 Visual/Aesthetics

The proposed project alternatives would introduce a new movable median barrier (Alternative 1) or a new solid barrier (Alternatives 2, 3A, and 3B), that would be slightly higher than the existing median barrier. Outside barriers would be constructed, and some new lighting installed. Tolling may be introduced to the corridor involving overhead signage and overhead toll reading equipment.

The project corridor is a relatively rural highway alongside the scenic areas of the north Bay wetlands and refuge lands. Between I-80 and the Napa River, SR 37 was reconstructed under several projects from the 1990s to early 2000s, from a conventional highway with local intersections and stop lights, to a divided freeway with controlled access at interchange ramps. A concrete median barrier was added in the late 1990s and early 2000s to the highway between Vallejo and SR 121 to reduce severe accidents occurring from traffic crossing over the then undivided highway. These improvements have addressed highway capacity in the Vallejo area and improved safety along project corridor, while adding visible elements such as barriers, overhead signs, lighting, and travel lanes and shoulders.

In addition to visual elements of the proposed project discussed in Section 2.2.12, such as toll gantries, bridge rails, and median barriers, other projects in the corridor would add similar visual elements to SR 37. Elements of other projects would/would not contribute to the visual/aesthetic impacts in the corridor.

Although these projects would add visible elements to the corridor, they would be consistent with the existing roadway features along SR 37.

- Bridge railings and outside safety barriers that would be installed by the proposed project and by the other corridor improvements would include open or see-through designs that would continue to allow partial views of the adjacent marsh lands and Bay waters, while improving motorist safety related to minimizing vehicles running off the road.

- The median barrier would be raised in height, by about 6 inches, between Mare Island and SR 121 to meet current design safety requirements. This would partially interfere with views from lower-profile vehicles across the median barrier. This is a cumulative change or impact over time with respect to the original highway, which had no divided barrier before the existing solid concrete median barrier was installed. This has been a necessary change over time to protect motorists from more serious injuries, as highway design standards have evolved to address collisions and safety.

Overall, the project would not result in a cumulatively considerable adverse effect to visual resources because it would blend in with similar elements along SR 37 and be consistent with existing roadway features.

2.5.4.3 Transportation

Each of the proposed alternatives would add one or two lanes to the existing highway to help alleviate existing congestion caused by the current lane merges. Other proposed SR 37 projects that are being considered that address traffic conditions are the lane extension and railroad crossing at Tolay Creek, and the potential reconstruction of the SR 37/SR 121 intersection. If the SR 37 Sears Point to Mare Island project is approved, these two projects would be reconsidered with respect to need and design. The lane extension and railroad crossing project at Tolay Creek is intended to relieve congestion in the eastbound direction in the vicinity of the SR 121 intersection, which can be addressed by the lane options being considered in the Sears Point to Mare Island project.

The SR 37/SR 121 intersection project is intended to address traffic at the turning movements between the two highways, which are at least partially improved with the proposed Sears Point to Mare Island project, especially in the eastbound direction. These projects would not introduce cumulative traffic impacts, as each project is intended to improve traffic movement and reduce current backups that occur at constrained locations on SR 37 at and in the vicinity of the SR 121 intersection. Other projects proposed within this corridor specifically address SLR/flooding, or pavement and bridge maintenance and restoration and would not change the capacity of the highway, and would not contribute to adverse cumulative effects. The long term ultimate improvement projects that would address SLR would effectively replace the existing highway, if and when these projects are advanced.

Chapter 3 California Environmental Quality Act Evaluation

3.1 Determining Significance under CEQA

The proposed project is a joint project by Caltrans and FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the 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 Environmental Impact Statement (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 the Department 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 environmental resource, then an 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 Significant Irreversible Environmental Changes

The proposed alternatives do not represent significant irreversible changes. The alternatives consist of widening and improvements to SR 37 to resolve existing and recurring inefficient traffic congestion. No new lands or resources would be accessible

(no change in route or secondary road access to new properties). Construction would use typical construction materials associated with a roadway infrastructure project, but this commitment of resources is not considered a significant change or obligation of limited resources.

The project does represent a commitment of resources to maintaining SR 37 at its present alignment and elevation or profile to alleviate current and future traffic congestion. A future project that addresses SLR would likely have to be on new alignment depending on how construction staging could be achieved, with possible abandonment of the existing alignment. The proposed improvements to the current facility are therefore considered an unavoidable and cumulative investment in the highway to meet the project's purpose and need to alleviate traffic congestion until an ultimate improvement can be funded that addresses both traffic and future SLR.

3.3 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. The first column lists pertinent questions applicable to the resource, and the other four columns include the degree of impact for each of those questions. In many cases, technical studies performed in connection with the project indicate that there are no impacts to a particular resource. A "no impact" answer in the last column reflects this determination. The words "significant" and "significance" used throughout the checklist are related to CEQA impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance. Significance determinations (e.g., no impact, less than significant, potentially significant impact) are responded to for each of the CEQA checklist questions; a "yes" or "no" response is given for each significance determination column in each question row. A "yes" response indicates that this is the significance determination that applies for that question. A "no" response indicates that the significance determination in that column does not apply to that question.

Project features, which can include both design elements of the project, and standardized measures that are applied to all or most Caltrans projects such as BMPs and measures included in the Standard Plans and Specifications (Caltrans 2020a) 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 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.

3.3.1 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	Yes	No
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No	No	Yes	No
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	No	No	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

3.3.1.1 CEQA Significance Determinations for Aesthetics

a) Have a substantial adverse effect on a scenic vista?

Less than Significant Impact. The project corridor is a designated scenic corridor in both Solano and Sonoma Counties. BCDC considers bay shoreline views such as those available along much of the project corridor to be scenic views. Trail and recreational areas such as Cullinan Ranch in the Refuge and Tolay Creek/Tubbs Island Trail near the project corridor provide scenic vistas.

As described in Section 2.2.12, the combination of a higher median barrier and outside barrier would have an impact on the scenic views along SR 37. Views from scenic areas toward the project corridor would not be substantially affected. However, depending on the Build Alternative and outside barrier option selected, there would be visual impacts to motorists on the project corridor because views of low-lying adjacent marshlands and waterways would be diminished or blocked. Longer distance views toward adjacent hills would not be affected.

Impacts of project improvements are depicted in the visual simulations for KV-1 through KV-5 in Section 2.2.12.3. At KV-3, the project would have the greatest impacts on scenic views for Alternatives 2, 3A, and 3B because the combination of the center median barrier and outside barrier would impair views of the Bay on both sides of SR 37. However, views of distant mountains and hills would still be seen. For all Build Alternatives, the implementation of a new toll gantry would the tallest built element in view. However, the gantry would not block water views on either side of the highway. Project improvements that would have the greatest impacts on scenic views would be the higher median barrier and outside barrier. Build Alternatives could impact the view of a scenic vista for motorists traveling along SR 37 because the 42-inch median barrier would block views of low-lying scenic landscapes on the other side of the highway for many drivers. However, SR 37 has scenic views on both sides of the highway, so views would still be visible on whichever side of the highway motorists are traveling.

For the outside barrier, both MGS and Type 85B designs are being considered, depending on the location. Type 85B barriers are designed to be partially transparent and would allow partial views of the Bay. Visual renderings at key viewpoints with Type 85B barriers in place are presented in Section 2.2.12.3. The MGS would behave a metal top rail that would partially impair views of the Bay. However, because the MGS is 5 inches shorter than the Type 85B barrier, people would still have views of the Bay above the barrier. Therefore, MGS (which is shorter) and Type 85B (which has a semi-transparent design) would both allow for partial views of the Bay, and would have similar visual impacts. The installation of a Type 85B barrier on the outside shoulder as part of the project avoids or reduces visual impacts because it provides some maintenance of the existing views through the barrier. Furthermore, outside barriers are only proposed at key locations, so the whole length of the project area would not be affected. Table 2-15 summarizes the differences between alternatives with respect to the visual impact findings. There would be less than a significant impact to scenic views.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less than Significant Impact. The project would contribute new built elements to a highway that is potentially eligible for scenic highway status. These include overhead gantries, lighting, a new median barrier, and outside safety barriers. These changes would not substantially damage or alter the highway, and scenic views from the highway would still be available.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those

that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than Significant Impact. The project is in a nonurbanized area. Views from publicly accessible recreational areas were evaluated, and these views would not be substantially affected. The primary visible changes would be from the motorist's viewpoint, from the higher barriers. Views would be partially impaired compared to the existing setting, but would remain available to motorists, and the scenic quality of the corridor would largely remain intact.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

No Impact. The project would not create a new source of substantial light or glare. All permanent lighting installed would be consistent with applicable regulations and with street lighting existing in the project vicinity. During construction, some work would occur at night. Construction lighting would be shielded and directed toward the area of work and would not constitute a substantial new source of light outside the work area. VIS-01. Limit Light Pollution would be implemented to limit light pollution and have minimum impact on the surrounding environment. All light fixtures would have light-emitting diodes configured at the minimum necessary number of bulbs, optimal mounting height, mast-arm length, and angle to restrict light to the roadways. Where applicable, shields on the fixtures to prevent light trespass to adjacent properties would be considered during the detailed design phase. Therefore, the project would not create a substantial amount of light or glare, which could adversely affect day or nighttime views. There would be no impact.

3.3.2 Agriculture and Forest Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department 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 the forest carbon measurement methodology provided in Forest Protocols adopted by CARB.

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

3.3.2.1 CEQA Significance Determinations for Agriculture and Forest Resources

a) and b). Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance or conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. As described in Section 2.2.5, the project area is adjacent to Farmland of Local Importance and Grazing Land as well as Non-Prime Agricultural parcels with Williamson Act contracts, between the SR 37/SR 121 interchange and the Sonoma Bridge in Sonoma County. The project would not convert Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. Although the project would require TCEs; the easements would not affect the continued use of the properties for agricultural use. None of the Build Alternatives are anticipated to require permanent property acquisitions. Additionally, there would be no permanent acquisition of Williamson Act properties. The project would not modify, nullify, or require changes to the Williamson Act contracts on the properties. Therefore, there would be no impact.

c) and d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. There are no forest lands in or adjacent to the project area. Therefore, no changes are anticipated to forest land, and there would be no impact.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The project would not involve changes that could result in the conversion of farmland and forest land. Therefore, there would be no impact.

3.3.3 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 non-attainment under an applicable federal or state ambient air quality standard?	No	No	Yes	No
c) Expose sensitive receptors to substantial pollutant concentrations?	No	No	No	Yes
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	No	No	No	Yes

3.3.3.1 CEQA Significance Determinations for Air Quality

a) Conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The project site is in the SFBAAB and within the jurisdiction of BAAQMD and CARB. The proposed project would not interfere with any of the control measures set forth in BAAQMD's 2017 Clean Air Plan. The project is a capacity-increasing project, and would be included in the MTC RTP, Plan Bay Area 2050. The project would be listed in the conforming 2021 TIP and the MTC RTP. Therefore, the project would also comply with the SIP. The project would not conflict with or obstruct implementation of applicable air quality plans and there would be no impact.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less than Significant Impact. As shown in Table 2-21 in Section 2.3.6.2, the area is in nonattainment for CAAQS for O_3, PM_{10} micrometers or smaller, and $PM_{2.5}$; and is in

nonattainment for NAAQS for O_3 and $PM_{2.5}$. During construction, there would be air emissions from the use of construction equipment and vehicles powered by gas and diesel, and dust from earthmoving activities such as trenching and grading. Table 2-22 in Section 0 of the EA shows the total estimated construction-related criteria pollutants for the Build Alternatives. The proposed project would also generate pollutants during construction, even with BMPs implemented. There would be temporary increases in criteria pollutants during construction, but they would be less than significant because of the limited duration of construction and with the implementation of BMPs.

Overall, each of the Build Alternatives would have substantially lower operational emissions when compared to existing/baseline conditions due to reduced congestion and improvements in vehicle fleet emissions over time. All of the Build Alternatives would have similar emissions compared to No-Build conditions for each study year (see Table 2-23 in Section 0). This is due to a greater reduction in regional travel time and vehicle idling despite an increase in regional VMT. Increased regional VMT over time is due to projected regional population growth, described in Section 2.2.6.

c) Expose sensitive receptors to substantial pollutant concentrations?

No Impact. Sensitive receptors are children, elderly, people with asthma, and others who are at a heightened risk of negative health outcomes due to exposure to air pollution. Sensitive receptors are typically associated with schools, residential dwellings, daycare centers, hospitals, and senior-care facilities. The project is in the San Pablo Bay lands. There is little to no development adjacent to SR 37 between Mare Island and SR 121. Most of the land adjacent to the highway is preserved open space or being used for agricultural purposes. The only sensitive receptors in the project area are two single-family homes on the southern side of SR 37, near the western terminus of the project. Sensitive receptors, including two residences, are within 500 feet of the project.

The Build Alternatives would not exceed existing conditions for criteria pollutants or MSATs, or exceed the BAAQMD's recommended thresholds for construction emissions. Air quality conditions for sensitive receptors is not expected to worsen. The Build Alternatives would not expose sensitive receptors that could occur near the project area to substantial pollutant concentrations. Therefore, there would be no impact.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

No Impact. The project would not introduce odors that are not already associated with existing traffic. Therefore, there would be no impact.

3.3.4 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, U.S. Fish and Wildlife Service, or NOAA Fisheries?	No	Yes	No	No
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	No	Yes	No	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

3.3.4.1 CEQA Significance Determinations for Biological Resources

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, U.S. Fish and Wildlife Service, or NOAA Fisheries?

Less than Significant with Mitigation Incorporated. Without mitigation, the project would have potentially significant direct and indirect impacts to special-status species habitat under all Build Alternatives, as described in Section 2.4.5. Build Alternatives 1, 2, and 3A would have relatively similar levels of permanent impacts to species habitat. Alternative 3B would have substantially greater impacts to special status species and

habitat due to roadway and bridge widening at Sonoma Creek that would require additional fill into species habitat. Table 3-1 summarizes anticipated permanent impacts to state and federally listed species with potential habitat in the BSA. Table 3-2 summarizes areas of potential temporary impacts during construction to listed species habit in the BSA.

Table 3-1 Estimated Permanent Habitat Impacts to Listed Species Habitats

Species Habitat	Alternative 1 (Acres)	Alternative 2 (Acres)	Alternative 3A (Acres)	Alternative 3B (Acres)	Alternative 3 B Shading (acres)
Chinook salmon, steelhead, green sturgeon, longfin smelt, and Delta smelt foraging habitat	0.02	0.05	0.04	0.59	0.17
Chinook salmon, steelhead, green sturgeon, longfin smelt, and Delta smelt prey production habitat	1.03	1.43	1.40	2.44	0.10
Ridgeway's Rail and California black rail	0.34	0.79	0.86	1.62	0.51
salt marsh harvest mouse	0.37	0.69	0.76	1.64	0.51
California red-legged frog	0.01	0.01	0.98	0.98	0.16

Table 3-2 Estimated Temporary Impacts Areas in Listed Species Habitats

Habitat	Alternative 1 (Acres)	Alternative 2 (Acres)	Alternative 3A (Acres)	Alternative 3 B (Acres)	Alternative 3B Shading
Chinook salmon, steelhead, green sturgeon, longfin smelt, and Delta smelt foraging habitat	1.37	1.93	1.70	3.00	0.29
Chinook salmon, steelhead, green sturgeon, longfin smelt, and Delta smelt prey production habitat	2.44	2.79	2.08	1.98	0.09
Ridgway's rail and California black rail	0.42	1.90	2.02	2.24	0.86
salt marsh harvest mouse	0.70	2.01	2.14	2.38	0.86
California red-legged frog	0.11	0.11	0.61	0.83	0.00

Federally Listed Species and Designated Critical Habitat

Under all considered Build Alternatives, the project may affect the following species: soft bird's-beak, California red-legged frog, Ridgway's rail, Chinook Salmon Sacramento River Winter Run ESU, Chinook Salmon Central Valley Spring Run

ESU, Delta smelt, steelhead Central Valley DPS, steelhead Central California Coast DPS, North American green sturgeon southern DPS, and salt marsh harvest mouse. Construction-related in-water disturbance and addition of fill materials in the project footprint would directly affect federally listed species. Implementation of AMMs would serve to reduce the likelihood of any indirect impacts (in the form of dust or sedimentation) to suitable habitat outside of the project footprint.

Under all Build Alternatives, direct impacts to individual salt marsh harvest mouse and Ridgway's rail would be limited because these species are also CFGC fully protected species. This means that "take," as defined by CFGC Section 86 as "Hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill," is not allowed for these species. FESA defines "take" as "Harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1532[19]). Impacts beyond harassment are not anticipated for either of these species, and specific measures for these species are proposed in Section 2.4.5 to avoid and minimize impacts to these species.

Under Alternative 3B only, the North American green sturgeon southern DPS has potential for direct take from underwater sound pressure during pile-driving activities.

Caltrans has prepared a draft Biological Assessment for consultation with USFWS and NMFS and has made preliminary effects determinations pursuant to section 7 of FESA. Caltrans would request formal consultation with USFWS and NMFS after selection of a preferred Build Alternative. Caltrans has made the following effects determinations:

- *may affect, and is likely to adversely affect*, California red-legged frog, Ridgway's rail, salt marsh harvest mouse, steelhead Central California Coast DPS, and North American green sturgeon southern DPS
- *may affect, but is not likely to adversely affect* soft bird's-beak, Chinook Salmon Sacramento River Winter-Run ESU, Chinook Salmon Central Valley Spring-Run ESU, Delta smelt, and steelhead Central Valley DPS
- *no effect* on federally designated critical habitat for California red-legged frog, Ridgway's rail, salt marsh harvest mouse, and Delta smelt
- *may affect, and is likely to adversely affect*, designated critical habitat for steelhead Central California Coast DPS, steelhead Central Valley DPS, Chinook Salmon Central Valley Spring-Run ESU, Chinook Salmon Sacramento River Winter-Run ESU, and green sturgeon Southern DPS

Although the project would have some permanent and temporary impacts, with implementation of the measures proposed for federally listed species in Section 2.4.5, the project would have less than significant impacts on federally listed species under all Build Alternatives.

State-Listed Species

Special-status animals protected under the CESA, including California black rail, Swainson's hawk, and longfin smelt, have potential to occur in the BSA. Ridgway's rail, Chinook Salmon Central Valley Spring-Run and Sacramento River Winter-Run ESUs, Delta smelt, and salt marsh harvest mouse are listed under both FESA and CESA and are discussed above.

CESA protects species listed as threatened or endangered from take unless authorized through an incidental take permit. Through implementation of the measures described below, direct impacts that may cause take (as defined by CFGC) of state-listed species would be avoided. Impacts to state-listed species would be limited to habitat impacts. Most habitat that would be impacted occurs immediately adjacent to SR 37, where habitat conditions are generally poor. Due to the lack of key habitat features (such as suitable roosting trees), no impacts to Swainson's hawk habitat are anticipated under the Build Alternatives.

Therefore, the project would have a less than significant impact on state-listed species with mitigation incorporated under all Build Alternatives.

State Species of Special Concern, Migratory Birds, Essential Fish Habitat, and Marine Mammals

Potential impacts to migratory birds, marine mammals, and CDFW State SSCs are discussed in Section 2.4.4. SSC including pallid bat, Saltmarsh Common Yellowthroat, San Pablo song sparrow, Sacramento Splittail, Suisun shrew, and Western Burrowing Owl have potential to occur in the BSA. California red-legged frog and North American green sturgeon are also SCC that are listed under FESA and are discussed under Section 2.4.5. Marine mammals with potential to occur in the BSA include California sea lion, northern elephant seal, and Pacific harbor seal. None of these species are federally or state-listed as threatened or endangered; however, all marine mammals are protected under the Marine Mammal Protection Act of 1972. These species may infrequently occur in or immediately adjacent to the BSA near Sonoma Creek and Tolay Creek. NMFS-regulated EFH is discussed under Section 2.4.6.

BIO-10 through BIO-40 would be implemented to avoid or minimize potential impacts to migratory birds, marine mammals, and state SSCs under all Build Alternatives.

Proposed Avoidance Minimization and Mitigation

AMMs proposed for all special-status species are detailed in Chapter 2. Proposed measures are listed here for ease of reference.

General Avoidance and Minimization Measures Applicable to Special-Status Species

The following general measures would serve to avoid and minimize potential impacts to special-status species with potential to occur in the project area under all Build Alternatives.

- **BIO-15: Stop Work Authority**
- **BIO-16: Worker Environmental Awareness Training**
- **BIO-17: Discovery of Injured or Dead Special-Status Species**

General Avoidance and Minimization Measures for Special-Status Wildlife Species

The following general measures would serve to avoid and minimize potential impacts to special-status wildlife species with potential to occur in the project area under all Build Alternatives.

- **BIO-18: Wildlife Species Relocation**
- **BIO-19: Construction Noise**

Special-Status Plant-Specific Measures

The following specific measures would serve to avoid and minimize potential impacts to special-status plant species under all Build Alternatives.

- **BIO-03: Tree Replacement, Landscaping, and Revegetation Plan**
- **BIO-08: Targeted Pre-Construction Plant Survey**
- **BIO-09: Special-Status Plant Monitoring**

Special-Status Bird-Specific Measures

In addition to complying with the MBTA and CESA, the following specific measures would be implemented to avoid and minimize potential impacts to special-status bird species to a less than significant level under all Build Alternatives.

- **BIO-10: Nesting Bird Protection**
- **BIO-13: Western Burrowing Owl Pre-Construction Surveys**

- **BIO-14: Western Burrowing Owl Nest Avoidance**
- **BIO-24: Ridgway's Rail and California Black Rail Pre-Construction Survey**
- **BIO-25: Ridgway's Rail and California Black Rail Monitoring**
- **BIO-40: Swainson's Hawk Pre-Construction Surveys**

Special-Status Mammal-Specific Measures

With the following specific measures, the project would avoid, minimize, and mitigate potential impacts to special-status mammal species to a minimal level under all Build Alternatives.

- **BIO-11: Pre-Construction Bat Surveys and Avoidance Measures**
- **BIO-12: Bat Monitoring Protocols**
- **BIO-27: Salt Marsh Harvest Mouse Pre-Construction Surveys**
- **BIO-28: Salt Marsh Harvest Mouse Exclusion Fencing**
- **BIO-29: Salt Marsh Harvest Mouse Monitoring Protocols**

California Red-Legged Frog-Specific Measures

With the following specific measures, the project would avoid, minimize, and mitigate potential impacts to California red-legged frog to a level of less than significant under all Build Alternatives.

- **BIO-20: California Red-Legged Frog Habitat Work Window**
- **BIO-21: California Red-Legged Frog Pre-Construction Surveys**
- **BIO-22: California Red-Legged Frog Monitoring Protocols**
- **BIO-23: Compensation for California Red-Legged Frog Habitat Effects**

Special-Status Fish-Specific Measures

The following specific measures would serve to avoid and minimize potential impacts to special-status fish to less than significant under all Build Alternatives.

- **BIO-04: Estuarine Dewatering Work Window**
- **BIO-05: Turbidity Control**
- **BIO-31: Vibratory Pile Driving**
- **BIO-32: In-Water Sheet Pile Fish Entrapment Avoidance**
- **BIO-33: Fish Monitoring**
- **BIO-34: Fish Relocation**

The following measures would be implemented under Alternative 3B only.

- **BIO-35: Compensation for Chinook Salmon, Steelhead, Green Sturgeon, Longfin Smelt and Delta Smelt Habitat**

- **BIO-36: In-Water Impact Pile Driving Work Window**
- **BIO-37: In-Water Impact Pile Driving Attenuation**
- **BIO-38: Hydroacoustic Monitoring**
- **BIO-39: Pile Proofing**

Compensation to Offset Impacts to Listed Species Habitat

The following measures are proposed to offset any potential direct and/or indirect impacts to listed species habitat under the Build Alternatives. Alternative 3B is anticipated to have the greatest amount of habitat impacts compared to the other Build Alternatives. The specific habitat and mitigation for the preferred alternative, once selected, would be determined during the project's final design. Caltrans' mitigation proposal may include any one or a combination of the following approaches: offsite mitigation through purchase of credits at an approved conservation bank(s); development of a compensation plan that would provide in-lieu funding to a nearby restoration program or restoration project that would create, restore and/or enhance resources adversely affected by the project. Compensation for temporary impacts to special status species habitat would be achieved through onsite in-kind habitat restoration to pre-disturbance conditions.

- **BIO-23: Compensation for California Red-Legged Frog Habitat Effects**
- **BIO-26: Compensation for Ridgway's Rail Habitat Effects**
- **BIO-30: Compensation for Salt Marsh Harvest Mouse and California Black Rail Habitat Effects**
- **BIO-35: Compensation for Chinook Salmon, Steelhead, Green Sturgeon, Longfin Smelt and Delta Smelt Habitat**

Significance Determination

The project is anticipated to have less than significant impacts with the above-discussed biological mitigation incorporated under the proposed Build Alternatives.

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?

Less than Significant with Mitigation Incorporated. Sensitive natural communities that occur in the BSA and have potential to be impacted by the project are discussed in Section 2.4.1. These communities include sensitive marsh and wetland communities, and valley oak. EFH and designated critical habitat for USFWS- and NMFS-listed species is discussed in response to the question above. Impacts to

wetlands, including riparian habitat, are included in the response to item c, which follows this response.

All Build Alternatives would have impacts on sensitive marsh species vegetation communities, as summarized in Section 2.4.1; all these communities are also in federally protected wetlands. Permanent impacts from fill in sensitive wetland communities would be the least under Alternative 1 (1.91 acres); moderate under Alternatives 2 (3.29 acres) and 3A (3.65 acres); and the largest under Alternative 3B (7.55 acres).

Four valley oak trees occur in the BSA. Impacts to valley oak are anticipated to be similar under all Build Alternatives and are assumed to be minimal. General avoidance and minimization measures to avoid potential impacts to valley oaks are proposed in Section 2.4.

Proposed Avoidance, Minimization, and Mitigation

Wetland Marsh Communities

The following specific measures proposed in Chapter 2 would serve to avoid and minimize potential impacts to sensitive marsh vegetation communities under all Build Alternatives.

- **BIO-01: Wetlands Protection – Invasive Plants**
- **BIO-02: Wetland Protection**
- **BIO-07: Wetlands and Other Waters Compensation**
- **BIO-23: Compensation for California Red-Legged Frog Habitat Effects**
- **BIO-26: Compensation for Ridgway's Rail Habitat Effects**
- **BIO-30: Compensation for Salt Marsh Harvest Mouse and California Black Rail Habitat Effects**
- **BIO-35: Compensation for Chinook Salmon, Steelhead, Green Sturgeon, Longfin Smelt and Delta Smelt Habitat**

Impacts to wetland communities would be incurred under all Build Alternatives, and compensation would be realized through implementation of the measures listed above, resulting in minimal impacts with mitigation.

Valley Oaks

The following general avoidance and minimization measures proposed in Chapter 2 would serve to protect sensitive valley oaks under all Build Alternatives.

- **BIO-03: Tree Replacement, Landscaping, and Revegetation Plan**

Significance Determination

Under Build Alternatives 1, 2, and 3A, the project would have less than significant impacts with mitigation incorporated for impacts to wetland communities.

Under Build Alternative 3B, the project would have less than significant with mitigation incorporated for impacts to wetland communities. Alternative 3B would likely require substantially greater mitigation to offset for permanent and temporary impacts to wetland marsh communities than all other alternatives.

Under all Build Alternatives, the project would have less than significant impacts to valley oak.

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?

Less than Significant with Mitigation Incorporated. The project is anticipated to have permanent impacts from placement of permanent fill for road widening, retaining walls, sheet piles, rock slope protection, and placement of guard rails. Under Alternative 3B, additional permanent impacts to wetlands and waters would be realized through bridge widening work at Sonoma Creek and would permanently shade additional areas below the widened bridge. The primary permanent impact under all scenarios is associated with road widening, with Alternative 3B having the greatest permanent impact on wetlands and waters. Temporary impacts are associated with construction access, staging areas, and temporary dewatering activities.

Although the project would cause temporary and permanent impacts to the intertidal areas, it has been designed to minimize fill and turbidity. The impact areas would be spread out along the alignment of SR 37, which borders thousands of acres of tidal waters and wetlands. Preliminary estimates of permanent and temporary fill impacts for all alternatives, as well as shading impacts from Alternative 3B, are shown in Table 2-38 and Table 2-39, respectively.

Proposed Avoidance, Minimization, and Mitigation

The following specific measures described in Chapter 2 and proposed for state and federally protected wetlands are summarized here.

- **BIO-01: Wetlands Protection – Invasive Plants**
- **BIO-02: Wetland Protection**
- **BIO-07: Wetlands and Other Waters Compensation**

Significance Determination

Under Alternatives 1, 2, and 3A, impacts to federally protected wetlands would be **less than significant with mitigation**.

Under Alternative 3B, impacts to federally protected wetlands would be **less than significant with mitigation**. Alternative 3B would have substantially greater impacts to wetlands and waters than any other alternatives considered and is anticipated to require a substantially greater amount of compensation to offset impacts accordingly.

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?

Less than Significant. Two crossings to the east of SR 121 were identified by CDFW in a letter to Caltrans on August 20, 2020, regarding the project. These included an unnamed tributary (Fish Passage Assessment Database ID# 732818) and water tank cattle pass (Fish Passage Assessment Database ID# 761446). Results of the preliminary fish passage assessments for these crossings are discussed in Section 2.4.4.1. None of the structures provided a barrier to anadromous fish, since they are either absent or can pass freely through the structure.

Although there is consistently a high level of traffic on SR 37, SR 37 is not considered a total barrier to above-ground terrestrial wildlife movement. However, due to the existing median barrier, small- to medium-sized wildlife are not expected to regularly cross the road over SR 37. Road widening and increased median barrier height under all build alternatives would further inhibit crossing by terrestrial wildlife within the project limits. The portion of SR 37 where the project would occur does not cross any likely movement corridors for larger terrestrial animals since there is very little land south of the roadway. There are several waterway crossings that could be used by dispersing wildlife to cross under SR 37, including the Tolay Creek and Sonoma Creek Bridges, and a culvert undercrossing west of Sears Point that may provide safe passage for both cattle and terrestrial wildlife to cross under SR 37. There are also several smaller culverts associated with tidal water features that may be used by smaller wildlife.

Significance Determination

Under all build alternatives, the project would not substantially interfere with the movement of any native or resident migratory fish, would not impede the use of native wildlife nursery sites, and would have no impact. The project would further inhibit road crossings because of road widening and increased median barrier height; although use is likely greater among birds and marine or aquatic species in the surrounding

habitat, there is some potential for terrestrial wildlife to pass through the project limits. Therefore, the project conservatively assumes that it would have less than significant impacts on wildlife corridors.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and would have **no impact**.

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 Impact. The project runs through a portion of the proposed draft Solano County Multispecies HCP. The draft Solano County HCP states, “The purpose of the HCP is to promote the conservation of biological diversity and the preservation of endangered species and their habitats consistent with the recognition of private property rights; provide for a healthy economic environment for citizens, agriculture, and industries; and allow for ongoing maintenance and operation of public and private facilities in Solano County.” The project would be consistent with the purpose of the Solano County HCP because it is a public facility. The proposed project would impact state and federally protected wetlands and waters, and special-status species habitats under all Build Alternatives. However, the project would not inhibit the continued marshland restoration work that is prioritized by the Solano County HCP in the areas surrounding the project. The project as proposed has been designed to reduce environmental impacts, would include measures to offset impacts to wetlands and federally protected species habitat; therefore, the project would be consistent with the Solano County HCP.

Significance Determination

The project under all Build Alternatives would not conflict with an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or state HCP and would have **no impact**.

3.3.5 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 dedicated cemeteries?	No	No	No	Yes

3.3.5.1 CEQA Significance Determinations for Cultural Resources

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No Impact. No historical resources as defined in Section 15064.5 would be impacted by the construction and operation of the project. As described in Section 2.2.13, the Mare Island Naval Shipyard is the only NRHP-listed property adjacent to the APE. It would not be affected by project construction or operation, because there are no contributing or noncontributing resources, such as landscape features, archaeological features, buildings, or structures, associated with the Mare Island Naval Shipyard adjacent to or in the APE. Therefore, there would be no impact.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

No Impact. The project has little or no potential to impact archaeological resources. The background research and literature review conducted for this project identified one previously recorded prehistoric archaeological site, designated as Nelson Mound. During the field survey and subsurface testing, no artifacts, features, or culturally sensitive soils were identified in any of the bores. The project includes AMM CUL-1, as described in Section 2.2.13.4, to avoid impacts to archeological resources if they are found during excavation activities. Therefore, there would be no impact.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

No Impact. There are no formal cemeteries or known burial sites in the project area. Project construction is not expected to disturb any human remains. The project includes AMM CUL-2, as described in Section 2.2.13.4, to avoid impacts to human remains. Therefore, there would be no impact.

3.3.6 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	No	Yes
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No	No	No	Yes

3.3.6.1 CEQA Significance Determinations for Energy

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

No Impact. Project construction and maintenance would be a temporary commitment of energy, necessary for any infrastructure improvement project. 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 construction would be conserved and minimized to the maximum extent feasible. Energy conservation in construction activities is assumed because the construction contractor would have a financial incentive and statutory mandate to minimize waste and externalities.

As described in Section 2.3.8, all Build Alternatives would reduce the potential for wasteful energy due to a reduction in stop-and-go traffic conditions.

For the reasons listed above, the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. There would be no impact.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The State of California Energy Action Plan and the Integrated Energy Policy Report regulate energy conservation throughout the state. The State of California Energy Action Plan was adopted to ensure adequate, reliable, and reasonably priced electrical power and natural gas quantities through policies that are

cost-effective and environmentally conscious for California's residents (CEC 2003). California policies influenced by the California Global Warming Solutions Act (AB 32), are demonstrated in the 2007 Integrated Energy Policy Report, which is updated regularly to provide policy recommendations to meeting the state's energy demands while addressing carbon constraints. According to SB 100, the state is targeting 100 percent renewable or carbon-free energy usage by 2045. The California Energy Commission's (CEC's) Clean Transportation Program leverages public and private investments to support adoption of cleaner transportation, powered by alternative and renewable fuels.

The propose project involves creating HOV lanes to alleviate traffic congestion along SR 37. The Build Alternatives would not conflict with any state or regional Energy Conservation Plans described above because it would not cause wasteful, inefficient, or unnecessary consumption use of energy, or wasteful use of energy resources in the project area or region. Therefore, there would be no impact.

3.3.7 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	No	Yes
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	Yes	No

3.3.7.1 CEQA Significance Determinations for Geology and Soils

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; ii) Strong seismic ground shaking?; iii) Seismic-related ground failure, including liquefaction?; or iv) Landslides?

No Impact. The project is in a seismically active area but is not in 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. Furthermore, Caltrans would implement AMMs described in Section 2.3.3.4. Therefore, there would be no impact.

b) Result in substantial soil erosion or the loss of topsoil?

No Impact. During construction of the project, earthmoving activities such as grading, excavation, and trenching have the potential to result in soil erosion and loss of topsoil, especially in areas where there are steeper slopes. Because the project alignment is relatively flat and a large portion of the project lies on artificial fill (clayey soils with a low erosion potential), there would be lower potential for substantial soil erosion to occur. The embankment of the bridge has greater slopes but is on soils with a low erosion potential. Nonetheless, BMPs such as stabilization by paving, rock slope protection, and erosion control would be implemented to reduce erosional impacts during construction activities. Therefore, there would be no impact related to soil erosion or loss of topsoil.

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 Impact. The project alignment would not be in a geologic unit that is unstable, nor would the project result in geologic units or soils becoming unstable. The project alignment is relatively flat, exclusive of the bridge approach embankment. The likelihood of landslides to affect the proposed project is considered low. The potential for lateral spreading is expected to be low based on conditions revealed in historic borings. The project alignment is underlain by soils with low to moderate liquefaction susceptibility. Subsidence and settlement have the potential to occur, but the project would be designed to account for this settlement. Furthermore, Caltrans would implement AMMs described in Section 2.3.3.4. Therefore, there would be no impact.

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 Impact. The near-surface fill is expected to have low expansion potential; the underlying native Bay Mud has a plasticity index of 50 or more and is expected to exhibit high shrink/swell behavior. Caltrans' design and construction guidelines incorporate engineering standards that address expansive soils. Furthermore, Caltrans would implement project features described in Section 2.3.3.4. Therefore, there would be no impact.

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 Impact. The proposed project would not involve incorporating septic tanks or other wastewater disposal systems. Therefore, there would be no impact.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than Significant. No paleontological resources have previously been recorded within the project limits and none were found during the field study. However, there is a potential to encounter unknown paleontological resources during project construction because there are three fossil localities in the vicinity of the project limits and there are areas within the project limits that have high potential sensitivity.

Direct impacts to paleontological resources could occur during project construction involving earthmoving activities such as grading, excavation, and boring. Direct

impacts are the destruction of the fossil remains and the geographic, geologic, phylogenetic, and taphonomic information associated with them. There is greater potential for direct impacts to occur in the two high geological rock units, Qpf and Tps. These areas are in the western portion of the project limits. It is highly unlikely that any impacts would occur in geological rock units af, alf, Qhf and Qhbm, which make up most of the project limits. As necessary, Caltrans would prepare a Paleontology Mitigation Plan as a standard measure to avoid direct impacts to address and minimize effects in soils that have a higher potential to contain paleontological resources, as described in Section 2.3.4.4. Therefore, impacts are expected to be less than significant.

3.3.8 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	Yes	No	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

3.3.8.1 CEQA Significance Determinations for Greenhouse Gas Emissions

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant with Mitigation Incorporated. Project construction would result in GHG emissions. This would consist primarily of emissions from equipment exhaust and worker and vendor vehicle trips. Construction emissions were estimated using the latest Sacramento Metropolitan Air Quality Management District's Road Construction Model RCEM version 9.0. Table 2-22 in Section 2.3.6 shows the construction emissions associated with the project for each construction activity, which would amount to 5,994 metric tons. Carbon dioxide equivalent (CO_2e) emissions from earthmoving activities and use of equipment and vehicles would be similar for all Build Alternatives except Alternative 3B, which involves widening of Sonoma Creek Bridge. This widening would require additional structures (steel, concrete, and other materials) and construction staging, all of which would result in additional GHG emissions.

Long-term operational emissions associated with vehicular traffic in the region were evaluated quantitively. GHG emissions impacts for the No Build and Build Alternatives were computed using CT-EMFAC 2017 for existing conditions (year 2020) and future years (2025 Opening Year, 2040 RTP, and 2045 Design Year). The SAFE vehicle emissions adjustment factors developed by CARB for carbon dioxide (CO_2) were applied to the CT-EMFAC2017 emissions factors, and the adjusted emissions factors were applied to the project area VMT estimates.

These results are shown in Table 3-6 in Section 3.4.3. The mobile GHG emissions in the region would decrease from baseline levels compared to any of the Build Alternatives and options in the study years 2025, 2040, and 2045. For CEQA analysis, this is considered a less than significant impact (because future emissions for any of

the Build Alternatives are less than existing). This decrease for each of the study years would occur with or without the project, primarily due to improvements in technology, vehicle fleet transition to improved cars, and reformulation of fuels.

The changes in GHG and VMT vary by alternative and study year when compared to the No Build Alternative. The evaluation of VMT is discussed in more detail in Sections 2.2.11 and 3.3.17, including measures that would reduce VMT. In 2025, vehicle emissions of GHGs decline for all alternatives compared to the No Build Alternative. There is a modest increase in VMT with all alternatives, but implementation of tolling reduces VMT to volumes below the No Build Alternative.

In 2040, GHG emissions decline for Alternatives 1 and 2 below the No Build Alternative. With Alternatives 3A and 3B, GHG emissions increase compared to the No Build Alternative, associated with increased VMT and an increase in the number of vehicles at higher speeds. However, with implementation of tolling, both VMT and GHG are below the No Build Alternative for all Build Alternatives.

In 2045, GHG emissions decline for Alternatives 1 and 2, and increase with Alternatives 3A and 3B, compared to the No Build Alternative. VMT increases for all Build Alternatives. With tolling, VMT is substantially reduced, especially when tolling is applied in the westbound direction only (as compared to tolling in both directions). GHG emissions for Alternatives 1 and 2 are reduced below the No Build Alternative. GHG emissions for Alternatives 3A and 3B are higher than the No Build Alternative, even when tolling is applied.

For all alternatives, the analysis of GHG emissions using the CT-EMFAC2017 model is not sensitive to (does not fully account for) reductions in emissions due to improvements in traffic flow, such as reducing stop-and-go traffic congestion. Reducing queues and stop-and-go traffic with the Build Alternatives would reduce idling and may reduce GHG emissions due to idling in a way that is not fully demonstrated by the analysis. Therefore, factoring these benefits in would result in additional GHG emission reduction benefits compared to the No Build option. Furthermore, GHG reduction measures would be implemented during construction to limit GHG emissions.

Because the Build Alternatives would not contribute to substantial increases in GHG emissions over existing conditions, and GHG reduction measures would be implemented during construction, the impact would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant Impact. The BAAQMD's 2017 clean air plan, *Spare the Air, Cool the Climate,* addresses GHGs in the project region. Additionally, Solano and Napa Counties have climate action plans. The Scoping Plan for Achieving California's 2030 Greenhouse Gas Target identifies reductions in GHG emissions goals.

Caltrans work would comply with all local, state, and federal regulations, ordinances, and statutes that apply to GHG emissions. The project is expected to improve GHG emissions by reducing traffic congestion; if tolling options are approved, VMT would also be reduced which would reduce GHG emissions. Furthermore, the project would promote and support ridesharing, carpooling, vanpooling, and public transportation, which is consistent with these plans. With implementation of construction GHG-reduction measures, the impact would be less than significant.

3.3.9 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	No	Yes
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	No	No	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	Yes	No
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No	No	No	Yes

3.3.9.1 CEQA Significance Determinations for Hazards and Hazardous Materials

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

No 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. There would be no impact.

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?

Less than Significant. During construction, hazardous materials such as fuels, paints, asphalt, and lubricants would be used. These materials could pose a threat to human health or the environment if not properly managed. Adherence to federal and state regulations during project construction and maintenance would reduce the risk of exposure to hazardous materials and accidental releases of hazardous materials. 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.

Furthermore, 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 SR 37 that would be excavated during construction are likely to contain ADL at concentrations above DTSC-regulated levels. UXO, mustard gas, or similar military hazards may also be encountered. Hazardous materials such as ACM, lead-based paint, treated-wood waste, and PCBs could also be encountered during construction and maintenance activities. The implementation of the project features for hazardous materials summarized in Table 1-4 would avoid and/or minimize impacts associated with hazardous materials. Impacts involving the release of hazardous materials are anticipated to be less than significant.

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 Impact. There are no existing schools or proposed schools within 0.25 mile of the project limits. There would be no impact.

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?

Less than Significant Impact. The project area is not in a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962. However, DTSC EnviroStor identified 15 potential contaminated sites and/or investigated sites within a 0.5-mile radius of the project limits. All but three of these sites are at Mare Island, Skaggs Island and Tubbs Island, which were previously used for military activities. Thirteen of these sites are listed as closed cases, which indicates that hazardous materials have been addressed to the satisfaction of the applicable regulatory authority, and a formal closure decision document has been issued. Of the 19 sites listed in the regulatory databases, one site was determined to have a greater potential to impact the proposed project: the former Tubbs Island Gunnery Range on the Coast of San Pablo Bay in Petaluma. The former gunnery range historical use may present hazardous materials in the soil within the project limits. The implementation of project features summarized in Table 1-4 would avoid and/or minimize impacts associated with hazardous materials. Therefore, impacts would be less than significant.

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 Impact. The project area is not in an airport land use plan or within 2 miles of a public airport or public use airport where the project would result in a safety hazard for people residing or working in the project area. Therefore, there would be no impact.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than Significant Impact. None of the Build Alternatives would impair implementation of an emergency response or emergency evacuation plan. During construction, implementation of the TMP would minimize construction-related delays and would include coordination with CHP and local law enforcement agencies. Even with the implementation of the TMP, there may be slower traffic due to construction activities. Although access would be maintained for emergency response vehicles, they may be required to move around traffic, which could result in slight delays.

During project operation, Build Alternatives 3A and 3B would result in the loss of a wider shoulder for emergency vehicle use, but the presence of two lanes in each direction on SR 37 would allow traffic to move over to the other lane, allowing emergency vehicles to pass them. Allowing traffic to move over may result in slight delays. Therefore, the Build Alternatives would have a less than significant impact.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

No Impact. Although all the Build Alternatives involve widening SR 37, none of them would change the alignment of the SR or any adjacent land uses. Section 3.3.20 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. There would be no impact.

3.3.10 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	Yes	No	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	No	Yes

3.3.10.1 CEQA Significance Determinations for Hydrology and Water Quality

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant Impact. During construction, temporary water quality impacts have the potential to occur from sediment discharge from DSAs; construction activities

such as grading and excavation near water sources; use of construction vehicles and equipment; and drainage facilities that discharge to water bodies. Table 2-19 shows the amount in acres of DSA for each Build Alternative. Construction site BMPs for erosion and sediment control and material management are considered project features and would be specified in the SWPPP prior to construction, and monitored during construction. These measures are consistent with the practices required under the statewide Construction General Permit. Permanent impacts to water quality could result from the addition of impervious area, which can prevent runoff from naturally dispersing and infiltrating into the ground. Table 2-19 shows the amount of impervious surface added in acres for each Build Alternative. Permanent erosion control measures would be applied to all exposed areas, once grading or soil disturbance work is completed, as a permanent measure to achieve final slope stabilization. Furthermore, implementation of water quality project features is required for this project, in compliance with federal, state, and local requirements. These features would minimize the potential for water quality impacts from runoff entering storm drains. The project would require a 401 Water Quality Certification from the RWQCB. WQ-2 would implement permanent stormwater treatment measures, as described in Section 2.3.2.4. Therefore, the project would have less than significant impacts to water quality and would not violate any water quality standards.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

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. Table 2-19 shows the amount of impervious surface added in acres for each Build Alternative. Stormwater treatment BMPs would allow for stormwater infiltration to minimize impacts to runoff and groundwater, however there is limited area along the route for new treatment options and off site mitigation for runoff is proposed as part of the project. Long-term dewatering activities are also not anticipated for this project. Therefore, permanent impacts to groundwater are not anticipated, and the impact would be less than significant.

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.

Less than Significant Impact with Mitigation.

i) Temporary water quality impacts can result from sediment discharge from construction near water resources or drainage facilities that discharge to water bodies. BMPs would be implemented during construction to prevent sediment-laden flows from leaving the construction site, such as such as temporary silt fencing, temporary drainage inlet protection, and street sweeping. A SWPPP under the Construction General Permit would also be developed, which would contain soil erosion and pollution prevention control measures. Permanent erosion control measures would be applied to all exposed areas once grading or soil disturbance work is completed as a permanent measure to achieve final slope stabilization. These measures may include hydraulically applying a combination of hydroseed with native seed mix, hydromulch, straw, tackifier, and compost to promote vegetation establishment, and installing fiber rolls to prevent sheet flow from concentrating and causing gullies. Therefore, the project is expected to result in a less than significant impact related to on- and offsite soil erosion and siltation.

ii) The project would require temporary dewatering for excavation activities for work in Tolay Creek during construction activities. Dewatering may also be required along the side slopes through the length of the corridor. Dewatering activities would comply with Caltrans' Field Guide to Construction Site Dewatering (2014a) and Caltrans' Standard Specifications (2020), and, if needed, a separate dewatering permit would be obtained prior to the start of construction. However, the existing drainage patterns are not anticipated to be impacted, because the goal is to maintain existing drainage patterns. Furthermore, impervious surface added to the project area would not result in substantially increased runoff, because the amount added is small. Therefore, the project is not expected to result in surface runoff that would cause flooding.

iii) Given that the project area has shallow groundwater, other conventional treatment measures that capture and treat stormwater runoff may need to be considered; these devices could include basins or media filters. Due to the presence of environmentally sensitive areas and limited available treatment area for BMPs, the project would also include offsite stormwater treatment options as well. Implementation of WQ-01: Offsite Stormwater

Treatment would address the site's limited onsite stormwater treatment capacity. Appropriate mitigation and coordination with RWQCB during the project's final design phase. The project would be programmed to meet the requirements of Caltrans' current MS4 and NPDES permits, following the guidelines and procedures outlined in Caltrans' latest Statewide SWMP to address stormwater runoff; and in accordance with Memorandum of Caltrans Post-Construction Stormwater and Hydromodification Standards (SFRWQCB 2008). Therefore, the impacts would be less than significant with mitigation.

iv) Although all the Build Alternatives would require different amounts of permanent fill to widen the highway, most improvements in the project would rework existing impervious areas. According to the project's *Location Hydraulic Study Report,* the amount of new impervious surface area added would not have an impact to the flows within the project's limits and would not impact existing floodplain conditions (WRECO, 2021). The proposed fill placed in the floodplain is relatively minor in the context of the greater floodplain area and is not anticipated to impede flood waters, affect bay level floodplains, or substantially reduce the area available to convey floodwaters. Therefore, there would be a less than significant impact.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less than Significant Impact. As discussed in Section 2.3.1.1, the majority of the project is in Zone AE. This zone represents the base floodplain with areas subject to flooding by the 100-year flood event, where base floodplain elevations are provided. Portions of the project area adjacent to Tubbs Island (between Tolay Creek and Sonoma Creek) are in SFHA Zone VE, which consists of coastal areas subject to coastal high-hazard flooding and to inundation by the 1-percent-annual-chance flood event. A small portion of the project area just east of the Tolay Creek crossing is in a shaded Zone X area. Zone X represents areas of moderate flood hazard, usually depicted on FIRMs as between the limits of the base and 500-year floods. As described in more detail in Section 2.3.1, the project would not change the overall land use in the watershed basin under any of the Build Alternatives. Most improvements in the project would be in the existing impervious area and would not change or encroachment into the 100-year floodplain. In Zone AE of the SR 37 corridor, widening of the existing lanes to accommodate the proposed roadway improvements would not significantly increase the fill in the floodplain.

The project area is mapped in a Tsunami Inundation Area (CalEMA 2009) and could be subject to flood waters from a tsunami event. Tsunamis are a result of offshore earthquakes, and any wave inundation is generally more of a risk to the California coastal area than to an inland Bay shoreline, but water could still be temporarily elevated in the Bay. An offshore earthquake event may allow a period of time for emergency response along coastal or Bay shorelines. Originating off-shore, elevated water from a tsunami is not expected to reach the project area quickly because of the distance it has to travel. Local, state, and federal agencies work in cooperation to provide notification and identify response strategy for tsunami events (OES 2007). The National Oceanic and Atmospheric Administration National Weather Service is responsible for issuing information about and warnings of possible tsunamis via the Tsunami Warning System (NOAA 2021). This information is delivered to the California Office of Emergency Services Warning Center, which passes this information directly to the Operational Areas via alert systems. For example, areas within a 3-hour tsunami travel time of the epicenter are placed in a Tsunami Warning status, and areas within a 3- to 6-hour tsunami travel time are placed in a Tsunami Watch status (OES 2007).

The CHP, police departments, and sheriff's offices can close a highway to traffic if there is a threat to public health or safety (OES 1999). Because the impacts of flood waters from a tsunami would likely take time to reach the project area, there would be time to restrict and/or close down SR 37. An emergency closure would substantially decrease the potential for risk of exposure of traffic, or a spill or other impact of pollution from such an event were it to occur.

Therefore, the project is not expected to result in significant risk of increased pollution due to flooding or inundation, and this would be a less than significant impact.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No 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 2.3.2.1. As a result, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Therefore, there would be no impact.

3.3.11 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	Yes	No

3.3.11.1 CEQA Significance Determinations for Land Use and Planning

a) Physically divide an established community?

No Impact. The project would be constructed in and along Caltrans' right-of-way. Additionally, the existing SR 37 alignment acts as a physical barrier and separator within the communities it traverses. The project would not physically divide an established community and there would be no impact.

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?

Less than Significant Impact. All Build Alternatives would be generally consistent with the general plans, regional plans, and transportation plans discussed in Section 2.2.2. Alternatives 2 and 3A would not be consistent with Sonoma County's policies, Solano County's and Caltrans' Bicycle Plans and Programs regarding accommodating bicyclists as they would reduce the available shoulder space. Alternative 2 would preclude bicyclists in the peak direction during peak hours and Alternative 3A would preclude bicyclists at Sonoma Creek Bridge. However, the project would not substantially change local land use patterns. The environmental impact of the project due to a conflict with any land use plan, policy, or regulation adopted to avoid or mitigate an environmental effect would be less than significant.

3.3.12 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

3.3.12.1 CEQA Significance Determinations for Mineral Resources

a) and b) Result in the loss of availability of a mineral resource that would be of value to the region and residents of the state or locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The proposed project would not result in the loss of availability of mineral resources that would be of value to the region or state or result in the loss of locally important mineral resources. The project area does not overlap with any known mining operations. There would be no impact to mineral resources.

3.3.13 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	No	Yes
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

3.3.13.1 CEQA Significance Determinations for Noise

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 Impact. The project would not increase ambient noise levels by more than 2 dBA. Most short-term construction noise would be similar to existing ambient highway noise levels. However, short-term noise levels would result from construction methods such as pile driving, which would be temporarily higher than existing ambient noise levels. However, these construction noises would be short-term and intermittent. Therefore, there would be no impact.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. Groundborne vibration was evaluated for the project. Pile driving would generate higher levels for short periods, when the pile driving is at the upper limit of activity. Elevated vibration levels during construction would be short-term and temporary during pile driving activities. Furthermore, vibration levels were evaluated at the nearest sensitive receptor, the Refuge Headquarters, and it was

determined that it would not exceed Caltrans criteria for vibration impacts. Because vibration would be higher during pile driving but would not exceed Caltrans standards for vibration, the project would have a less than significant impact.

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 Impact. The project is not in the vicinity of an airport. There would be no impact.

3.3.14 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

3.3.14.1 CEQA Significance Determinations for Population and Housing

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 Impact. The project would not induce substantial population growth, directly (e.g., through construction of new homes or businesses) or indirectly (e.g., through extension of roads or other infrastructure). As noted in Section 2.2.6, the project would provide additional capacity in Caltrans' right-of-way to help alleviate congestion and improve travel time reliability along SR 37. Furthermore, the project would not provide new access to previously undeveloped land. The project would accommodate planned growth but would not result in reasonably foreseeable changes to planned land uses both adjacent to and in the vicinity of the project study area. The project is not expected to induce substantial population growth, either directly or indirectly, and there would be no impact.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The project would not require residential or business relocation and would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. There would be no impact.

3.3.15 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**
i) Fire protection?	No	No	No	Yes
ii) Police protection?	No	No	No	Yes
iii) Schools?	No	No	No	Yes
iv) Parks?	No	No	No	Yes
v) Other public facilities?	No	No	No	Yes

3.3.15.1 CEQA Significance Determinations for Public Services

a) 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:

i) Fire protection?

ii) Police protection?

iii) Schools?

iv) Parks?

v) Other public facilities?

No Impact. The project would not involve construction of new housing or other land uses that could increase the local population and demand for governmental facilities and services, such as fire protection, police protection, schools, or parks. Project construction has the potential to increase traffic delays on SR 37 that could affect response times of emergency response vehicles. However, a TMP would be implemented to minimize construction-related delays and ensure accessibility throughout the corridor for emergency service providers. Therefore, the project would

not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physically altered governmental facilities. There would be no impact.

3.3.16 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	Yes	No
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

3.3.16.1 CEQA Significance Determinations for Recreation

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?

Less than Significant Impact. As discussed in Section 2.2.4, the project may require TCEs for equipment access and staging at park and recreational facilities during construction. The TCEs would not preclude or substantially impede the use of any parks or recreation facilities during construction. However, implementation of Build Alternatives 3A and 3B would require permanent partial acquisitions from the Refuge of 1.65 acres and 3.92 acres, respectively. Due to the minimal area of use in the Refuge and the location of permanent use in the Refuge directly adjacent to SR 37, which provides limited recreational value, Build Alternatives 3A and 3B are not anticipated to adversely affect ongoing recreation and habitat conservation activities. The project would not increase the use of existing neighborhood and regional parks or other recreational facilities in such a way that substantial physical deterioration as result of the temporary or permanent use of the park and recreation areas would occur and impacts would be less significant.

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

3.3.17 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	Yes	No
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	No	Yes	No	No
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	No	No	No	Yes
d) Result in inadequate emergency access?	No	No	No	Yes

3.3.17.1 CEQA Significance Determinations for Transportation

The existing traffic conditions are described in Section 2.2.11.3. This section uses the No Build Alternative as the CEQA baseline.

a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less than Significant Impact. The proposed project transverses Sonoma, Solano, and Napa counties and the city of Vallejo. These jurisdictions have plans and policies regarding local circulation. However, SR 37 is part of the State Highway System and is under Caltrans' jurisdiction. The project is expected to improve traffic conditions along SR 37 by adding HOV lanes, which would improve the person-carrying capacity of the corridor, as well as the traffic flow and travel times in the peak direction. Bicyclists are permitted. The project would not conflict with a program, plan, ordinance or policy related to transportation, and impacts would be less than significant.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less than Significant with Mitigation Incorporated. SB 743 (2013) requires the Governor's Office of Planning and Research 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 VMT as the most appropriate measure of assessing transportation impacts.

Construction VMT. During construction, vehicles trips would increase temporarily associated with workers traveling to and from the job sites, construction equipment trips, and transport of materials. Because of the limited accessibility for parking and staging, vehicle trips would be coordinated by parking off site and consolidating trips to and from the work locations along SR 37. Public outreach and notifications would be used to inform drivers using SR 37 to expect delays, which would likely discourage discretionary trips and reduce VMT during construction (or divert vehicles to alternative routes which may temporarily increase VMT). Vehicle trips associated with construction would be temporary and limited to the construction period only.

Post-Construction VMT. As described in Section 2.2.11.3, the daily VMT under all Build Alternatives for 2025 (opening year) and 2045 (design year) is estimated to increase from No Build conditions. The increase in VMT for the alternatives for both study years is summarized below in Table 3-3. Comparing the study years in Table 3-3 also represents how the needed reduction in VMT and number of vehicle trips are tied to the study year, and to offset the VMT increase more reduction in vehicle trips is needed in 2045 than in the near term in 2025.

Many of the trips in the north Bay Area relying on SR 37 are regional in that they cross multiple counties and tend to be long-distance trips. Based on the MTC regional model, the average vehicular trip length on SR 37 is about 46 miles. This is the approximate distance between Fairfield and San Rafael, or between Fairfield and Petaluma. To illustrate how VMT changes with the project, for every daily change of 10,000 VMT, an average trip length of 46 miles would result in about 217 vehicular trips on this corridor daily.

Table 3-3 Summary of VMT and Vehicle Trip Increases by Alternative

Scenario	Daily VMT Change
2025 Alternatives 1 and 2	6,346
2025 Alternatives 3A and 3B	9,598
2045 Alternatives 1 and 2	31,729
2045 Alternatives 3A and 3B	47,992

The following actions would reduce the impact of an increase in VMT associated with the Build Alternatives. Performance measures would be used to evaluate or monitor implementation of the proposed actions. The priority would be to implement tolling that would be in effect when the HOV lanes are opened to use. Tolling would provide an immediate offset to the estimated increase in VMT (there would be no VMT impact with tolling), as described in the following section. Implementing tolling on this section of SR 37 would require separate state and federal approvals. The necessary legislative approval would be sought following approval of the project by Caltrans and

the California Transportation Commission. Tolling is not the only solution available to effectively reduce VMT, and the following paragraphs describe tolling and other options to reduce VMT. These actions are not mutually exclusive; one or all could be implemented.

Performance Measures: The performance criteria are the VMT metrics listed in Table 3-3. These are based on the impact caused by the specific project alternative. The objective would be to achieve or exceed these criteria. The following actions, or equivalent actions if others are identified in the future, would be applied over time to achieve the metrics by the 2025 and 2045 study years. The project sponsors and/or Caltrans would use the existing and proposed traffic monitoring programs and facilities to evaluate performance. For example, traffic counts are conducted on SR 37 and all freeways on an annual basis, providing yearly vehicle count information. Implementation of the proposed tolling equipment, which records all vehicles passing through the toll readers, would provide accurate counts of trip volumes that can be used to monitor and report vehicle use on SR 37. The traffic counts and records can also be used to update the regional forecast model that predicted each study year's VMT estimate. VMT is going to increase over time, regardless of the project; therefore, it would be reasonable for the project to mitigate the total VMT increase over time.

Implement Tolling: Tolling is a proposed project feature. The project description in Section 1.4.2.6 includes tolling equipment that would be installed when the project is constructed and Section 2.2.11.3 describes two tolling methods, either one direction only tolling or tolling in both directions. The tolling equipment includes overhead gantries with toll reading equipment, advance signs notifying drivers of upcoming tolls, cameras to read FasTrak and license plate identification, and the associated power and communications lines.

Toll fares would be consistent with other Bay Area bridges, with discounts for HOVs (graduated based on number of occupants), and means-based toll discounts would be implemented. The HOV lane would also encourage carpooling and bus use because the lanes provide a faster trip during peak periods in comparison to the general purpose lane used by SOVs. Charging a toll would result in a reduction in discretionary trips and charging a higher toll for SOVs would discourage SOV trips. Tolling in combination with the HOV designation of the proposed additional lanes during peak periods encourages carpooling, and lower VMT. The MTC regional model used for travel forecasting (see Section 2.2.11) was also used to predict VMT with tolling in place, and the result was a reduction in overall VMT (summarized below in Table 3-4, from Table 2-14):

Table 3-4 VMT Reduction with Proposed Project and Tolling

Alternative	Change in VMT with Tolling in Westbound Direction Only	Change in VMT with Tolling in both Eastbound and Westbound Directions
2025 Daily VMT Difference	-17,344	-6,594
2045 Daily VMT Difference	-86,718	-32,971

Source: VMT values from MTC model, provided by Elite Transportation Group, Inc.

It is important to note that the reduction in VMT with tolling shown in Table 3-4 is based on the MTC regional model that was applied for all trips in the nine-county Bay Area. That modeling shows a net reduction in trips for the regional area. Some drivers might choose to use a route other than SR 37 if tolling is implemented (i.e., the driver might divert from SR 37 to an alternate route because of the new toll). The regional model was used to account for all trips, including diversion trips; a net reduction in trips likely results because of the price sensitivity of drivers when choosing available routes and deciding whether to take discretionary trips. Applying tolling without providing a new HOV lane(s) would not effectively reduce the existing congestion where SR 37 drops from two lanes to one lane in each direction and would result in drivers diverting to longer routes to avoid both the congestion and tolls. Therefore, applying tolling alone without adding the proposed HOV lanes was not considered an effective option to meet the purpose and need of the project, and was not an option that would be funded or constructed by the project sponsors.

An equity or means-based discount program is intended to be implemented, which would effectively provide a toll discount for eligible drivers. The evaluation of tolling reported in Table 3-4 took into account that HOV drivers would have a reduced toll rate. A means-based discount program could incrementally influence the decision to drive for a portion of SR 37 users (the portion of drivers eligible for a toll discount). The greater the subsidy provided would lower the VMT reduction estimated with tolling in place. Although the reduction in VMT reported above with tolling would be incrementally less with a discount program, the margin in the VMT reduction estimated in Table 3-4 is still sufficient for this type of program to be implemented and still achieve the VMT reduction goals.

The proposed project alternatives to add HOV lanes with tolling would effectively reduce existing congestion and reduce VMT to levels that are lower than the No Build Alternative. Alternatives 1, 2, 3A, and 3B with tolling would therefore have no net increase (no adverse impact) in VMT and would provide a beneficial reduction in VMT in comparison to the No Build Alternative. Alternatives 3A or 3B would have the greatest reduction in VMT compared to Alternatives 1 or 2.

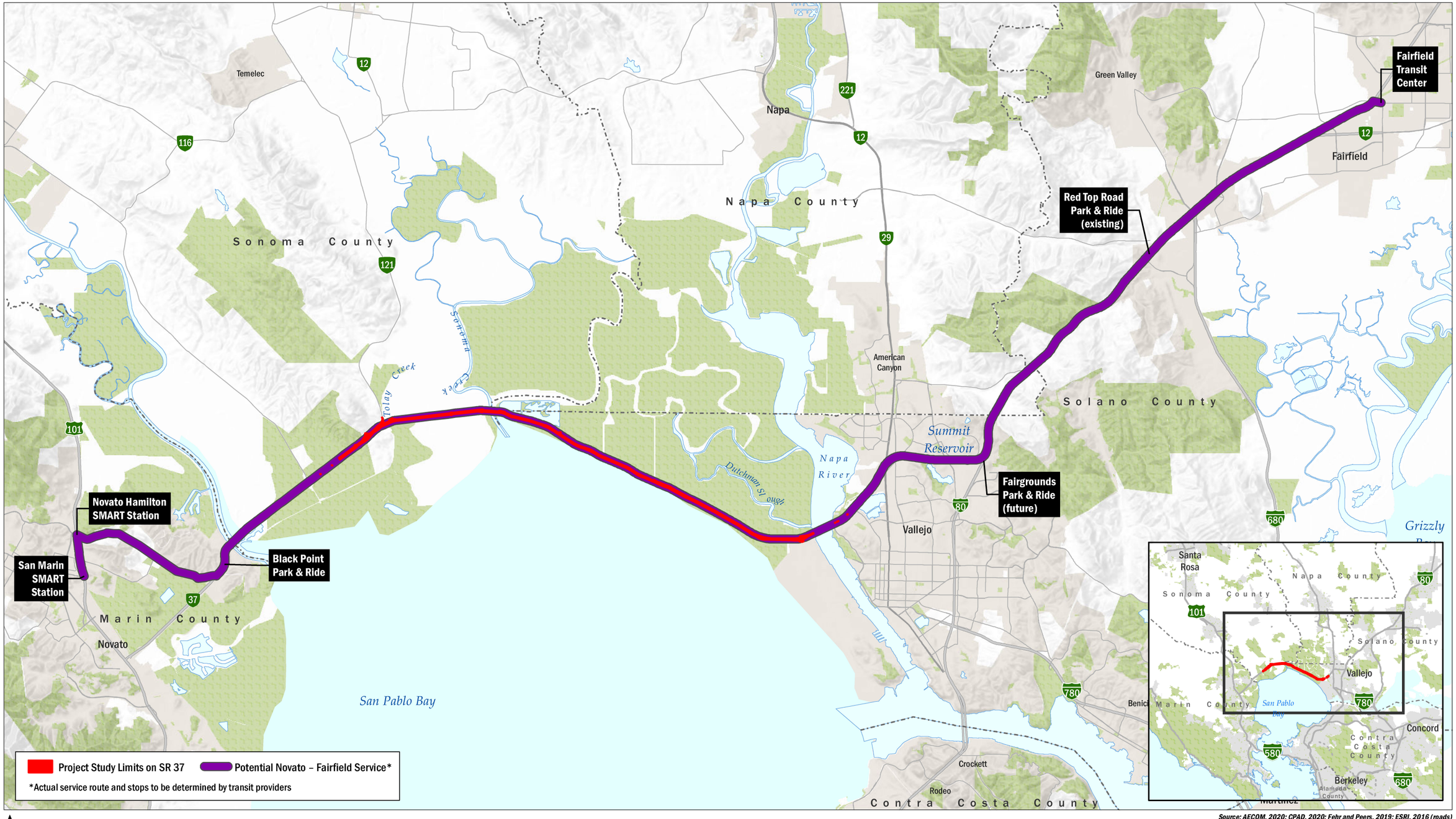
VMT-1: Bus Service, Ride Sharing

Bus Service: There are no public bus service routes that use SR 37, partially because the existing peak period congestion results in significant delays that affect all vehicles using the route. Bus riders and other HOVs currently gain no time savings advantage or incentive over SOVs because all vehicles must use one lane between Mare Island and SR 121, with no option to pass other vehicles. The following describes the range of options that would take advantage of the proposed HOV lanes and help reduce VMT in the SR 37 corridor, as well as reducing regional trips that connect to the SR 37 corridor.

A transit feasibility study has been completed for the SR 37 corridor (Fehr & Peers 2019). This study identified express bus service as an appropriate and cost-effective route and travel option between Fairfield, Vallejo, and Novato (Figure 3-1). Potential service stops these routes would serve, using SR 37, were the Fairfield Transit Center, Red Top Road Park-and-ride lot, a (future) Fairgrounds park-and-ride stop, Black Point park-and-ride, SMART Station, and the Novato Hamilton SMART Station. With HOV lanes, these routes would serve existing and future trips between Vallejo and Novato (approximately 25 miles) and Fairfield and Novato (approximately 40 miles). Bus service providers in this regional area include NVTA (which currently operates the Vine Transit system that connects to SR 37 in Vallejo and American Canyon east of the Napa River), Solano Express bus service (whose service area includes SR 37 and Vallejo), Marin Transit (whose service area includes the U.S. 101 corridor in Novato), and Golden Gate Transit (which includes service to Novato in the vicinity of SR 37).

There is an opportunity for bus transit service on SR 37 to connect to the existing SMART rail service at San Marin and Novato Hamilton stations, allowing riders to take advantage of longer trips that parallel the communities along the U.S. 101 corridor. The existing SMART rail service serves the Sonoma County Airport, Santa Rosa, Rohnert Park, Cotati, Petaluma, Novato, San Rafael, and Larkspur, connecting to the Larkspur ferry service. Bus service connecting to SMART would provide an option for use of bus and rail service rather than driving within the North Bay Counties, which would reduce VMT. Similarly, transit service on SR 37 can connect with other transit service providers, such as Golden Gate Transit, to provide transit alternatives for longer trips.

Providing new bus service on SR 37 would require action and funding by local transportation authorities and transit providers. The proposed SR 37 Sears Point to Mare Island Improvement Project is sponsored by MTC, NVTA, STA, and SCTA, who would commit to identifying and assisting in funding regional and local transit providers to expand bus service onto the SR 37 corridor.



Source: AECOM, 2020; CPAD, 2020; Fehr and Peers, 2019; ESRI, 2016 (roads)

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FIGURE 3-1: SR 37 POTENTIAL EXPRESS BUS SERVICE CONNECTING TRANSIT SERVICES

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Ride Sharing: The proposed HOV lanes provide an incentive for individuals to carpool and combine trips, which reduces VMT by reducing the trip length and/or number of SOVs using the SR 37 corridor. These factors include the higher cost of driving due to tolling (if approved), the time savings gained by being an HOV, and the savings in mileage and cost by not driving. These incentives are enhanced for some drivers if park-and-ride lots are available. Existing park-and-ride lots in the region and their use are illustrated in Figure 3-2. This figure also shows the estimated occupancy in terms of the average percentage of daily capacity being used. Lots that are over capacity or being used at a high percentage of their capacity indicate the potential opportunity for bus service to effectively serve this corridor and/or the need for more carpool lot availability. The current use of existing car pool lots in the vicinity of SR 37 would be expected to increase with tolling and the attraction of saving travel time with an HOV. The demand for bus and park-and-ride lots could be expected to increase with the proposed project's provision of one or more HOV lanes.

Figure 3-3 shows the potential opportunities for enhanced park-and-ride lot expansion that could help serve SR 37. Expansion of these lots would serve formal and casual carpool and vanpool riders and enhance opportunities for pickup and drop-off locations. This would be another option to help reduce VMT; and, as noted before, implementation of additional park-and-ride capacity serving the SR 37 corridor could be implemented over time by the project sponsors to serve the anticipated increase in demand between the 2025 and 2045 study years.

Existing and emerging mobility services are also expected to enhance the ability of individuals to combine rides and reduce VMT. Examples of existing services include MTC's 511.org program, which connects riders and aids in finding transit services and setting up vanpools. More recent or emerging technologies, including web-based services, help identify ridesharing and transit opportunities. Park-and-ride lots can help provide a common location to meet and serve trip origins and destinations. These mobility applications are provided by agencies and private services and would be available with or without the proposed project, but the proposed HOV lanes in combination with park-and-ride lots would further enhance or promote the effectiveness of ridesharing using the SR 37 corridor.

In summary, the proposed project without tolling increases VMT for the four proposed Build Alternatives in comparison to the No Build Alternative. There would be no increase in VMT with implementation of tolling at the time the proposed lanes are opened for use. Tolling would require legislative approval in addition to the approval of the project. Without tolling, there are other strategies that could reduce VMT, including project sponsor assistance with implementing bus service routes along SR 37, additional park-and-ride availability, and ride sharing services. MTC supports rideshare

and transit development along the corridor and would help fund these improvements to mitigate VMT if tolling is not implemented. Because the VMT impact occurs in a graduated increase over time, as illustrated in the differences in VMT between the 2025 and 2045 study years, the implementation of bus service, increased park-and-ride availability, or other viable options would be implemented over time as VMT increases and demand for these ridesharing services also increases. These are all viable options that without tolling would fully offset the increase in VMT and maintain the project as consistent with CEQA Guidelines Section 15064.3(b). Tolling, bus service, increased park and ride availability, and ride sharing services are not mutually exclusive and any or all of these measures would be used to meet the performance measure of maintaining or reducing VMT below the corresponding No Build VMT levels. The project is sponsored by regional and local transportation authorities who would commit to helping fund bus service and ride sharing facilities and programs that benefit SR 37 VMT reduction.

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 Impact. Although Build Alternatives 2, 3A, and 3b would involve widening SR 37, the alignment of SR 37 would not change. SR 37 traffic must be maintained during construction, and construction staging areas would be needed along or near the route for equipment and materials. The project would not increase hazards due to design features, and there would be no impact.

d) Result in inadequate emergency access?

Less than Significant Impact. During construction, access would be maintained within the SR 37 corridor. A TMP would be developed to coordinate with emergency service providers during construction. There would be no impact related to emergency access. None of the Build Alternatives would impair implementation of an emergency response or emergency evacuation plan. During construction, implementation of the TMP would minimize construction-related delays and would include coordination with CHP and local law enforcement agencies. However, even with the implementation of the TMP, there may be slower traffic due to construction activities. While access would be maintained for emergency response vehicles they may be required to move around traffic, which could result in slight delays.

During project operation, Build Alternatives 3A and 3B would result in the loss of a wider shoulder for emergency vehicle use, but the presence of two lanes in each direction on SR 37 would allow traffic to move over to the other lane, allowing emergency vehicles to pass them. Allowing traffic to move over may result in slight delays. Therefore, the Build Alternatives would have a less than significant impact.

Source: AECOM, 2020; CPAD, 2020; Fehr and Peers, 2019; ESRI, 2016 (roads)

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FIGURE 3-2: EXISTING PARK-AND-RIDE LOTS IN VICINITY OF SR 37

Source: AECOM, 2020; CPAD, 2020; Fehr and Peers, 2019; ESRI, 2016 (roads)

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FIGURE 3-3: PARK-AND-RIDE OPPORTUNITIES IN VICINITY OF SR 37

3.3.18 Tribal Cultural Resources

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:	**Significant and Unavoidable Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	No	No	No	Yes
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No	No	No	Yes

3.3.18.1 CEQA Significance Determinations for Tribal Cultural Resources

a, b) 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 a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

No Impact. The NAHC was contacted on October 2019 to request a search of the Sacred Lands File for sacred lands or other cultural properties of significance to Native Americans in or near the APE. The NAHC replied via email on October 25, 2019, stating that a search of the file had been completed and was negative for cultural resources. Section 2.2.13 discusses the Native American Consultation performed for this project in more detail. As a result of consultation with the NAHC and local Native American tribes, no tribal cultural resources were identified in or near the APE. Therefore, there would be no impact.

3.3.19 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

3.3.19.1 CEQA Significance Determinations for Utilities and Service Systems

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?

Less than Significant Impact. The project would require relocation of some PG&E overhead electrical distribution lines. Seven wooden poles would be relocated due to the construction and widening of the roadway. The relocation of electrical facilities may result in temporary interruptions of service. Final verification of utilities would be performed during the project's detailed design phase, and any needed relocations

would be coordinated with the affected utility owner to minimize potential interruptions of service. This impact would be less than significant.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

No Impact. The project would not include new development or uses that would require water supplies. There would be no impact.

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 Impact. The project would not generate new wastewater flows or affect public utilities for wastewater treatment. There would be no impact.

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 Impact. The project would not generate solid waste, other than during construction.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact. The project would not result in the production of solid waste other than during construction. During construction, the project would not generate or require solid waste disposal that exceeds local standards, or exceeds the capacity of local infrastructure. Construction waste that could not be recycled would be disposed of at a certified facility based on the waste type and is not anticipated to affect landfill capacity. The project would also comply with all federal, state, and local statutes and regulations related to solid waste. There would be no impact.

3.3.20 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	No	Yes

3.3.20.1 CEQA Significance Determinations for Wildfire

SB 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 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.

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. The project limits traverse Sonoma, Solano and Napa Counties. These counties have Emergency Operation Plans, which provide guidelines for emergency response planning, preparation, training, and execution throughout their jurisdictions. None of the Build Alternatives would 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 SR 37 would remain in operation. A TMP would be implemented to

minimize construction-related delays. A substantial reduction in emergency response times is not expected. There would be no impact.

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 Impact. The eastern and central part of the project corridor (from the eastern terminus to Sonoma Creek) passes primarily through publicly owned marshland and agricultural lands. This part of the corridor is generally flat, with little to no slopes, and consists of sloughs, marsh vegetation, and small water channels. Portions of SR 37 in the local responsibility area for Sonoma County are in a moderate severity zone. A large portion of the alignment in the project area is in areas of Solano County that are unzoned.

The project would not change fire risk conditions and it would not change the alignment of SR 37. During construction, most work would occur in Caltrans' right-of-way; areas adjacent to SR 37 would be needed for widening the highway and construction staging. Project features for minimizing fire risks would be incorporated, such as clearing vegetation from the work area; prohibiting the use of highly flammable chemicals; following locally changing meteorological conditions; and maintaining awareness of the possibility of increased fire danger during the time work is in progress (see Table 1-4). All construction activities would follow state and federal fire regulations. The project is not expected to exacerbate wildfire risks or expose project personnel to pollutants from a wildfire or the uncontrolled spread of a wildfire. There would be no impact.

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 Impact. The project involves widening SR 37 and would require relocation of some PG&E overhead electrical distribution lines. Seven wooden poles would be relocated due to the construction and widening of the roadway in certain sections. All project construction would follow state and federal fire regulations during these relocations. Project features for minimizing fire risks would be incorporated, such as clearing vegetation from the work area; prohibiting the use of highly flammable chemicals; following locally changing meteorological conditions; and maintaining awareness of the possibility of increased fire danger during the time work is in progress. Therefore, the project is not expected to exacerbate wildfire risks or expose project personnel to

pollutants from a wildfire or the uncontrolled spread of a wildfire, and there would be no impact.

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 Impact. No recent fires have occurred in the project vicinity that could result in post-fire slope instability or drainage changes. Furthermore, the project limits are in a relatively flat area with little to no slopes and extensive wetland vegetation that remains green year round. Implementation of standard Caltrans practices for erosion control and other measures would avoid or minimize the project's potential to result in downslope or downstream flooding or landslides. These measures are incorporated into the project design as a matter of Caltrans practice and are not mitigation. The proposed project would not expose the public to a risk of post-fire slope instability or drainage changes. No impact would occur.

3.3.21 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	No	Yes
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	No	No	No	Yes

3.3.21.1 CEQA Significance Determinations for Mandatory Findings of Significance

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?

Less than Significant Impact. Though the proposed project would have potential impacts on special-status species and their habitats, impacts would not substantially reduce habitat or wildlife at a population level. Additionally, the project would not eliminate a plant or animal community, or substantially reduce the number or range of any rare or endangered plant or animal. The project would not eliminate any examples of major periods on California history or prehistory. Because the project would have

some impacts on special-status species and their habitat in the project area that would be less than substantial at population or community levels, it would have a less than significant impact.

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)?

Less than Significant Impact with Mitigation Incorporated. The build alternatives without tolling result in an increase in VMT, and measures to reduce VMT below the No Build alternative levels are described in Section 3.3.17, Transportation. One or all of the measures described in that section can be implemented to meet the performance measure of maintaining VMT at the No Build level. If other projects or factors contribute or change VMT, the same strategy of using tolling, bus service, and ride sharing programs can still be used to offset VMT. Additional measures may also be applied, such as changing the toll rate at peak periods. These measures would be effective with respect to a cumulative impact change in VMT, and the impact would be less than significant.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

No Impact. The proposed project would include construction impacts that could affect human beings (e.g., construction noise and traffic delays), but these impacts would be short term and not substantially adverse. Therefore, there would be no impact.

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 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 (IPCC) by the United Nations and World Meteorological Organization in 1988 led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including CO_2, methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2.

Two terms are typically used when discussing how we 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 deciding on an 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 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.

The 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 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 (H&SC 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 (LCFS) 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 LCFS 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 MPO for each region must then develop a "Sustainable Communities Strategy" (SCS) 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 CEC, 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 CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million

metric tons of carbon dioxide equivalent ($MMTCO_2e$).[1] Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, Safeguarding California, every 3 years, and to ensure that its provisions are fully implemented.

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

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

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

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

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

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

EO N-19-19 (September 2019) advances California's climate goals in part by directing the California State Transportation Agency to leverage annual transportation spending to reverse the trend of increased fuel consumption and reduce GHG emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This EO also directs CARB to encourage automakers to produce more clean vehicles, formulate ways to

[1] GHGs differ in how much heat each trap in the atmosphere (global warming potential). CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent" (CO_2e). The global warming potential of CO_2 is assigned a value of 1, and the global warming potential of other gases is assessed as multiples of CO_2.

help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

3.4.2 Environmental Setting

SR 37 is the main transportation route that connects Solano, Napa, Sonoma, and Marin Counties. Most of the proposed project is in a rural area, which is adjacent to open-space, agricultural, and recreational uses. The project is also adjacent to the Refuge and the NSMWA. The portion of the project alignment in Vallejo is near residential and mixed-use development. Currently, commuters experience significant recurring traffic congestion and delays at the bottlenecks within the traffic study limits during the peak hours. Traffic demands exceed capacity in segments between SR 121 and Mare Island, where the existing two lanes merge into one lane in both the eastbound and westbound directions. Plan Bay Area 2050 guides transportation development in the project area. The BAAQMD's 2017 clean air plan, *Spare the Air, Cool the Climate,* 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 CARB does so for the state, as required by H&SC Section 39607.4.

National GHG Inventory

The U.S. EPA prepares a national GHG inventory every year 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 CO_2, CH_4, N_2O, HFCs, perfluorocarbons, SF_6, and nitrogen trifluoride. It also accounts for emissions of CO_2 that are removed from the atmosphere by "sinks" such as forests, vegetation, and soils that uptake and store CO_2 (carbon sequestration).

The 1990-2019 inventory found that overall GHG emissions were 6,558 million metric tons in 2019, down 1.7 percent from 2018 but up 1.8 percent from 1990 levels. Of these, 80 percent were CO_2, 10 percent were CH_4, and 7 percent were N_2O; the balance consisted of fluorinated gases. CO_2 emissions in 2019 were 2.2 percent less than in 2018, but 2.8 percent more than in 1990. As shown on Figure 3-4, the transportation sector accounted for 29 percent of GHG emissions in the United States in 2019 (U.S. EPA 2021a, 2021b).

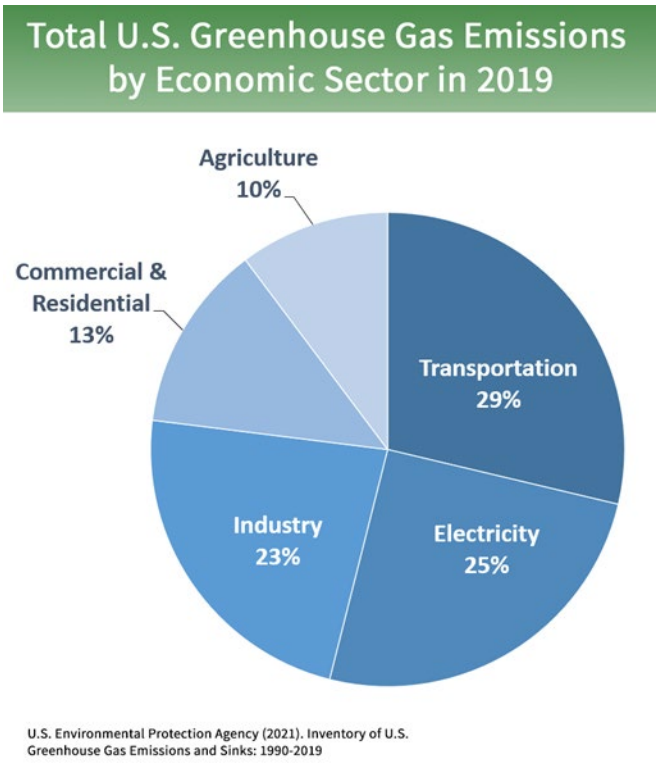

Figure 3-4 U.S. 2019 Greenhouse Gas Emissions

Source: U.S. EPA 2021c

State GHG Inventory

CARB 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 2020 edition of the GHG emissions inventory reported emissions trends from 2000 to 2018. It found total California emissions were 425.3 $MMTCO_2e$ in 2018, 0.8 $MMTCO_2e$ higher than 2017 but 6 $MMTCO_2e$ lower than the statewide 2020 limit of 431 $MMTCO_2e$. The transportation sector was responsible for 41 percent of total GHGs. Transportation emissions decreased in 2018 compared to the previous year, which is the first year-over-year decrease since 2013. Overall statewide GHG emissions declined from 2000 to 2018 despite growth in population and state economic output (CARB 2020a).

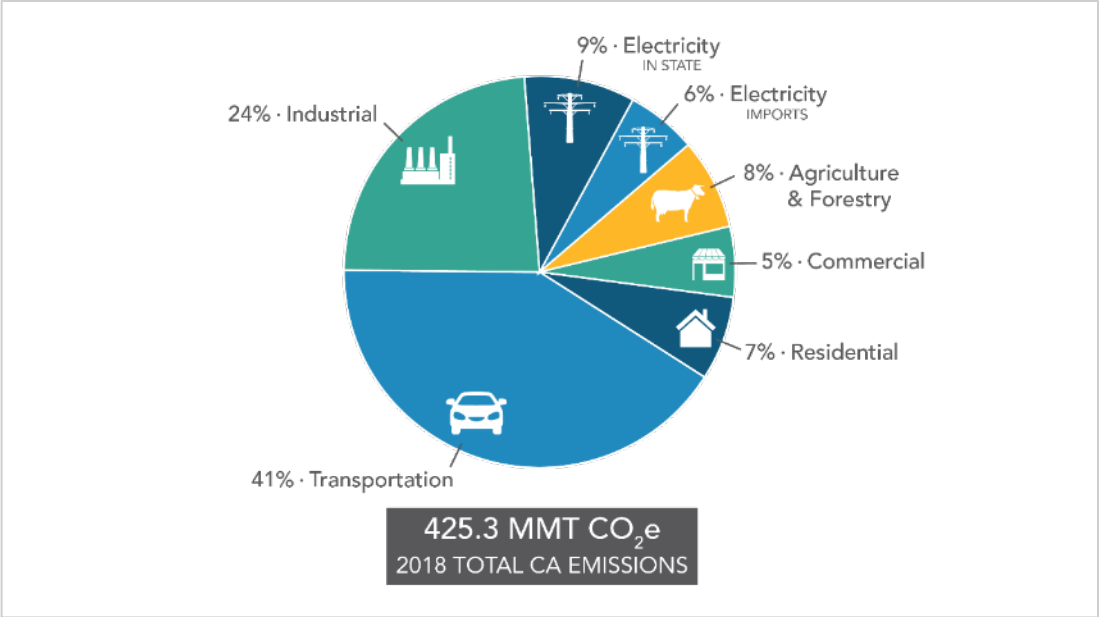

Figure 3-5 California 2018 Greenhouse Gas Emissions by Economic Sector

Source: CARB 2020b

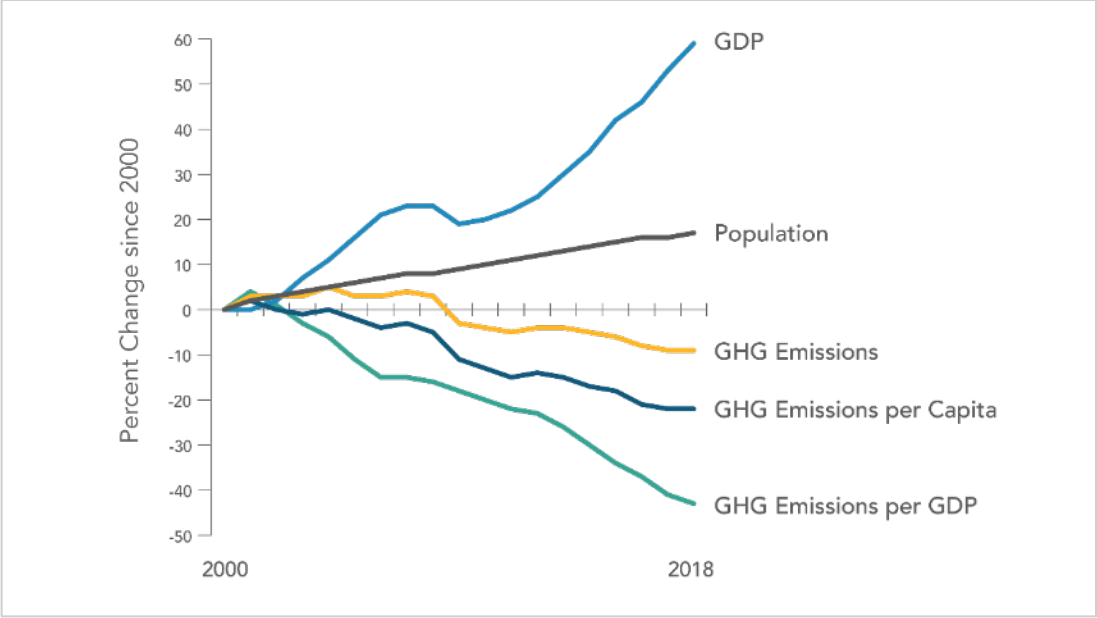

Figure 3-6 Change in California GDP, Population, and GHG Emissions Since 2000

Source: CARB 2020b

AB 32 required CARB 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. CARB 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.

Regional Plans

CARB sets regional targets for California's 18 MPOs to use in their 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, with GHG reduction targets of 10 percent by 2020 and 19 percent by 2035. The proposed project would be included in the MTC RTP, Plan Bay Area 2050.

The 2017 clean air plan, Spare the Air, Cool the Climate (BAAQMD 2017), defines strategies for climate protection in the Bay Area that support goals laid out in Plan Bay Area 2050 (ABAG and MTC 2021a). Those 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. Local climate action plans also offer GHG reduction strategies.

These plans are summarized in Table 3-5. The plans include goals, policies, and strategies for reducing GHG emissions. These strategies are current and future actions that have been or would be implemented and correspond to the proposed project.

Table 3-5 Regional and Local Greenhouse Gas Reduction Plans

Title	GHG Reduction Policies or Strategies
Plan Bay Area 2050	Transportation Demand Management (TDM) strategies, including bicycle and pedestrian networks, transit, targeted transportation alternatives, trip caps, car sharing, carpool and vanpool incentives, and commuter benefits ordinances. Incorporation of regional Climate Action Program that, includes the following: • Commuter Benefits Program — use of tax incentives to encourage more commuters to walk, bicycle, take transit, carpool, and vanpool to and from work • Car Sharing — expanding car sharing to more communities and exploring all service models, including round trip, one-way, and peer-to-peer trips; MTC developed a Bay Area Carsharing Implementation Strategy to guide actions over the next few years • Targeted Transportation Alternatives — using campaigns and encouragement programs to change individual travel behavior from driving alone to using sustainable modes, such as walking, biking, riding transit, carpooling, vanpooling and car sharing, for all types of trips
County of Solano Climate Action Plan	• Commuter and rideshare incentives • Solano Bicycle and Pedestrian Program • County Fleet Fuel Efficiencies
County of Napa Climate Action Plan	• Reduce vehicle trips through consolidation of vehicle trips and nonmotorized trips • Encourage the use of electric and alternative fuel vehicles • Reduce VMT through smarter land use planning

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 CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of CH_4 and N_2O are emitted during fuel combustion. In addition, a small amount of HFC emissions are included in the transportation sector.

The CEQA Guidelines generally address GHG emissions as a cumulative impact due to the global nature of climate change (Pub. Resources Code, § 21083(b)(2)). As the California Supreme Court explained, “because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself.” (Cleveland National Forest Foundation v. San Diego Assn. of Governments (2017) 3 Cal.5th

497, 512.) In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment.

3.4.3.1 Operational Emissions

Nearly 29 percent of GHG emissions in the United States in 2019 came from the transportation sector. CO_2 emissions from fossil fuel combustion accounted for 74.1 percent of all GHG emissions, and transportation activities accounted for about 37.5 percent of CO_2 emissions from fossil fuel combustion in 2019. Most transportation-related GHG emissions are from passenger cars (40.5 percent), freight trucks (23.6 percent), and light-duty trucks (17.2 percent). The remainder of GHG emissions comes from other modes of transportation, including aircraft, ships, boats, and trains, as well as pipelines and lubricants (U.S. EPA 2021a, 2021b). Because CO_2 emissions represent the greatest percentage of GHG emissions it has been selected as a proxy within the following analysis for potential climate change impacts generally expected to occur.

The highest levels of CO_2 from mobile sources such as automobiles occur at stop-and-go speeds (0 to 25 mph) and speeds over 55 mph; the most severe emissions occur from 0 to 25 mph (see Figure 3-7). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued concurrently.

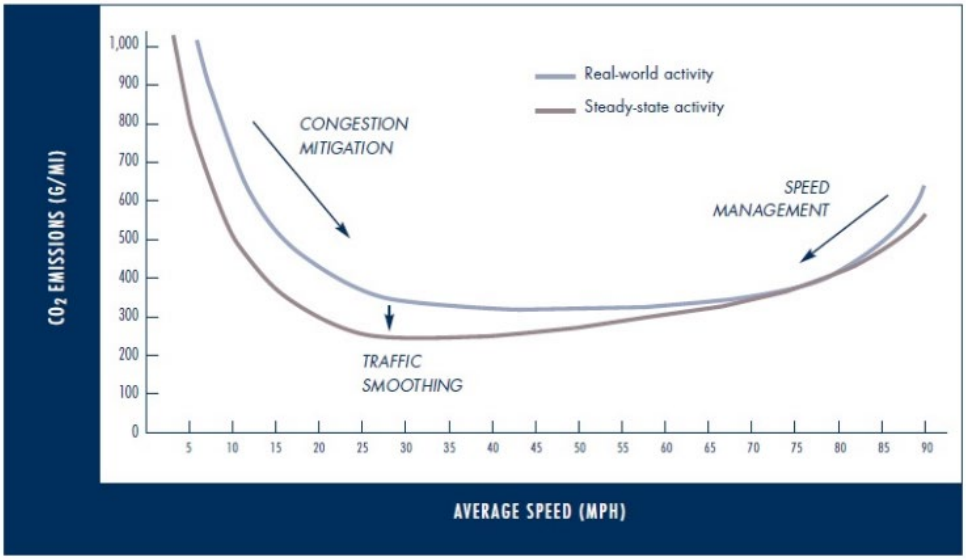

Figure 3-7 Possible Use of Traffic Operation Strategies in Reducing On-road CO_2 Emissions

(*Source:* Barth and Boriboonsomsin 2010)

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued concurrently.

The RTP (Plan Bay Area 2050) contains regional strategies for reducing GHG emissions from transportation sources on a regional scale. This project is included in the RTP. *Plan Bay Area 2050* outlines measures to reduce per capita VMT, including but not limited to TDM strategies such as transit, targeted transportation alternatives, car sharing, carpool and vanpool incentives, and commuter benefits ordinances (ABAG and MTC 2021a). Specifically, *Plan Bay Area 2050* incorporated MTC's Climate Initiatives Program, which is designed to reduce GHG emissions from the transportation sector with strategies that include financial tools such as tax incentives to encourage more commuters to take transit, carpool, and vanpool; vanpooling setup support; and campaigns and programs to promote using sustainable travel modes, such as riding transit, carpooling, vanpooling and car sharing. The Counties of Solano and Napa have Climate Action Plans with similar policies and strategies aimed at increasing transit ridership, implementing TDM, and promoting alternatives to solo driving such as ridesharing.

HOV lanes are intended to facilitate transit and increase vehicle occupancy by encouraging ridesharing such as carpools and vanpools.

Quantitative Analysis

GHG emissions impacts for the No Build and Build Alternatives were computed using CT-EMFAC 2017 for the existing year and future years (2025 Opening Year, 2040 RTP, and 2045 Design Year). The SAFE vehicle emissions adjustment factors developed by CARB for CO_2 were applied to the CT-EMFAC2017 emissions factors, and the adjusted emissions factors were applied to the project area VMT estimates.[2] Table 3-6 shows the estimated CO_2e emissions and VMT.

Under all Build Alternatives in all study years, the mobile GHG emissions in the region would decrease from baseline levels due to improvements in vehicle technology with or without the project. Modeling shows that Build Alternatives 1 and 2 would have lower annual GHG emissions than the No Build Alternative for all future years. Alternatives 3A and 3B would have 1,187 metric tons of CO_2e less than the No Build Alternative. In 2040 and 2045 the GHG emissions would be higher than the No Build by 22,657 metric tons and 58,421 metric tons of CO_2e per year, respectively. These results are without tolling applied. Because the CT-EMFAC2017 model is insensitive to a vehicle's modal events, such as acceleration and deceleration due to traffic congestion, it does not adequately capture CO_2 reductions associated with smoother traffic flow under the build alternatives. As described in Section 3.3.17, the project would improve traffic conditions on SR 37 and intersections. Reducing queues and stop-and-go traffic would reduce idling and GHG emissions due to idling. Factoring these benefits in could result in additional GHG emission reduction benefits compared to the No Build Alternative. Tolling and other proposed VMT reduction measures would also reduce GHG emissions.

Although CT-EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its GHG emission rates are based on tailpipe emission test data. The model does not account for factors such as the rate of acceleration and vehicle aerodynamics, which influence the amount of emissions generated by a vehicle. GHG emissions quantified using CT-EMFAC are therefore estimates and may not reflect actual physical emissions. Though CT-EMFAC is currently the best available tool for calculating GHG emissions from mobile sources, it is important to note that the GHG results are only useful for a comparison among alternatives.

[2] The U.S. National Highway Traffic Safety Administration and Environmental Protection Agency SAFE (Safer Affordable Fuel-Efficient) Vehicles Rule Part One, revoking California's authority to set its own GHG emissions standards, was published on September 27, 2019, and was effective November 26, 2019. The SAFE Vehicles Rule Part Two became effective June 30, 2020. It amended existing CAFE and tailpipe carbon dioxide emissions standards for passenger cars and light trucks and established new standards covering model years 2021 through 2026. The rule retains the model year 2020 standards for both programs through model year 2026. ARB has provided adjustment factors for GHG emissions based on the SAFE Rule, and modeling these estimates with EMFAC2017 or CT-EMFAC2017 remains the most precise means of estimating future GHG emissions.

Table 3-6 Modeled Annual CO2e Emissions and VMT by Alternative

Alternative	GHG Emissions (MT CO_2e/ year)	Difference Between No Build and Build (MT CO_2e/ year)	Change Between Existing and Build (MT CO_2e/year)	Daily VMT	Daily Difference In VMT Build and No Build	Annual VMT[1]	Annual Difference In VMT Build and No Build
Baseline 2020	24,555,199	NA	NA	149,948,925	NA	54,768,844,687	NA
No Build 2025	21,996,764	NA	NA	156,255,326	NA	57,072,258,000	NA
Build Alternatives 1 and 2 2025	21,995,070	-1,694	-2,560,129	156,261,672	6,346	57,074,575,829	2,317,829
Build Alternatives 3A and 3B 2025	21,995,577	-1,187	-2,559,622	156,264,925	9,599	57,075,763,812	3,505,812
With Tolling 2025 westbound only (Tolling Option 1)	21,993,294	-3,470	-2,561,905	156,237,983	-17,343	57,065,923,217	-6,334,783
With Tolling 2025 both Directions (Tolling Option 3)	21,996,633	-132	-2,558,567	156,248,732	-6,594	57,069,849,482	-2,408,518
No Build 2040	21,394,504	NA	NA	175,174,532	NA	63,982,497,938	NA
Build Alternatives 1 and 2 2040	21,387,079	-7,425	-3,168,120	175,199,916	25,384	63,991,769,254	9,271,316
Build Alternatives 3A and 3B 2040	21,417,161	22,657	-3,138,039	175,212,926	38,394	63,996,521,187	14,023,249
With Tolling 2040 westbound only (Tolling Option 1)	21,387,803	-6,701	-3,167,397	175,105,158	-69,374	63,957,158,808	-25,339,130
With Tolling 2040 both Directions (Tolling Option 3)	21,389,387	-5,117	-3,165,812	175,148,156	-26,376	63,972,863,867	-9,634,071
No Build 2045	21,628,584	NA	NA	181,480,934	NA	66,285,911,251	NA
Build Alternatives 1 and 2 2045	21,616,583	-12,001	-2,938,616	181,512,664	31,730	66,297,500,396	11,589,145
Build Alternatives 3A and 3B 2045	21,687,005	58,421	-2,868,195	181,528,926	47,992	66,303,440,312	17,529,061
With Tolling 2045 westbound only (Tolling Option 1)	21,679,909	51,325	-2,875,290	181,394,216	-86,718	66,254,237,338	-31,673,913
With Tolling 2045 both Directions (Tolling Option 3)	21,684,863	56,279	-2,870,336	181,447,963	-32,971	66,273,868,662	-12,042,589

Notes:

Source: Illingworth & Rodkin using CT-EMFAC 2017 version 1.0.2, 2021.

[1] Annual VMT values from MTC model, provided by Elite Transportation Group, Inc., March 8, 2021.

[2] Tolling in one direction (westbound only) is also referred to as Tolling Option 1. Tolling in both directions is also referred to as Tolling Option 3. These options are estimated for Alternatives 3A/3B.

3.4.3.2 Construction Emissions

Construction GHG emissions would result from material processing, onsite 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 by implementing better traffic management during construction.

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.

Construction emissions were estimated using the latest Sacramento Metropolitan Air Quality Management District's RCEM, version 9.0. Table 2-22 in Section 2.3.6 shows the construction emissions associated with the project. As shown in Table 2-22, CO_2e emissions from earthmoving activities and use of equipment and vehicles would amount to 5,994 metric tons. These emissions would be similar for all Build Alternatives except Alternative 3B, which involves widening of Sonoma Creek Bridge. Widening of Sonoma Creek Bridge would require additional structures (steel, concrete, and other materials) and construction staging, all of which would result in additional GHG emissions for that alternative.

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 CARB emission reduction regulations; and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

3.4.3.3 CEQA Conclusion

CEQA Guidelines Section 15064.4 states that, among other factors, a lead agency should consider the extent to which the project may increase or reduce GHG emissions compared to the existing environmental setting when assessing the significance of impacts from GHG emissions on the environment. Although the comparison of future Build to future No Build conditions may be useful in aiding the analysis of significance and in determining the extent of project-level measures to reduce GHG emissions due to the project, CEQA and the CEQA Guidelines remain

focused on the comparison of future conditions with the project compared to existing conditions.

Although individual projects are not required to meet the 2050 reduction targets established in EOs and legislation, current professional CEQA practices and important court cases[3] in 2014 and 2015 advocate for demonstrating continued progress toward assisting the state in achieving these goals.

The project would result in a reduction of GHG emissions by 2045 compared to the existing conditions, as shown in Table 3-6. Because the Build Alternatives would not contribute to increases in GHG emissions over existing conditions, and GHG-reduction measures would be implemented during construction, the impact would be less than significant.

3.4.4 Greenhouse Gas Reduction Strategies

3.4.4.1 Statewide Efforts

Major sectors of California's 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.

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 (Figure 3-8). GHG emission reductions would come from cleaner vehicle technologies, lower-carbon fuels, and reduction of VMT. A key state goal for reducing GHG emissions is to reduce today's petroleum use in cars and trucks by up to 40 percent by 2030 (California Environmental Protection Agency 2015).

[3] Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming (2015) 224 Cal.App.4th 1105 (CBD vs. CDFW; also known as the "Newhall Ranch" case; Cleveland National Forest Foundation v. San Diego Association of Governments, 180 Cal.App.3d 548 (Cal.App. 2014)

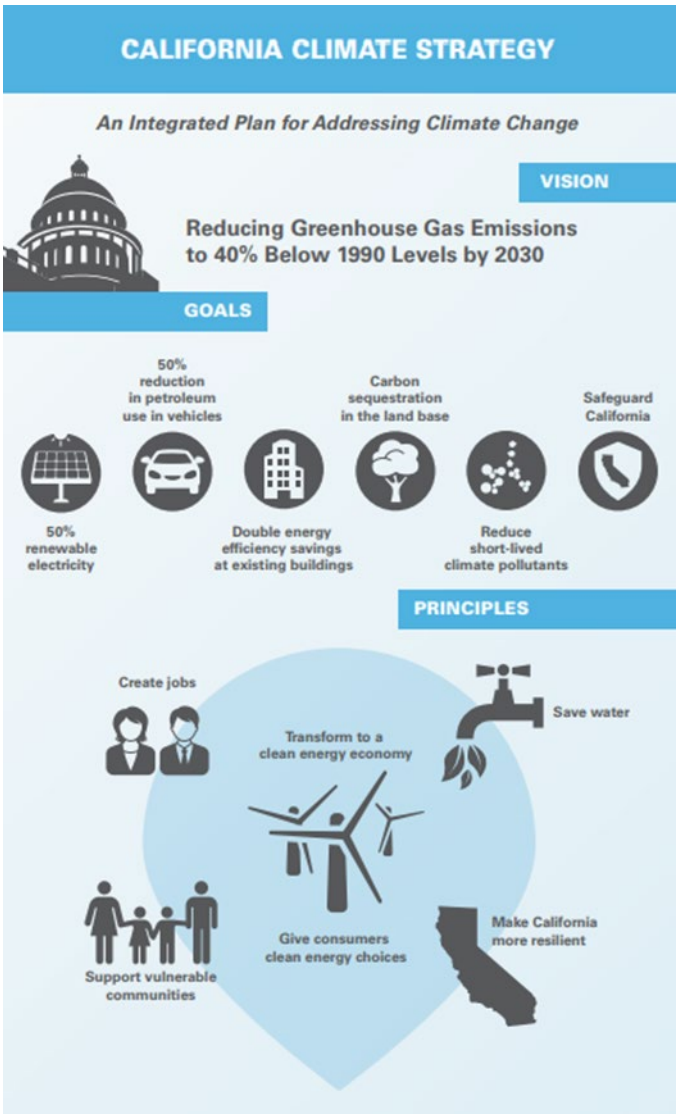

Figure 3-8 California Climate Strategy

In addition, SB 1386 established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove CO_2 from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter. Subsequently, Governor Gavin Newsom issued EO N-82-20 to combat the crises in climate change and biodiversity. It instructs state agencies to use existing authorities and resources to identify and implement near- and long-term actions to accelerate natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities and in particular low-income, disadvantaged, and vulnerable communities. Each agency is to develop a Natural and Working Lands Climate Smart Strategy that serves

as a framework to advance the state's carbon neutrality goal and build climate resilience.

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

The *California Transportation Plan* (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. It serves as an umbrella document for all the other statewide transportation planning documents. The CTP 2050 presents a vision of a safe, resilient, and universally accessible transportation system that supports vibrant communities, advances racial and economic justice, and improves public and environmental health. The plan's climate goal is to achieve statewide GHG emissions reduction targets and increase resilience to climate change. It demonstrates how GHG emissions from the transportation sector can be reduced through advancements in clean fuel technologies; continued shifts toward active travel, transit, and shared mobility; more efficient land use and development practices; and continued shifts to telework (Caltrans 2021a).

SB 391 requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. Although MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, the CTP identifies additional strategies.

Caltrans Strategic *PLAN*

The Caltrans 2020–2024 Strategic Plan includes goals of stewardship, climate action, and equity. Climate action strategies include developing and implementing a Caltrans Climate Action Plan; a robust program of climate action education, training, and outreach; partnership and collaboration; a VMT monitoring and reduction program; and engaging with the most vulnerable communities in developing and implementing Caltrans' climate action activities (Caltrans 2021b).

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) established a Departmental policy to 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

Operation of the proposed project would encourage ridesharing, carpooling, and mass transit use; and reduce recurring during AM and PM peak hours, which would help reduce GHG emissions from idling vehicles. Two tolling strategies are also being considered, which, if approved by the Legislature, would result in a reduction of VMT.

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

1. 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.

2. 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. This includes requirements such as idling restrictions and keeping engines properly tuned reduce emissions, including GHG emissions.

3. Caltrans would implement all project features described in Table 1-4 in Section 0 (see PF-AIR-02), which would reduce GHG emissions from the project during construction activities.

3.4.5 Adaptation

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 United States Global Change Research Program delivers a report to Congress and the president every 4 years, in accordance with the Global Change Research Act of 1990 (15 USC ch. 56A § 2921 et seq). The Fourth National Climate Assessment, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways." Chapter 12, "Transportation," presents a key discussion of vulnerability assessments. It notes that "asset owners and operators have increasingly conducted more focused studies of particular assets that consider multiple climate hazards and scenarios in the context of asset-specific information, such as design lifetime" (USGCRP 2018).

The USDOT 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 USDOT to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions" (USDOT 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 (State of California 2018) is the state's effort to "translate the state of climate science into useful information for action" in a variety of sectors at both statewide and local scales. It adopts the following key terms used widely in climate change analysis and policy documents:

- *Adaptation* to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- *Adaptive capacity* is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."
- *Exposure* is the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.
- *Resilience* is the "capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience." Adaptation actions contribute to increasing resilience, which is a desired outcome or state of being.
- *Sensitivity* is the level to which a species, natural system, or community, government, etc., would be affected by changing climate conditions.
- *Vulnerability* is the "susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt." Vulnerability can increase because of physical (built and environmental), social, political, and/or economic factor(s). These factors include, but are not limited to: ethnicity, class, sexual orientation and identification, national origin, and income inequality. Vulnerability is often defined as the combination of sensitivity and adaptive capacity as affected by the level of exposure to changing climate.

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

EO S-13-08, issued by then-governor Arnold Schwarzenegger in November 2008, focused on SLR 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 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 "SLR 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 SLR 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 SLR 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 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 conducted climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects including precipitation, temperature, wildfire, storm surge, and SLR. 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

The January 2018 *Caltrans Climate Change Vulnerability Assessments* for the District 4 region (Caltrans 2018), which covers the nine-county San Francisco Bay Area, was consulted regarding climate stressors in the project area. The report and accompanying Climate Change Vulnerability Assessment map tool (Caltrans 2017a) identified the following climate change conditions for the project area for the analysis years 2025, 2055, and 2085.

SR 37 Sea-Level Rise Planning Efforts

In 2018, the California Ocean Protection Council (OPC) released SLR guidance for California that provides probabilistic SLR projections for a range of future scenarios. The SLR projections up to 2100 for San Francisco Bay are shown in Table 3-7. The range in projections represent uncertainties in climate models and scientific understanding of the physical processes associated with climate change. The OPC guidance presents probabilistic projections to capture this uncertainty, and the table shows SLR values with different probabilities of exceedance to allow asset managers to make informed, risk-based decisions on future planning and design.

Table 3-7 Summary of State of California SLR Projections for San Francisco Bay

Modeled Year	Projected SLR Increase with a 66 Percent Likelihood (feet)	Projected SLR Increase with a 5 Percent Likelihood (feet)	Projected SLR Increase with a 0.5 Percent Likelihood (feet)	H++ Scenario Extreme Risk Scenario (feet)
2030	0.5	0.6	0.8	1.0
2040	0.8	1.0	1.3	1.8
2050	1.1	1.4	1.9	2.7
2060	1.5	1.8	2.6	3.9
2070	1.9	2.4	3.5	5.2
2080	2.4	3.0	4.5	6.6
2090	2.9	3.6	5.6	8.3
2100	3.4	4.4	6.9	10.2

Source: OPC 2018

Note: Projections assume a high emissions scenario (RCP 8.5). The 66 percent projections assume a low risk aversion scenario, and only upper end range estimates are shown in this table.

OPC guidance recommends that projects with low risk aversion consider the upper end of the projected “likely range” of probabilities (i.e., the 66 percent likelihood), and projects with medium to high risk aversion consider the 0.5 percent scenario. This project considers medium- to-high risk aversion scenarios, with an analysis that focuses on the 0.5 percent likelihood scenario to the assumed design life 2040 because it is a critical transportation asset. Table 3-7 shows the range of projected SLR scenario values from low risk to high risk aversion (66 percent, 5 percent, and 0.5 percent probabilities) for each decade up to 2100. The OPC guidance also includes an extreme risk aversion scenario called the “H++ Scenario.” This scenario has an unknown probability and assumes that extreme SLR resulting from the loss of the West Antarctic ice sheet occurs in each projected year. This extreme scenario is typically used for projects with high stakes and long-term decision-making processes. The proposed project is not considered to be high stakes and is proposed as an effort to address congestion in the immediate future. The “H++ Scenario” is presented here for the purpose of illustrating all projected scenarios provided by the OPC.

Upon completion in 2025, the project would be protected from frequent tidal inundation by the existing levees and elevated roadway. However, due to the elevation of the shoreline compared to extreme tides, it may still be exposed to temporary flooding during storm conditions or in the event of a levee breach at Tubbs Island. Comparing the elevation of the shoreline protection features with specific amounts of SLR and storm surge can show which portions of the roadway are vulnerable to flooding.

In isolation, SLR would have a limited impact on the project. Under a likely scenario in the relatively near future (0.5 percent probability by 2040), SLR is projected to cause a 1.3-foot increase in the daily high tide, which could lead to permanent inundation of about 600 feet of the roadway near Mare Island if no adaptation measures are taken). In combination with extreme tides, SLR would increase the frequency and magnitude of temporary flooding of the roadway. For example, without estimated SLR, the current 50-year storm is predicted to cause flooding in about 2 miles of the highway, and overtopping in portions of the levees around Tubbs Island.

Based on the shoreline analysis in the project area, the following flood impacts on the SR 37 roadway in the project area are assumed under existing conditions (AECOM 2020; i.e., with no projected SLR):

- The levees around Tubbs Island may be exposed to overtopping during a 1-year (or greater) coastal storm event if they are not raised; portions of the impacted levees are near the highway and may result in flooding to the highway. The likelihood of flooding of the highway increases if the overtopping results in a breach of the levee.

- Approximately 960 feet (0.2 mile) of highway may be exposed to flooding on a frequent basis (i.e., approximately annually or every other year (Figure 3-9).

- A 10-year storm event, which has a 10 percent chance of occurring each year, would expose around 3,680 feet (0.7 mile) of the highway to temporary flooding (Figure 3-10). Frequent flooding would occur at Tolay Creek, and frequent and severe flooding would occur at Mare Island.

- Floods from a 50-year storm event, which has a 2 percent chance of occurring each year, would expose 9,900 feet (1.9 miles) of the highway to temporary flooding (Figure 3-11). Frequent flooding would occur at Tolay Creek, and frequent and severe flooding would occur at Mare Island.

- Floods from a 100-year storm event, which has a 1 percent chance of occurring each year, would expose 14,435 feet (2.7 miles) of the highway to temporary flooding (Figure 3-12). Severe flooding is projected at Tolay Creek, and severe to extreme flooding is projected at Mare Island.

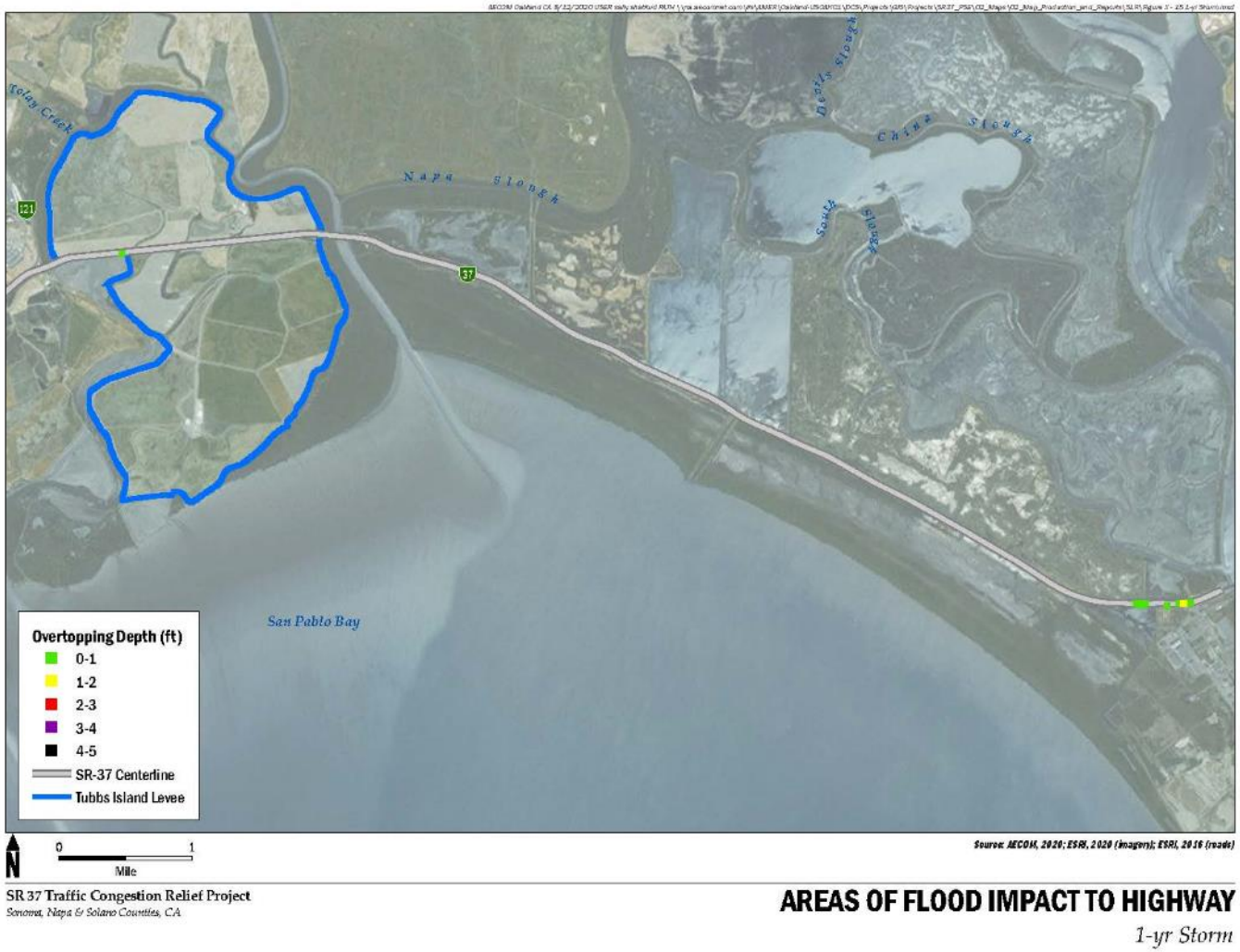

Figure 3-9 Areas of Flood Impact to Highway Under Existing Conditions with a 1-Year Storm Scenario

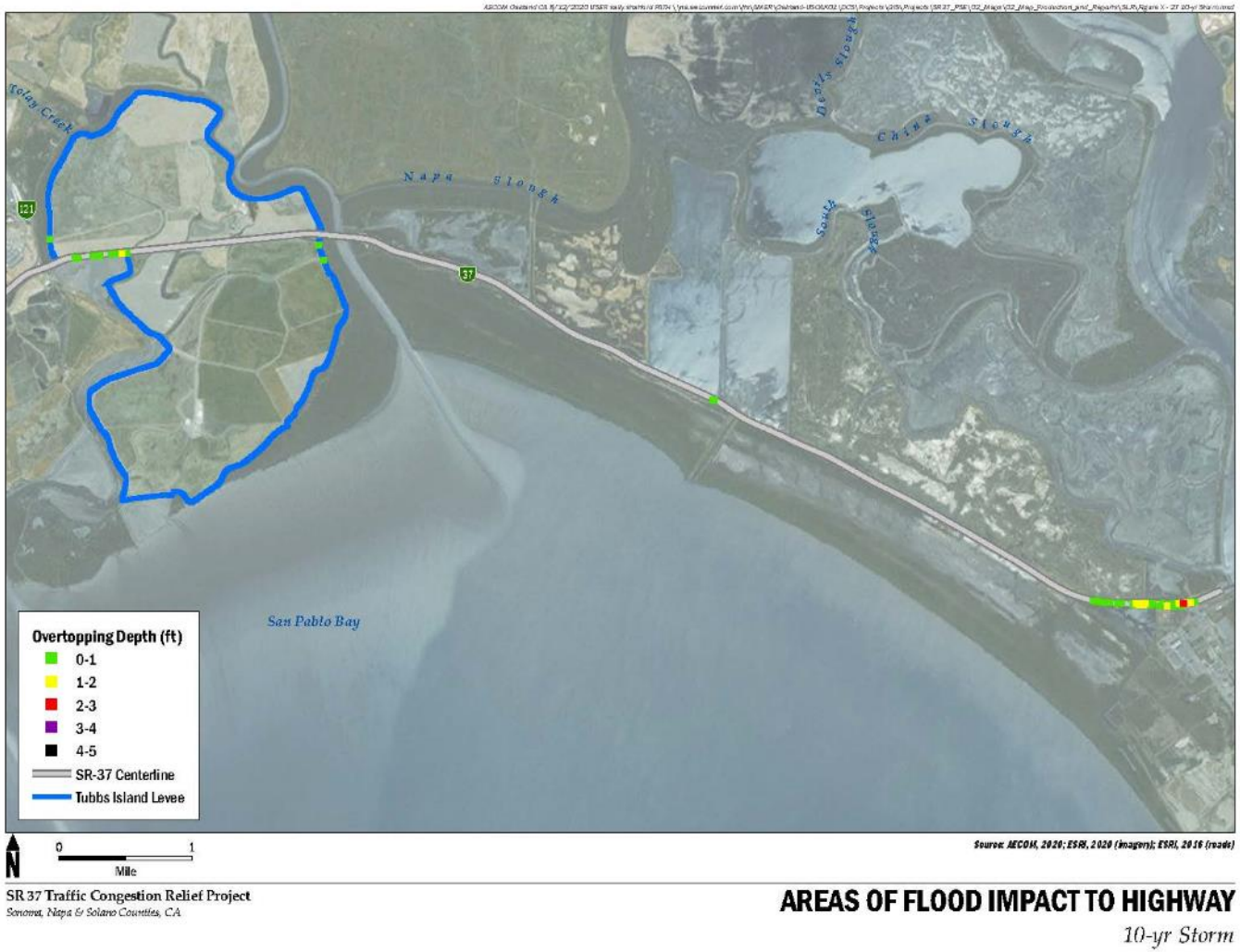

Figure 3-10 Areas of Flood Impact to Highway Under Existing Conditions with a 10-Year Storm Scenario

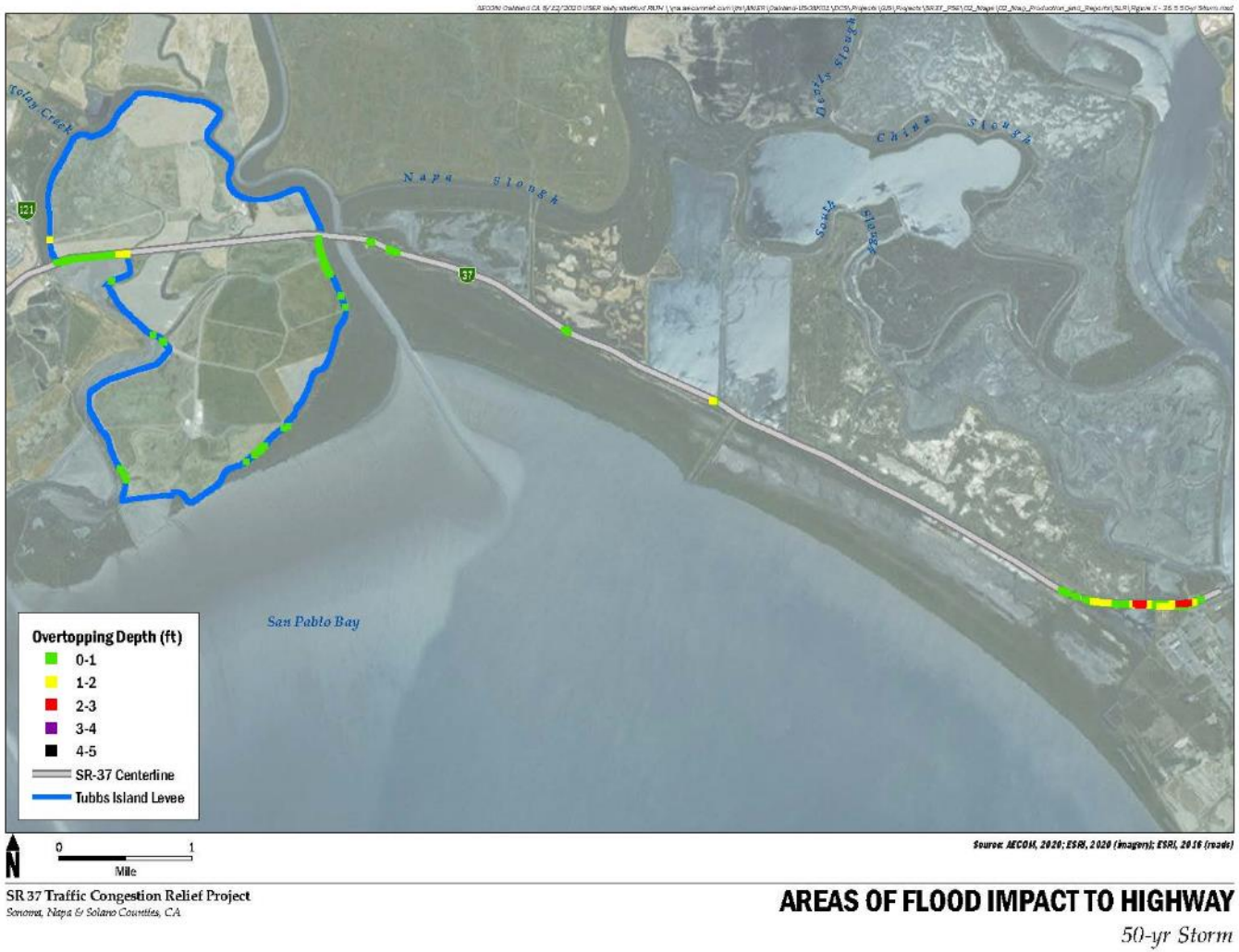

Figure 3-11 Areas of Flood Impact to Highway Under Existing Conditions with a 50-Year Storm Scenario

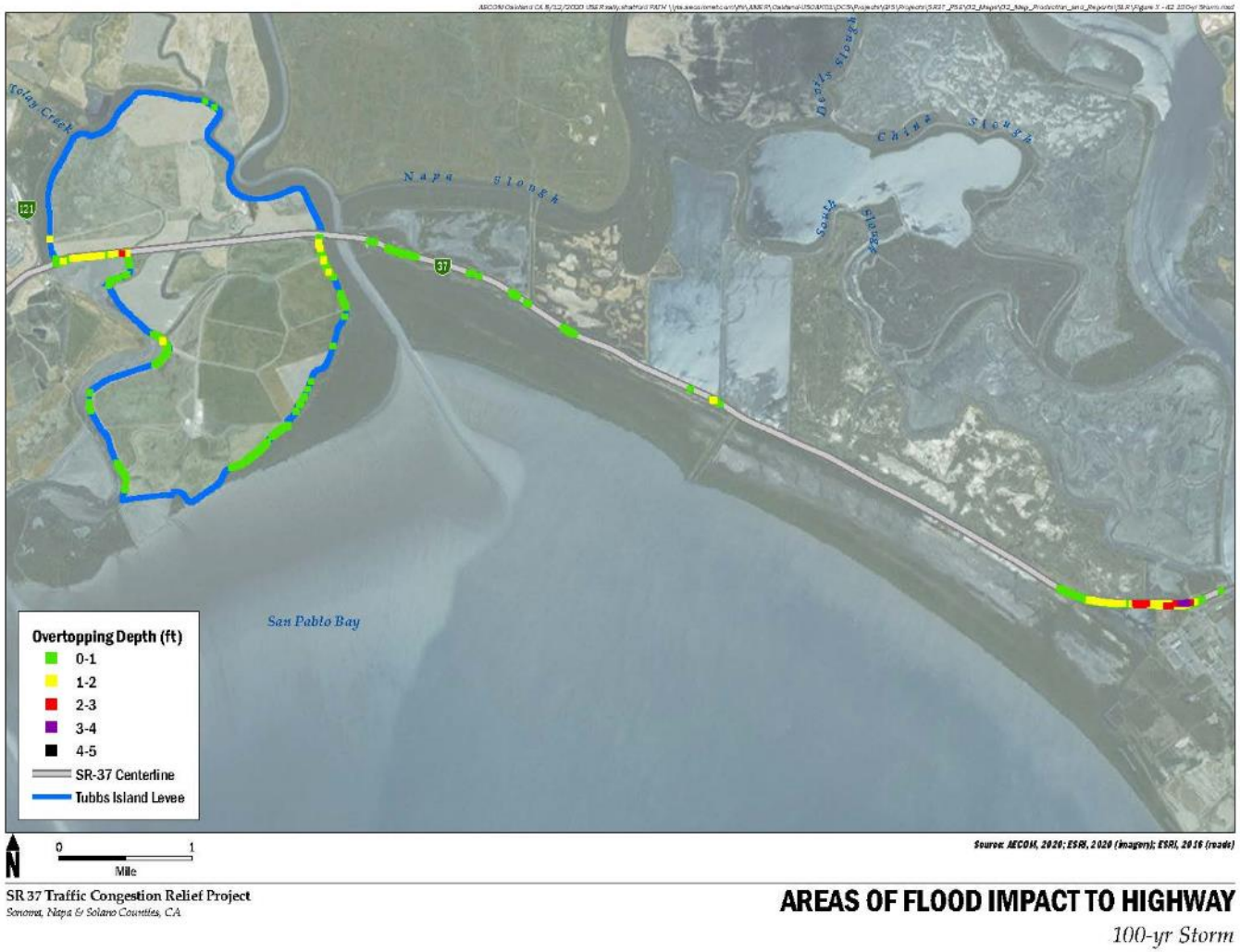

Figure 3-12 Areas of Flood Impact to Highway Under Existing Conditions with a 100-Year Storm Scenario

The following flood impacts on the SR 37 roadway in the project area are assumed under the OPC projected SLR levels with a 0.5 percent likelihood conditions to the year 2050 (i.e., 1.9 feet of SLR) on top of the 1-, 10-, 50-, and 100-year storm events. These scenarios are based on the existing roadway design and elevation, with an SLR increase 1.9 feet of SLR:

- Floods from a 1-year storm event, which has a 100 percent chance of occurring each year, with 1.9 feet of SLR, would expose 9,900 feet (1.9 miles) of the highway to temporary flooding (Figure 3-13). Frequent flooding would occur at Tolay Creek, and frequent and severe flooding would occur at Mare Island.

- Floods from a 10-year storm event, which has a 10 percent chance of occurring each year, with 1.9 feet of SLR, would expose 22,125 feet (4.2 miles) of the highway to temporary flooding (Figure 3-14). Severe flooding is projected at Tolay Creek, and severe to extreme flooding is projected at Mare Island.

- Floods from a 50-year storm event, which has a 2 percent chance of occurring each year, with 1.9 feet of SLR, would expose 34,720 feet (6.6 miles) of the highway to temporary flooding (Figure 3-15). Extreme flooding is projected at Mare Island and at Tolay Creek.

Based on the shoreline analysis, the most vulnerable sections of SR 37 in the project area were identified. Of the highway segments, the areas that are most prone to flooding are:

- A low-lying segment of SR 37 west of the Mare Island Interchange

- A low-lying bayfront segment of SR 37 between Tolay Creek and Tubbs Island Trailhead

- The portion of SR 37 along the interior of Tubbs Island that is protected by perimeter levees

These areas are the most low-lying sections of the highway and the most vulnerable to existing and future flooding from SLR and storm surge. Overtopping of these segments may lead to flooding of the roadway. The segment near the Mare Island interchange first shows overtopping for a 1-year storm; however, flooding along this segment is typically less than what is shown on the maps due to the wide expanse of fronting marsh, channels, and ponded wetland area and the limited duration of high tides. As SLR increases the height and duration of high tides in the Bay, it is expected that Bay waters would more readily inundate the highway.

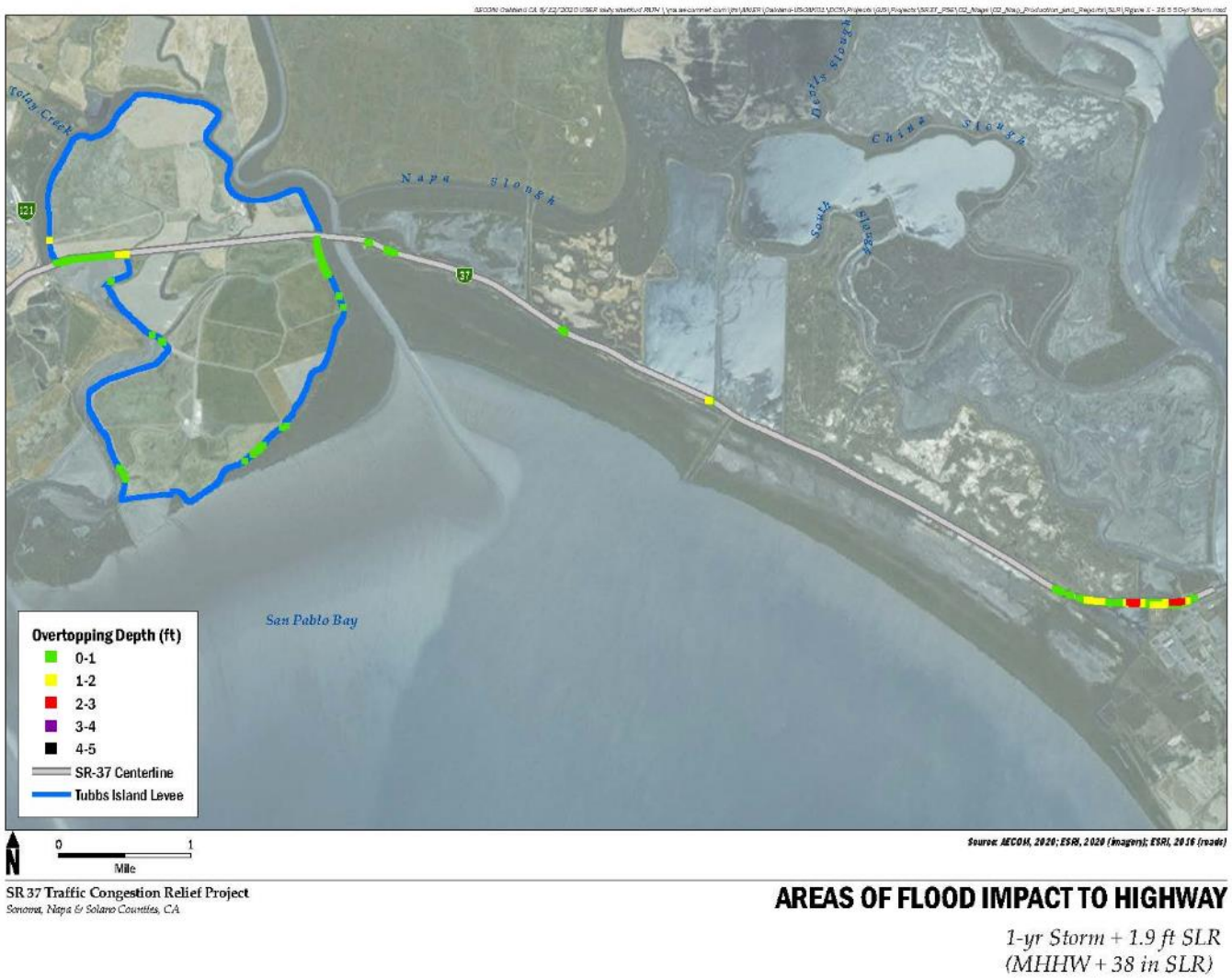

Figure 3-13 Areas of Flood Impact to Highway Under 1.9 Feet of SLR Conditions with a 1-Year Storm Scenario

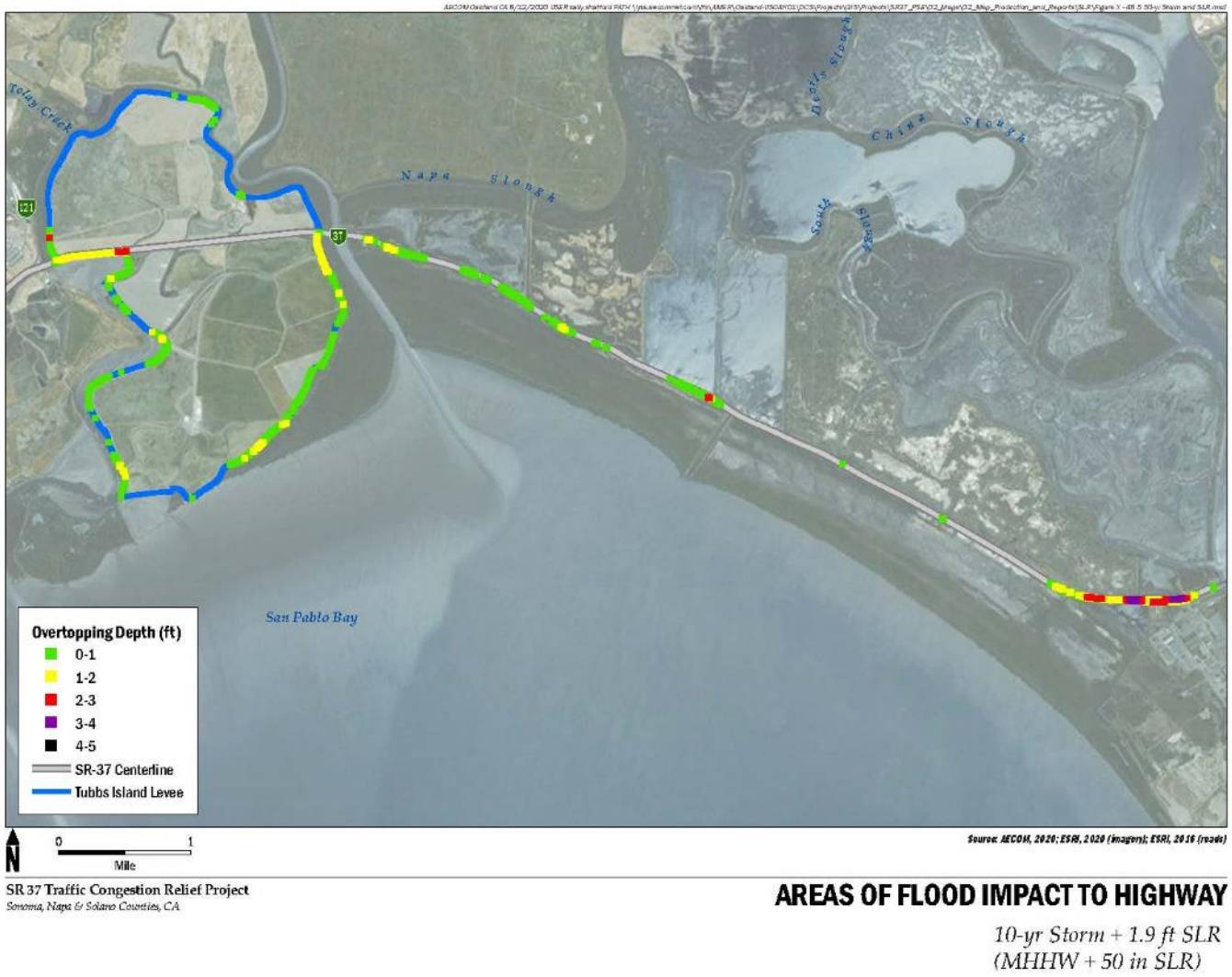

Figure 3-14 Areas of Flood Impact to Highway Under 1.9 Feet of SLR Conditions with a 10-Year Storm Scenario

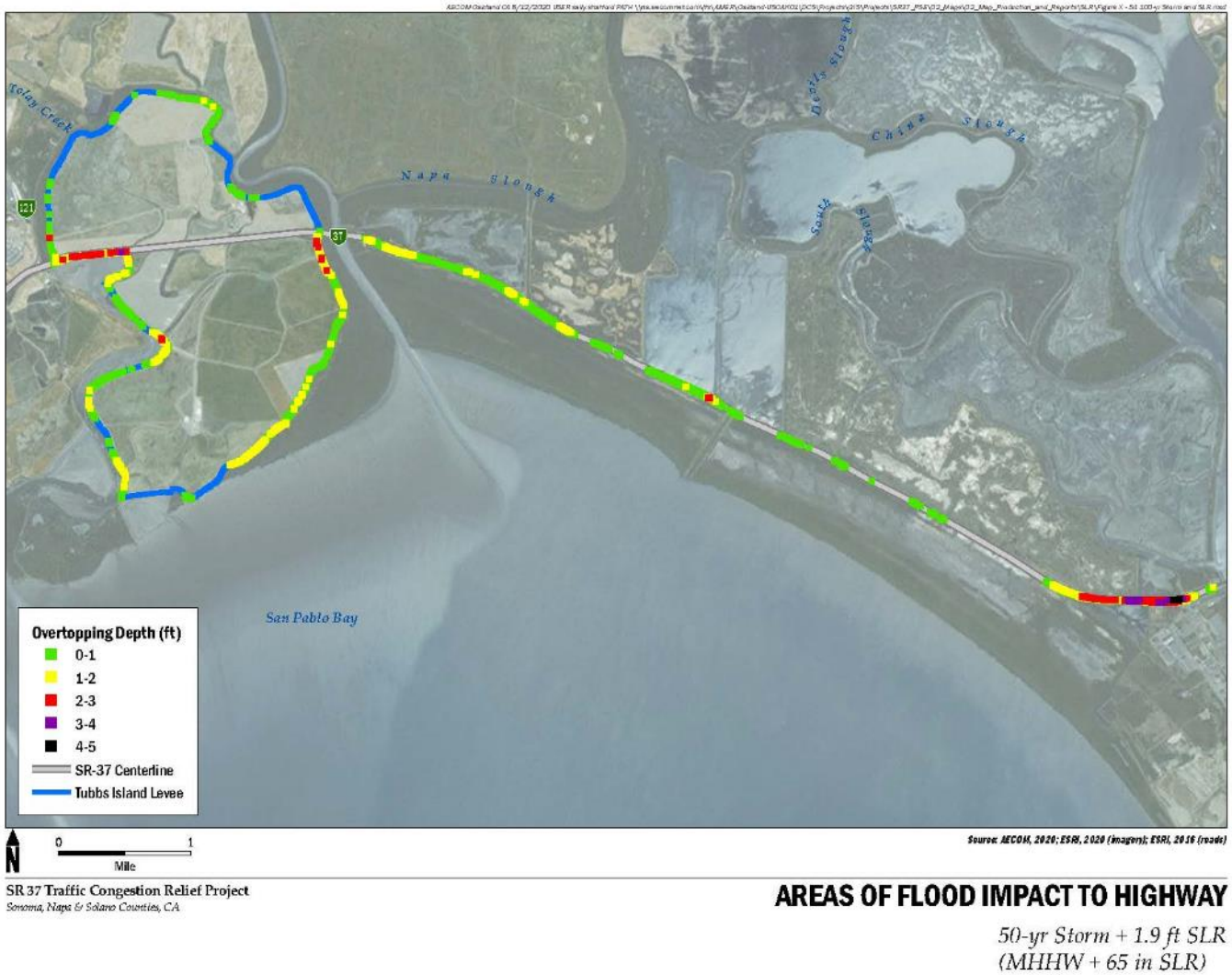

Figure 3-15 Areas of Flood Impact to Highway Under 1.9 Feet of SLR Conditions with a 50-Year Storm Scenario

The segment between Tolay Creek and the Tubbs Island Trailhead first shows overtopping with a 1-year storm and may be impacted approximately annually or every other year. The amount of overtopping shows how much the water would exceed the elevation of the highway and can be used to assess the severity of flooding for each event.

Although the primary goal of the project is to relieve traffic congestion, future impacts on the project related to SLR have been considered. The project includes several design features that would make it more resilient to flooding from SLR. These design features include:

- Equipment that may be vulnerable to inundation, such as communications and power equipment, would be relocated and placed on raised pads for its protection.
- Corrosion-resistant construction materials would be required, as appropriate, for utility, power-service connections, foundations, and drainage facilities.
- In consideration of planning responses for inundation or emergency events, an incident management plan would be developed in cooperation with a multi-agency team. The plan would include emergency response procedures, alternative transportation communication protocols, response and enforcement, and recovery procedures.
- Small-scale raising of the road elevation for two segments of SR 37 near the Mare Island Interchange, and between Tolay Creek and the Tubbs Island Trailhead, would be evaluated and addressed during the final design phase for the selected alternative.
- Sheet pile walls along the edge of shoulders would address roadway confinement, may help minimize floodwater percolating into the base and subgrade, and would reduce seepage into the side slopes of the roadway embankment. In addition, the sheet pile walls heights may be increased above finished grade to provide some flood protection.

The segments of the project alignment that are vulnerable to flooding from SLR are near Tolay Creek and West of Mare Island. The segment of SR 37 in the project area is not as vulnerable to flooding from SLR as other parts of the corridor to the west. This portion of SR 37 is part of a larger corridor, and SLR planning efforts are being addressed on a broader scale. Table 2-54 in Section 2.5.2 includes projects and studies related to SLR. These projects and studies look at how SR 37 infrastructure

can be designed to be more resilient to SLR and flooding and are described in more detail below.

SR 37 Design Alternative Assessment for the Ultimate Project (SR 121 to Mare Island; completed) and SR 37 Ultimate SLR Resilient Corridor Design Alternatives Assessment (U.S. 101 to SR 121; in progress): These studies provide a high-level evaluation of long-term project alternatives that could be implemented on SR 37 to address traffic congestion and SLR, while integrating ecosystem enhancements into project design. The purpose of these studies is to improve resiliency of transportation infrastructure to SLR and flooding.

SR 37 Corridor SLR and Complete Streets (U.S. 101 to SR 29): This project proposes to reconstruct SR 37 to address SLR and recurring flooding, while including Complete Streets features to address multi-modal bicycle and pedestrian use. The purpose of this project is to address recurring flooding and future SLR impacts to the existing SR 37 in Marin County. Flooding on SR 37 occurs during seasonal rain and high-tide events, causing delays and closures.

SR 37 Corridor Planning and Environmental Linkages Study (U.S. 101 to Interstate 80): The PEL study is a future planning process that examines broad transportation, environmental, community, and economic goals in the greater SR 37 corridor. PEL would provide strategies and adaptation measures for complex corridor issues such as SLR and flooding.

Floodplains and Precipitation

As described in Section 3.3.10, most of the project is in SFHA Zone AE. This zone represents the base floodplain with areas subject to flooding by the 100-year flood event, where base floodplain elevations are provided. In these areas, the 100-year flood elevation is approximately 10 to 11 feet NAVD88. Other portions of the project area adjacent to Tubbs Island (between Tolay Creek and Sonoma Creek) are in SFHA Zone VE, which are coastal areas subject to coastal high-hazard flooding and to inundation by the 1-percent-annual-chance flood (100-year) event with additional hazards due to storm-induced velocity wave action. In these project areas, the 100-year flood elevation is approximately 11 to 12 feet NAVD88.

In addition to SLR, the project area is exposed to flooding from extreme tides from the Bay. Storm surges caused by storm induced velocity wave action can have an additive impact to SLR and cause temporary flooding of the roadway. Furthermore, climate change can increase the frequency of intense storms. EPA's Climate Change Indicators tracks the frequency of heavy precipitation events in the US and shows a greater than normal portion of total annual precipitation has come from extreme single-day precipitation events (EPA 2021d). These storms can result in increased runoff

from creeks into the Bay. Intense storm events that coincide with very high tides increases the risk of flooding events that could affect the most vulnerable (lowest elevation) segments of the highway (Tolay Creek and Mare Island areas). Although the project would add impervious surface to the Bay, it would be a minimal amount of new surface area, that incrementally contributes to risk of flooding in the future with SLR. The project includes several design features that would make it more resilient to precipitation, as described in the bullet point list in the SLR Planning Efforts section above.

The Caltrans Climate Change Vulnerability Assessment for District 4 (2018) mapped the potential change in 100-year storm precipitation depths at less than 5 percent through 2085 under a "business-as-usual" high-emissions scenario. BCDC and other jurisdictions' policies related to flooding are discussed in Section 2.2.2 and Table 2-2. BCDC would be consulted during the project design phase.

Wildfire

Most of the project area is surrounded by marshlands that do not contain steep slopes or high vegetation prone to wildfires. Portions of SR 37 in the local responsibility area for Sonoma County are in moderate fire-hazard severity zones. A large portion of the alignment in the project area in Solano County is in unzoned areas. The project would not change fire risk conditions and it would not change the alignment of SR 37. Caltrans' 2018 revised Standard Specification 7-1.02M(2) mandates fire prevention procedures, including a fire prevention plan, to avoid accidental fire starts during construction.

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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, public notices, PDT meetings, and stakeholder meetings. This chapter summarizes the results of the Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Corridor Study

Letters were received from the RWQCB on May 18, 2018, and from the U.S. EPA on August 31, 2018, that requested that Caltrans look at the broader corridor and not compartmentalize issues by projects. As discussed in Table 2-54 in Section 2.5.2, Caltrans and its partners are conducting a number of studies to look at the corridor as a whole. there are a number of studies and projects being carried out by Caltrans in the corridor. This document has analyzed cumulative impacts of those projects as a whole. Furthermore, several studies and projects being proposed to address SLR in the broader corridor are discussed in Section 2.4.5.

4.2 Public Scoping Process

In compliance with CEQA, a NOP for an EIR was filed with the State Clearinghouse on July 9, 2020. The filing of the NOP began a 46-day public scoping period that extended through August 24, 2020. The NOP is included in Appendix G. The public scoping period and virtual public scoping meeting was noticed on the Caltrans website (https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/d4-37-corridor-projects); through newspaper advertisements in the Marin Independent, Napa Valley Register, Santa Rosa Press Democrat, and Vallejo Times Herald; postcard mailers to approximately 3,000 addresses; an email blast to 180 recipients; flyers mailed to approximately 25 federal and state agencies; and a Caltrans District 4 news release.

A public scoping meeting was held on July 22, 2020, from 6:00 PM to 7:30 PM, through an online Zoom meeting. The purpose of the meeting was to present preliminary information on the project and receive early input on the proposed environmental studies and project alternatives. There were approximately 150 attendees at the meeting and 64 questions/comments were submitted during the meeting.

As part of the public scoping process, the public was invited to submit written comments on the scope and content of the environmental document during the public comment period, which began on July 9, 2020, and ended on August 24, 2020. A total of 48 written comments were submitted. Comments received during the public scoping period were reviewed and are summarized in the *Preliminary Summary of Scoping Comments Received and Scoping Meeting Questions* Report and in Table 4-1. A more detailed summary is included in Appendix G.

Table 4-1 Overall Topics Raised in Public Scoping Comments

Comment Topic	Summary of Comment Topic
General	General comments included the following topics: support of or opposition to the project or a specific design alternative; requests for consideration of climate change impacts; safety differences among each of the alternatives; consistency with other agency policies; and suggestions for technical topic discussions, evaluation of alternatives, and addressing environmental justice in the environmental document.
Project Design/ Operations	Project design/operations comments included questions regarding general lane and HOV lane usage, requests to maintain the size of vehicle pull-outs, noting that the lack of shoulders could be problematic for emergency response, and suggestions for alternative designs such as lengthening of Tolay Creek Bridge.
Project and Agency Coordination Recommendations	Several comments received included recommendations for coordination with agencies such as the NAHC, BCDC, RWQCB, Transportation Authority of Marin (TAM), and other regulatory agencies.
Bicycle and Pedestrian Facilities	Many comments received expressed concern regarding accommodation of bicycle and pedestrian facilities and requests to include bicycle and pedestrian facilities along the SR 37 project corridor.
Mitigation	The topic of mitigation included comments related to suggestions for the project to avoid potential VMT impacts and impacts to San Francisco Bay.
Environmental Issues to Consider	Several comments received included suggestions for the analysis in the environmental document regarding topics such as biological resources, hydrology/water quality, noise, and transportation. Comments included suggestions for mitigation/avoidance measures, technical studies to be included, and potential impacts to be evaluated.
Tolling	Tolling comments included suggestions for incorporating a toll on the Tolay Creek Bridge and a toll gantry west of the Mare Island intersection.

4.3 Project and Stakeholder Coordination

A PDT was formed at the initiation of this project, consisting of representatives from the many stakeholders involved. The PDT includes representatives of Caltrans, MTC, SCTA, STA, NVTA, and the consultants.

A Technical Advisory Committee (TAC) was established during the early phases of the project as part of the overall SR 37 Corridor Planning team that consists of these same agencies. The TAC guided the development of the project through early conception into the preliminary design and environmental review phase, referred to as project approval and environmental document. The SR 37 Policy Committee, is a multi-county committee with policy makers participating from Marin, Napa, Sonoma, and Solano Counties, also provided guidance. The SR 37 Policy Committee was originally formed in 2015 as part of a Memorandum of Understanding to discuss joint county efforts in improving the SR 37 corridor, addressing issues such as SLR, traffic congestion, transit options, and recreational activities. The policy committee has continued to meet and provide input to project development.

During development of the plan for evaluating near-term and long-term solutions to SR 37, a series of workshops and working group meetings were held with key environmental stakeholders in the development of alternatives. Attendees of these workshops and meetings include TAC members, and representatives from BCDC, California Coastal Conservancy, SR 37 Baylands Group, Ducks Unlimited, Greenbelt Alliance, Marin Audubon Society, Point Blue Conservation Science, San Francisco Bay RWQCB, San Francisco Bay Joint Venture, San Francisco Bay Trail, San Francisco Estuary Institute, SMART, Sonoma Land Trust, the Nature Conservancy, USACE, USFWS, CDFW, and Vallejo Sanitation and Flood Control District.

Caltrans also led a public engagement process as part of the early alternatives assessment and corridor improvement development. These efforts included:

- In 2017, Caltrans, the MTC, the TAM, SCTA, NVTA, and STA conducted a series of open houses to inform the public about the SR 37 Improvement Plan. The attendance at the open houses ranged from approximately 30 to about 100 members of the public. Staff and management from Caltrans, MTC and the four transportations authorities were in attendance, as well as elected officials from the local counties and cities.

- An online survey was conducted to better understand the travel patterns of regular SR 37 users and to collect feedback about users' major concerns and priorities for improvements along the highway. The survey was open and available for input in 2017 and 2018, and more than 3,750 responses were collected.

- Two rounds of focus group meetings were held in 2018 throughout the four North Bay Counties. Eleven focus groups were conducted. These focus groups were conducted to gain a better understanding of travel patterns on SR 37 from

daily commuters in the four-county area; to identify specific locations on the route where travelers have key issues and concerns; to identify improvements along the corridor; and to obtain feedback for alternatives being considered.

4.4 Consultation and Coordination with Public Agencies

4.4.1 Federal Highway Administration

After public circulation of the EIR/EA, the proposed project's air quality studies would be submitted to FHWA for a project-level conformity determination.

4.4.2 United States Army Corps of Engineers

The proposed project alternatives have been designed to minimize impacts to wetlands and other waters of the United States, but the various alternatives under consideration would affect these resources as described in this report. A preliminary jurisdictional wetland delineation has been prepared for submittal to USACE. A permit application would be submitted to the USACE during the detailed design phase.

4.4.3 United States Fish and Wildlife Service and National Marine Fisheries Service

Endangered species consultation with USFWS and NMFS is necessary when a project has the potential to affect a federally listed species and/or destroy or adversely modify designated critical habitat. Through the NEPA Assignment Memorandum of Agreement with FHWA, Caltrans is authorized to handle FHWA's responsibilities under NEPA and other federal environmental laws, such as FESA.

Caltrans has prepared draft Biological Assessments based on the alternative with the greatest assumed level of impact (Alternative 3B) for consultation with USFWS and NMFS. Caltrans has made preliminary effects determinations that would be presented to the Services during section 7 consultation. Preliminary effects determinations based on the considered alternative concluded that the project *may affect, and is likely to adversely affect*, California red-legged frog, Ridgway's rail, salt marsh harvest mouse, steelhead Central California Coast DPS, and North American green sturgeon southern DPS. Caltrans has also concluded that the project *may affect, but is not likely to adversely affect* soft bird's-beak, Chinook Salmon Sacramento River Winter-Run ESU, Chinook Salmon Central Valley Spring-Run ESU, Delta smelt, and steelhead Central Valley DPS.

Construction-related underwater sound pressure, in-water disturbance, and addition of fill materials in the project footprint may directly affect federally listed species. Implementation of project features and environmental commitments would reduce the

likelihood of any indirect impacts to suitable habitat outside of the project footprint. The only species for which take may occur (as a result of underwater sound pressure during in-water impact pile driving activities [an action that is included in Alternative 3B only]) is the North American green sturgeon southern DPS.

The project would affect tidally influenced wetlands and waters that contain critical habitat for fish species under all Build Alternatives. With implementation of the proposed environmental commitments, the project may affect, and is likely to adversely affect designated critical habitat for steelhead Central California Coast DPS, steelhead Central Valley DPS, Chinook Central Valley Spring-Run ESU, Chinook Sacramento River Winter-Run ESU, and green sturgeon Southern DPS. In the context of the San Pablo Bay ecosystem, these adverse effects would be small in scope, be the sum of many small impact areas spread across a long corridor, and are not expected to result in the adverse modification of the estuarine components of critical habitat for these species.

Federally managed marine fisheries are regulated by NMFS through the Magnusson-Stevens Fishery Conservation Management Act (MSA). Waters in the project footprint provide EFH as designated in three FMPs: Pacific Salmon FMP, Pacific Groundfish FMP, and Coastal Pelagic FMP; and the San Francisco Bay is designated as an estuarine Habitat Area of Particular Concern within those FMPs. Although this project may adversely affect EFH, such effects are expected to be minor and would not substantially alter the value of EFH in the project footprint. Caltrans has prepared an analysis of potential impacts to EFH is included in the Biological Assessment with a request for consultation pursuant to the MSA.

The project area supports open water foraging habitat for marine mammal species. Alternative 3B has potential to cause underwater sound pressures during vibratory and impact pile driving that could cause behavioral response if marine mammals occur in the nearby waters during those activities. An Incidental Harassment Authorization or Letter of Authorization from the NMFS Office of Protected Resources to allow for potential take of Marine Mammal Protection Act-protected species would be required for in-water impact and vibratory pile driving activities. This authorization would be submitted prior to construction. Alternatives 1, 2, and 3A are not anticipated to have impacts to marine mammal species because they do not include in-water pile driving activities.

4.4.4 Tribal Entities

The NAHC was contacted on October 2019 to request a search of the Sacred Lands File for sacred lands or other cultural properties of significance to Native Americans in or near the APE. The correspondence is included in Appendix D. The NAHC

responded that the search had returned negative results; follow-up correspondence was sent to the individuals identified by NAHC. One response was received, indicating that the APE was outside of the UAIC's territory and that no further information was available. An email was received from FIGR stating that the project could have potential effects, and requesting consultation as the project further develops. This information is also summarized in Section 2.2.13.

4.4.5 State Agencies

4.4.5.1 State Historic Preservation Officer

The project's cultural resource studies were submitted to the SHPO for concurrence of a determination of resources that are not eligible for the NRHP, and notification of Caltrans' finding of No Historic Properties Affected. No comments were received from SHPO, and Caltrans made the determination to move forward consistent with the provisions of the Section 106 PA. This documentation is included in Appendix D.

4.4.5.2 California Department of Fish and Wildlife

CESA Consultation protects species listed as threatened or endangered from take unless authorized through an incidental take permit. The project may affect the California black rail. General and specific conservation measures are proposed that would avoid and minimize effects to California black rail to the maximum extent practicable, and mitigation may be necessary if impacts cannot be avoided (mitigation may be proposed in combination with other species habitat mitigation).

4.4.6 Regional Agencies

4.4.6.1 Metropolitan Transportation Commission (Air Quality Conformity)

The project team initiated consultation with the Bay Area AQCTF by submitting a Project Assessment Form for $PM_{2.5}$ Interagency Consultation. The project was found not to be a POAQC by MTC's AQCTF at their May 27, 2021, consultation meeting.

Public comment is requested regarding the information in the Project Assessment Summary for $PM_{2.5}$ Interagency Consultation and the Task Force's determination (see Appendix D). Following the close of the public review and comment period for this EIR/EA, all comments received on the air quality conformity determination would be included in an air quality conformity report to be submitted to FHWA. The final determination on project-level conformity would be made by FHWA.

4.4.6.2 San Francisco Bay RWQCB

Project construction could affect waters of the state. Pursuant to Section 401 of the CWA, a Notice of Intent would be submitted to the RWQCB during the detailed design phase. The proposed project would implement any general WDRs issued by the RWQCB.

4.4.6.3 Bay Conservation Development Commission

Project construction would include work within BCDC jurisdiction, as described in Section 2.2.3. An initial consultation meeting was held with BCDC on February 17, 2021. This meeting included an overview of the project alternatives and the preliminary jurisdictional area potentially affected by the project alternatives; and discussion about public shoreline access, bicycle access along SR 37, and design options that should be addressed. An application would be submitted to BCDC during the project design phase.

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

Public input on the project would be solicited during the review period for this Draft EIR/EA, which would last a minimum of 45 days. The review period, information about public meetings, and instructions for submitting comments are included on the first page of this document.

All formal comments would be addressed and responses published in the Final EIR/EA. After receiving comments from the public and reviewing agencies, a Final EIR/EA would be prepared. Caltrans may prepare additional environmental and/or engineering studies to address comments. The Final EIR/EA would include responses to comments received on the Draft EIR/EA and would identify the preferred alternative. If the decision is made to approve the project, a Notice of Determination would be published for compliance with CEQA, and Caltrans would decide whether to issue a FONSI or require preparation of an EIS under NEPA. A Notice of Availability of the FONSI would be sent to the affected units of federal, state, and local government, and to the State Clearinghouse, in compliance with EO 12372.

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