State Route 1 Auxiliary Lanes

On State Route 1 in Santa Cruz County and the City of Capitola between State Park Drive and Bay Avenue/Porter Street

05-SCR-1-10.54-13.44

EA 05-0C733/Project ID 0518000116

SCH Number 2019100143

Draft Environmental Impact Report/ Environmental Assessment

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 U.S. Code 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the Federal Highway Administration and Caltrans.

November 2020

Caltrans

General Information About This Document

What's in this document:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration, has prepared this Environmental Impact Report/Environmental Assessment, which examines the potential environmental impacts of the alternatives being considered for the proposed project in Santa Cruz County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA). Caltrans is the lead agency under the California Environmental Quality Act (CEQA). The document explains why the project is being proposed, the alternatives being considered for the project, the existing environment that could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read the document. Additional copies of the document and the related technical studies are available for review at the Caltrans Midway Office at 2885 South Higuera Street in San Luis Obispo and at the County of Santa Cruz Public Works office (fourth floor) at 701 Ocean Street in Santa Cruz. This document may be downloaded at the Caltrans website: https://dot.ca.gov/caltrans-near-me/district-5 and the Santa Cruz County Regional Transportation Commission website: https://sccrtc.org/projects/streets-highways/.
- Attend the public hearing on Tuesday, December 8, 2020 from 5:00 p.m. to 6:30 p.m.
- We'd like to hear what you think. If you have any comments regarding the proposed project, please attend the public hearing, and/or send your written comments to Caltrans by the deadline.
- Submit comments via U.S. mail to: Lara Bertaina, Senior Environmental Planner, Central Region Environmental, California Department of Transportation, District 5, 50 Higuera Street, San Luis Obispo, California, 93401.
- Submit comments via email to: Lara.Bertaina@dot.ca.gov.
- Submit comments by the deadline: January 11, 2021.

What happens next:

After comments are received from the public and reviewing agencies, Caltrans, as assigned by the Federal Highway Administration, 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 appropriated, Caltrans could design and construct all or part of the project.

Printing this document: To save paper, this document has been set up for two-sided printing (to print the front and back of a page). Blank pages occur where needed throughout the document to maintain proper layout of the chapters and appendices.

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 write to or call Caltrans, Attention: Lara Bertaina, Central Region Environmental, 50 Higuera Street, San Luis Obispo, California 93401; 805-542-4610 (Voice), or use the California Relay Service 1-800-735-2929 (TTY), 1-800-735-2929 (Voice), or 711.

SCH Number 2019100143
05-SCR-1-10.54-13.44
EA 05-0C733/Project ID Number 0518000116

Widen State Route 1 from post miles 10.54 to 13.44 in Santa Cruz County

DRAFT ENVIRONMENTAL IMPACT REPORT /ENVIRONMENTAL ASSESSMENT

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

THE STATE OF CALIFORNIA
Department of Transportation
and
Santa Cruz County Regional Transportation Commission
Responsible Agencies: California Transportation Commission, County of Santa Cruz, City of Capitola

Timothy M. Gubbins
District Director
California Department of Transportation
NEPA and CEQA Lead Agency

11/17/2020
Date

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

Lara Bertaina, California Department of Transportation, District 5, 50 Higuera Street, San Luis Obispo, California, 93401; 805-542-4610

Summary

California participated in the “Surface Transportation Project Delivery Pilot Program” (Pilot Program) pursuant to 23 U.S. Code 327 for more than 5 years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Barack Obama on July 6, 2012, amended 23 U.S. Code 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a Memorandum of Understanding pursuant to 23 U.S. Code 327 (NEPA Assignment Memorandum of Understanding) with the Federal Highway Administration. The NEPA Assignment Memorandum of Understanding became effective October 1, 2012, and was renewed on December 23, 2016, for a term of 5 years. In summary, Caltrans continues to assume Federal Highway Administration 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, the Federal Highway Administration assigned, and Caltrans assumed all the U.S. Department of Transportation (U.S. DOT) Secretary’s responsibilities under NEPA. This assignment includes projects on the state highway system and Local Assistance Projects off the state highway system within the State of California, except for certain categorical exclusions that the Federal Highway Administration assigned to Caltrans under the 23 U.S. Code 326 Categorical Exclusion Assignment Memorandum of Understanding, projects excluded by definition, and specific project exclusions.

Introduction

Caltrans in cooperation with the Santa Cruz County Regional Transportation Commission, the County of Santa Cruz, and the City of Capitola propose to widen State Route 1 to include auxiliary lanes, to accommodate bus-on-shoulder operations between the State Park Drive and Bay Avenue/Porter Street interchanges, replace the Capitola Avenue overcrossing, and build a new pedestrian and bicycle overcrossing at Mar Vista Drive. The project is subject to federal and state environmental review requirements. Caltrans, as assigned by the Federal Highway Administration, is the lead agency under NEPA and CEQA.

Overview of the Project Area

State Route 1 is the main route connecting the southern and central areas of the County of Santa Cruz and is the only continuous commuter route linking Watsonville, Capitola, Aptos, Cabrillo College, Santa Cruz, and the University of California, Santa Cruz. State Route 1 is also a southern terminus for State Route 9 and State Route 17 and brings heavy tourist traffic to coastal destinations in Santa Cruz and Monterey Counties. Capitola Avenue is a north-south local road that connects Soquel Drive and Bay Avenue. Capitola Avenue crosses over State Route 1 between Park Avenue and Bay Avenue/Porter Street interchanges, at the border of Capitola and the County of Santa Cruz.

Improvements in the project area were addressed previously in the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact, which was adopted in December 2018. The Tier 1 component, referred to as the corridor improvement project, proposed about 8.9 miles of new high-occupancy vehicle lanes, high-occupancy vehicle on-ramp bypass lanes, auxiliary lanes, pedestrian and bicycle overcrossings, and rebuilt interchanges. It was recognized that the Tier 1 project would likely be implemented in phases. The Tier 2 component, therefore, analyzed the first phase of the corridor improvement project, which included auxiliary lanes between 41st Avenue and Soquel Avenue/Drive, among other improvements within the Tier 2 project limits.

The proposed project is included in the second phase of the improvements described in the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact, The proposed project is on State Route 1 between the State Park Drive and Bay Avenue/Porter Street interchanges in the County of Santa Cruz (see Figure 1-1). The project limits extend from post miles 10.54 to 13.44 for a total of about 2.9 miles (see Figure 1-2). The project is currently programmed through the Santa Cruz County Regional Transportation Improvement Plan Measure D and the State Transportation Improvement Program.

Purpose and Need

The purpose and objectives of the project are listed below.

- Reduce congestion along State Route 1 through the project limits.
- Promote the use of alternative transportation modes by increasing transportation system capacity and reliability.
- Enhance pedestrian and bicycle connectivity, including access across State Route 1 within the project limits.
- Replace the Capitola Avenue overcrossing with a new overcrossing to accommodate a wider freeway (State Route 1) and improve accessibility to pedestrian and bicycle traffic, provide adequate vertical clearance, and update the structure to meet current Caltrans standards.

The project is needed to address capacity and transportation demand issues on the State Route 1 corridor in the project area, to address roadway deficiencies on the Capitola Avenue overcrossing, and to improve the limited opportunities for pedestrians and bicyclists to safely navigate State Route 1 in the project corridor.

Proposed Action

The project under consideration in this Environmental Impact Report/ Environmental Assessment is a widening of State Route 1 between post mile 10.54 to post mile 13.44 in the County of Santa Cruz and the City of Capitola to include auxiliary lanes and to accommodate bus-on-shoulder operations between

the State Park Drive and Bay Avenue/Porter Street interchanges. The project also proposes to replace the Capitola Avenue overcrossing and build a new pedestrian and bicycle overcrossing at Mar Vista Drive.

This Environmental Impact Report/Environmental Assessment analyzes a No-Build (No-Action) Alternative and a Build Alternative. The proposed Build Alternative would involve the construction of 12-foot auxiliary lanes on the northbound and southbound sides of State Route 1 between the State Park Drive and Bay Avenue/Porter Street interchanges, improve shoulders at the interchanges to allow for bus-on-shoulder operations, and build a new pedestrian and bicycle overcrossing at Mar Vista Drive. The Build Alternative also proposes to add retaining walls near the Bay Avenue/Porter Street interchange, replace the Capitola Avenue overcrossing, and provide sound barriers along the corridor as needed.

The overhead electric line and the waterline that run parallel to the Capitola Avenue overcrossing would require relocation. Construction staging would be within the existing median and in areas between the mainline and interchange on-ramp and off-ramp. Two lanes in each direction on State Route 1 would remain open to traffic throughout the majority of construction. Nighttime lane closures would be necessary to build the Capitola Avenue overcrossing and Mar Vista Drive pedestrian and bicycle crossing. A Traffic Management Plan would be prepared to address construction-period traffic management, including detours.

Temporary construction easements are expected during the construction of sound barriers. Some permanent acquisition may be required to build the Mar Vista Drive pedestrian and bicycle overcrossing.

Under the No-Build (No-Action) Alternative, the existing lane configuration and width of State Route 1 would remain as it is. No widening of State Route 1 would occur, and auxiliary lanes, bus-on-shoulder improvements, and the Mar Vista Drive pedestrian and bicycle overcrossing would not be built. Additionally, the Capitola Avenue overcrossing would not be replaced. Therefore, there would be no changes to visual resources.

The project is a joint project by Caltrans and the Federal Highway Administration and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. Caltrans is the lead agency under NEPA. Caltrans is the lead agency under CEQA. Additionally, the Federal Highway Administration'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 U.S. Code Section 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the Federal Highway Administration and Caltrans.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, often, a “lower-level” document is prepared for NEPA. One of the most common joint document types is an environmental impact report/environmental assessment.

After receiving comments from the public and reviewing agencies, a final environmental impact report/environmental assessment would be prepared. Caltrans may prepare additional environmental and/or engineering studies to address comments. The final environmental impact report/environmental assessment would include responses to comments received on the draft environmental impact report/environmental assessment 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 Finding of No Significant Impact or require an environmental impact statement for compliance with NEPA. A Notice of Availability of the Finding of No Significant Impact would be sent to the affected units of federal, state, and local government, and the State Clearinghouse in compliance with Executive Order 12372.

Summary of Potential Impacts from Alternatives

Potential Impact	Build Alternative	No-Build (No-Action) Alternative
Land Use—Consistency with the City of Capitola General Plan	No Impact	No Impact
Land Use—Consistency with the Santa Cruz County General Plan	No Impact	No Impact
Coastal Zone	The project is potentially inconsistent with policies from the County of Santa Cruz Local Coastal Program and the City of Capitola Local Coastal Program regarding visual resources, biological resources, wetland and creek protection, and historical resources.	Consistent
Parks and Recreational Facilities	Temporary impacts during construction from temporary lane closures and parking restrictions.	No Impact
Growth	No Impact	No Impact
Community Character and Cohesion	Temporary impacts related to road closures and detours during construction.	Worsened congestion could result in access impacts.

Potential Impact	Build Alternative	No-Build (No-Action) Alternative
Relocations and Real Property Acquisition—Business Displacements	No Impact	No Impact
Relocations and Real Property Acquisition—Housing Displacements	No Impact	No Impact
Relocations and Real Property Acquisition—Utility Service Relocation	Utility relocations would be required during construction.	No Impact
Environmental Justice	No Impact	No Impact
Utilities and Emergency Services	Temporary indirect impacts related to road closures and detours during construction and temporary impacts related to utility relocation in advance and/or during construction.	No Impact
Traffic and Transportation/ Pedestrian and Bicycle Facilities	Temporary indirect impacts related to access in advance and/or during construction. Vehicle miles traveled would increase compared to the No-Build (No-Action) Alternative.	Existing traffic network deficiencies remain and worsen.
Visual/Aesthetics	Visual impacts from loss of vegetation required for widening and construction of soundwalls and retaining walls. Blocking of views by soundwalls and retaining walls.	No Impact
Cultural Resources	No Impacts. No historic properties or archaeological sites would be affected.	No Impact
Hydrology and Floodplain	Potential impacts from a change in impervious surface area, fill inside the floodplain, and change in the 100-year water surface elevation.	No Impact
Water Quality and Stormwater Runoff	Potential impacts from construction include stormwater runoff, erosion, water quality degradation, and short-term discharges. An increase in impervious surfaces would result in a loss in volume or amount of water that may have previously recharged localized aquifers and thereby reduce regional groundwater volumes.	No Impact
Geology, Soils, Seismicity and Topography	Potential impacts for severe ground shaking from earthquakes. The erosion hazard is moderately low to high due to the variable soils in the project site. Low risk for landslides and liquefaction.	No Impact
Paleontology	Potential for direct impacts during excavation for replaced Capitola Avenue overcrossing and construction of soundwalls, retaining walls, and relocating utilities.	No Impact

Potential Impact	Build Alternative	No-Build (No-Action) Alternative
Hazardous Waste and Materials	Potential exposure to humans to lead chromate or other harmful chemicals from construction activities. Risk of encountering contaminated soil and exposure to hazardous chemicals from past pesticide/herbicide use during ground-disturbing activities.	No Impact
Air Quality	The project would generate minimal air quality impacts for Federal Clean Air Act criteria pollutants and have not been linked with any special Mobile Source Air Toxics concerns. Construction activities are expected to result in short term degradation of air quality and increases in emissions from traffic during delays.	No Impact
Noise and Vibration	Potential long-term noise impacts due to traffic noise. Temporary increase in noise levels due to the operation of construction equipment and construction activities.	No Impact
Energy	Temporary energy consumption during construction for the use of construction equipment and on-road vehicles.	No Impact
Natural Communities	Permanent impacts associated with the project would result from the construction and placement of soundwalls. Temporary impacts would occur throughout the work area and would result from equipment operation, access, staging, worker foot traffic, and utility relocation. Both temporary and permanent impacts to a riparian forest, coast live oak woodland, eucalyptus woodland, ruderal/disturbed habitat areas, and developed/landscaped areas.	No Impact
Wetlands and Other Waters	The project would result in about 0.192 acre of permanent impacts and 0.540 acre of temporary impacts to waters of the State. The project would also result in 0.144 acre of permanent impacts and 0.395 acre of temporary impacts to Coastal Zone riparian non-wetlands.	No Impact

Potential Impact	Build Alternative	No-Build (No-Action) Alternative
Plant Species	No Impact	No Impact
Animal Species	Potential impacts from removal of eucalyptus and other suitable roosting trees used during the monarch butterfly winter roosting season. Construction could impact Santa Cruz black salamanders, California giant salamanders, foothill yellow-legged frogs, California red-legged frogs, western pond turtles, pallid bats, Townsend's big-eared bats, hoary bats, other roosting bats, and San Francisco dusky-footed woodrat.	No Impact
Threatened and Endangered Species	Potential impacts on foothill yellow-legged frogs and California red-legged frogs during construction.	No Impact
Invasive Species	During construction, areas where temporary disturbance occurs would be more susceptible to the introduction and colonization or spread of invasive plants.	No Impact
Cumulative Impacts	The incremental contribution of the project to the cumulative visual impact may be considerable.	Existing traffic network deficiencies remain and worsen.
Wildfire	No Impact	No Impact
Climate Change	A minor increase in greenhouse gases over a future No-Build (No-Action) Alternative scenario due to an increase in vehicle miles traveled.	No Impact

Coordination with Other Public Agencies

Notice of Preparation

A Notice of Preparation was published on October 7, 2020. It was filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties. A copy of the Notice of Preparation is included in Appendix A.

A public scoping meeting for the environmental impact report/environmental assessment was held on October 23, 2019, from 6:00 p.m. to 8:00 p.m. at the Community Foundation Santa Cruz County at 7807 Soquel Drive in Aptos. The public scoping meeting was announced in the Notice of Preparation. The purpose of the public scoping meeting was to provide information about the proposed project. Maps and other project information were presented during the meeting. Staff members from Caltrans, Santa Cruz County Regional Transportation Commission, ICF, and Mark Thomas, the civil engineering firm leading the

project, were on hand to answer questions and receive comments regarding the scope and content of the environmental impact report/environmental assessment.

Comments received on the Notice of Preparation include:

- The suggestion to follow the appropriate process for tribal resources consultation and associated surveys.
- Acknowledgement that the improvements proposed by the project are necessary to alleviate traffic in this area.
- Comment encouraging consideration of noise impacts from the project, given existing noise levels.
- Suggestions to prioritize pedestrian and bicycle mobility and public transportation over vehicle mobility.
- Suggestions to coordinate with other planned transportation projects.
- Suggestions to extend the proposed improvements farther along State Route 1.
- Questions about the efficacy of bus-only lanes.
- Suggestions for additional or alternate ways to facilitate traffic improvements.
- Questions about data on previous, similar projects and their efficacy.
- Concerns about securing the appropriate project budget.

Since the Notice of Preparation was released, the Mar Vista Drive pedestrian and bicycle overcrossing was added to the project and is analyzed in this environmental impact report/environmental assessment.

Necessary Permits and Approvals

In addition to the completion of CEQA and NEPA documentation and project approvals by the lead and responsible agencies, the following permits, licenses, agreements, and certifications are required for project construction:

Agency	PLAC	Status
Regional Water Quality Control Board	Waste Discharge Requirement Permit	To be obtained before construction starts.
U.S. Fish and Wildlife Service	Section 7 Consultation	To be obtained before approval of the final environmental document.
California Department of Fish and Wildlife	California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement	To be obtained before construction starts.
California Coastal Commission	Coastal Development Permit	To be obtained before construction starts.
State Historic Preservation Office	National Historic Preservation Act Section 106 Concurrence	To be obtained before approval of the final environmental document.

Table of Contents

List of Figures

List of Tables

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans), in cooperation with the Santa Cruz County Regional Transportation Commission, the County of Santa Cruz, and the City of Capitola, propose to widen State Route 1 to include auxiliary lanes and to accommodate bus-on-shoulder operations between the State Park Drive and Bay Avenue/Porter Street interchanges. The project also proposes to replace the Capitola Avenue overcrossing with a bridge that accommodates pedestrian and bicycle traffic and build a new pedestrian and bicycle overcrossing at Mar Vista Drive. The project is subject to federal and state environmental review requirements. Caltrans, as assigned by the Federal Highway Administration, is the lead agency under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).

State Route 1 is the main route connecting the southern and central areas of the County of Santa Cruz and is the only continuous commuter route linking Watsonville, Capitola, Aptos, Cabrillo College, Santa Cruz, and the University of California, Santa Cruz. State Route 1 is also a southern terminus for State Route 9 and State Route 17 and brings heavy tourist traffic to coastal destinations in Santa Cruz and Monterey Counties. Capitola Avenue is a north-south local road that connects Soquel Drive and Bay Avenue. Capitola Avenue crosses over State Route 1 between the Park Avenue and Bay Avenue/Porter Street interchanges, at the border of Capitola and the County of Santa Cruz.

Improvements in the project area were addressed previously in the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact, which was adopted in December 2018. The Tier 1 component, referred to as the corridor improvement project, proposed about 8.9 miles of new high-occupancy vehicle lanes, high-occupancy vehicle on-ramp bypass lanes, auxiliary lanes, pedestrian and bicycle overcrossings, and rebuilt interchanges. It was recognized that the Tier 1 project would likely be implemented in phases. The Tier 2 component, therefore, analyzed the first phase of the corridor improvement project, which included auxiliary lanes between 41st Avenue and Soquel Avenue/Drive, among other improvements within the Tier 2 project limits.

The proposed project is included in the second phase of the improvements described in the Tier 1 portion of the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact. The proposed project is on State Route 1 between

the State Park Drive and Bay Avenue/Porter Street interchanges in the County of Santa Cruz (see Figure 1-1). The project limits extend from post mile 10.54 to post mile 13.44 for a total of about 2.9 miles (see Figure 1-2). This project is currently programmed through the Santa Cruz County Regional Transportation Improvement Plan Measure D and the State Transportation Improvement Program.

Figure 1-1 Project Location

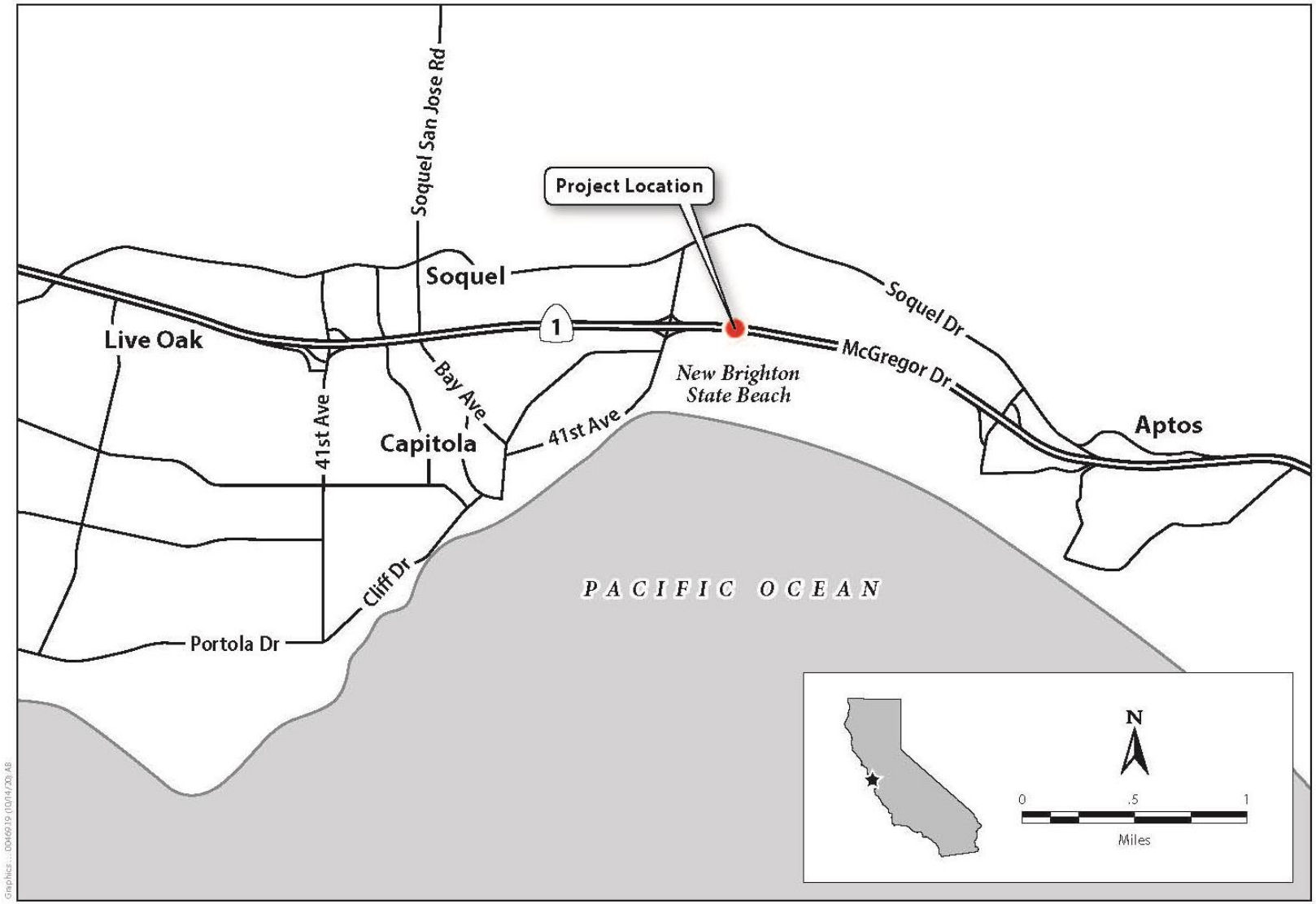
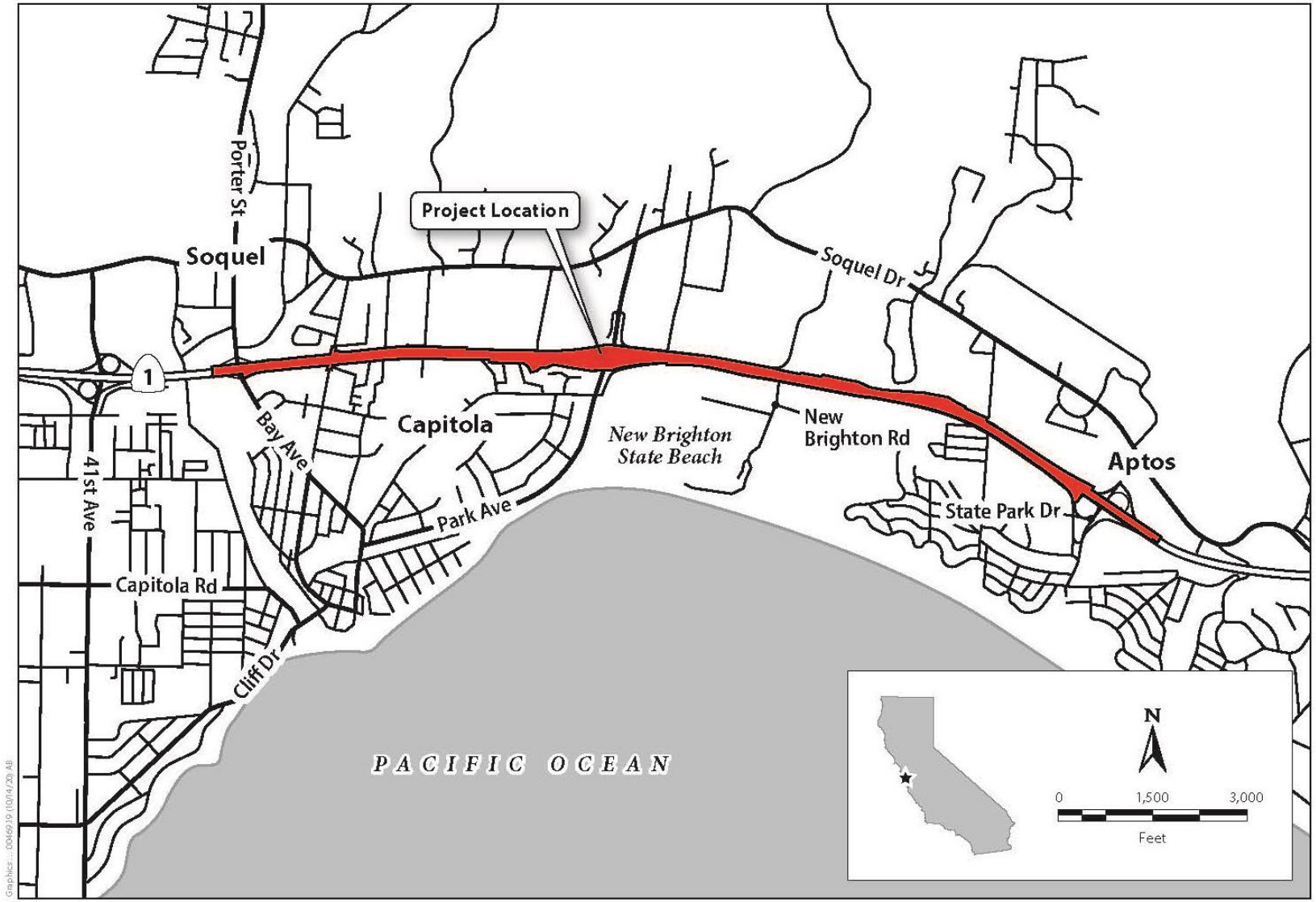


Figure 1-2 Project Limits



1.2 Purpose and Need

1.2.1 Purpose

The purpose and objectives of the project are listed below.

- Reduce congestion along State Route 1 throughout the project limits.
- Promote the use of alternative transportation modes by increasing transportation system capacity and reliability.
- Enhance pedestrian and bicycle connectivity, including access across State Route 1 within the project limits.
- Replace the Capitola Avenue overcrossing to accommodate a wider freeway (State Route 1) and pedestrian and bicycle traffic, provide adequate vertical clearance, and update the structure to meet current standards.

1.2.2 Need

The proposed project is needed for multiple reasons, as described in the following sections.

Capacity and Transportation Demand

The northbound direction of State Route 1 during the morning peak period (6:00 a.m. to 12:00 p.m.) and the southbound direction of State Route 1 during the evening peak period (2:00 p.m. to 8:00 p.m.) are the peak directions of travel. The capacities on the mainline segments of State Route 1 are estimated to be in the range of 3,600 to 5,600 vehicles an hour in the northbound direction and 3,800 to 6,150 vehicles an hour in the southbound direction. Based on the available counts, traffic volumes for the peak directions on State Route 1 are approaching or equal to the capacity of the freeway. This has resulted in several bottlenecks along State Route 1 in the northbound and southbound directions that cause congestion during peak hours, substantially delaying drivers. As a result, traffic on local streets—or "cut-through" traffic—is increasing because drivers are seeking to avoid congestion on the freeway. This congestion has also caused delays to transit service along State Route 1. There are currently insufficient incentives to increase transit service in the State Route 1 corridor because congestion threatens reliability and cost-effective transit service delivery.

This trend of increasing congestion and delay on State Route 1 within the project corridor is expected to continue. Average weekday mainline traffic in the State Route 1 northbound and southbound directions within the project limits is expected to grow between 2019 and 2025 by 3.7 percent and 4.1

percent, respectively, and between 2019 and 2045 by 16.9 percent and 18.3 percent, respectively. Additionally, average weekday ramp traffic (off-ramps and on-ramps combined total) in the State Route 1 northbound and southbound directions is also expected to grow between 2019 and 2025 by 2.8 percent and 3.5 percent, respectively, and between 2019 and 2045 by 9.6 percent and 12.2 percent, respectively. This would result in even more congestion and delay and slower speeds on State Route 1 in the future.

Roadway Deficiencies

The main roadway deficiency within the project corridor is on the Capitola Avenue overcrossing. The existing length (i.e., span) of the Capitola Avenue overcrossing cannot accommodate a wider freeway. Additionally, the existing Capitola Avenue overcrossing does not meet current Caltrans design or safety standards for vertical clearance over the freeway, has substandard widths, and does not have bicycle lanes across the bridge.

Modal Interrelationships and System Linkages

There are currently limited overcrossings available for pedestrians and bicyclists to use to safely navigate across State Route 1 in the project corridor, even though portions of the project area are designated as regional bicycle routes. There are also insufficient State Route 1 pedestrian and bicycle crossing locations within the project corridor, particularly near Mar Vista Drive.

Enhanced Transit in the State Route 1 Corridor

The decision to consider bus-on-shoulder operations on State Route 1 was a result of the findings of the Monterey Bay Area Feasibility Study of Bus-on-Shoulder Operations on State Route 1 and the Monterey Branch Line. That study concluded, after evaluating four alternatives, that a hybrid auxiliary lane/bus-on-shoulder project on State Route 1 between the Morrissey and Freedom Boulevard interchanges could be a very cost-effective way to provide meaningful benefits to transit riders in the corridor (CDM Smith 2019).

The bus-on-shoulder component would increase the carrying capacity of State Route 1 without impacting traffic operations and traffic safety. For instance, improved transit travel times and reliability of transit services with the bus-on-shoulder component would provide meaningful benefits to transit riders in the corridor by reducing vehicle miles of travel and improving traffic operations (CDM Smith 2019).

Independent Utility and Logical Termini

Regulations from the Federal Highway Administration (23 Code of Federal Regulations 771.111 [f]) require that the project evaluate:

- If the proposed project has logical termini,
- If the proposed project has independent utility, and

- If the proposed project does not restrict the consideration of alternatives for other transportation improvements.

The Federal Highway Administration defines logical termini as rational endpoints for a transportation improvement and a review of environmental impacts for the transportation improvement. The proposed project possesses logical termini because it connects two logical endpoints for the project and is of sufficient length to address matters on a broad scope. The proposed improvements would not restrict the consideration of alternatives for other reasonably foreseeable transportation improvements. Continuing coordination between Caltrans, Santa Cruz County Regional Transportation Commission, the City of Capitola, and the County of Santa Cruz would avoid potential conflicts with alternatives for this project and other planned area transportation improvements.

Independent utility is a Federal Highway Administration requirement that highway projects are usable and are a reasonable expenditure even if no additional transportation improvements in the area are made. The Federal Highway Administration states that “as long as a project would serve a significant function by itself (i.e., it has independent utility), there is no requirement to include separate but related projects in the same analysis.” The project has independent utility in that no additional investment would be required as a result of project completion.

The proposed project is part of a program-wide improvement of State Route 1 and would not restrict or prevent other transportation improvements in the corridor.

1.3 Project Description

This section describes the proposed action and the project alternative developed to meet the purpose and need of the project while avoiding or minimizing environmental impacts. The alternatives are the Build Alternative and the No-Build (No-Action) Alternative.

The project is in the County of Santa Cruz and the City of Capitola on State Route 1 from post mile 10.54 to post mile 13.44. The total length of the project is about 2.9 miles. Within the project limits, State Route 1 is a conventional four-lane freeway with two 12-foot lanes, a 5-foot paved inside shoulder, and 6-foot to 10-foot paved outside shoulders in each direction. The Capitola Avenue overcrossing (built in 1948) is an undivided two-lane road (one lane in each direction) with a curb-to-curb width of about 28 feet for shared-use of vehicles and bicycles with an estimated 3.3-foot-wide pedestrian walkway on both sides. The Capitola Avenue overcrossing has a clearance of 14 feet, 6 inches in the southbound direction, and 14 feet, 10 inches in the northbound direction over State Route 1, which is the lowest

clearance within the project limits. The purpose of the project is to widen State Route 1 to include auxiliary lanes and to accommodate bus-on-shoulder operations between the State Park Drive and Bay Avenue/Porter Street interchanges, replace the Capitola Avenue overcrossing, and build a new pedestrian and bicycle overcrossing at Mar Vista Drive.

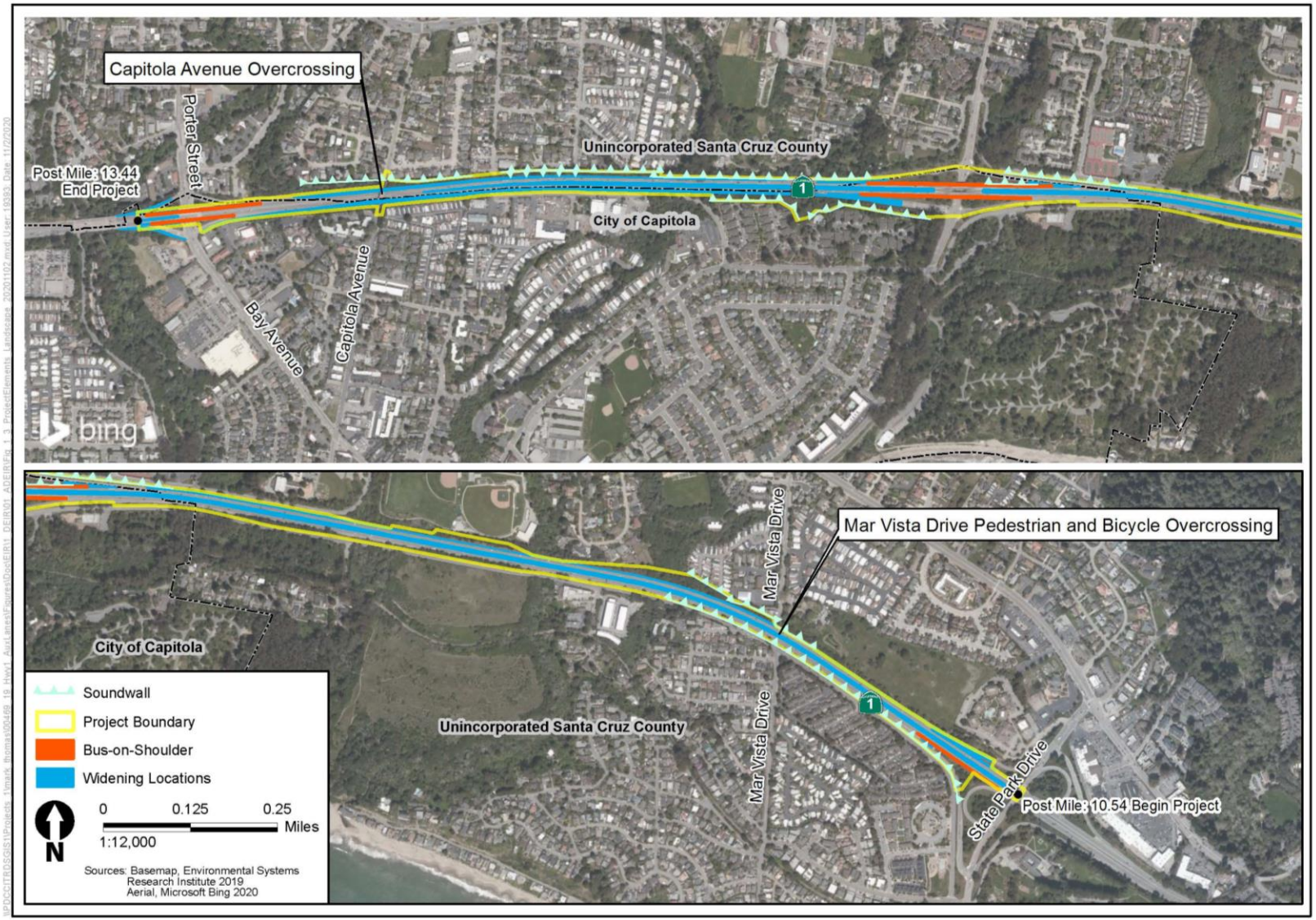
1.4 Project Alternatives

1.4.1 Build Alternative

The proposed Build Alternative would involve the construction of auxiliary lanes on both the northbound and southbound sides of State Route 1 between the State Park Drive and Bay Avenue/Porter Street interchanges, improve shoulders at the interchanges to allow for bus-on-shoulder operations, and build a new pedestrian and bicycle overcrossing at Mar Vista Drive. The proposed Build Alternative would also involve adding retaining walls near the Bay Avenue/Porter Street interchange, replacing the Capitola Avenue overcrossing and the outside barrier at the Park Avenue undercrossing, and providing sound barriers along the corridor as needed. Figure 1-3 shows the Build Alternative.

The components of the Build Alternative are discussed in greater detail below.

Figure 1-3 Project Elements



Auxiliary Lanes

The proposed project would provide 12-foot auxiliary lanes on the northbound and southbound sides of State Route 1 from about post mile 10.7 to post mile 11.9 (State Park Drive to Park Avenue) and from post mile 12.3 to post mile 13.2 (Park Avenue to Bay Avenue/Porter Street). An auxiliary lane is the portion of roadway adjoining the traveled way that connects an on-ramp to the next off-ramp and is used for speed change, turning, weaving, truck climbing, maneuvering, and other purposes supplementary to through-traffic movement. (Federal Highway Administration 2017) Auxiliary lanes have been shown to increase freeway capacity significantly and reduce queue lengths while also maintaining safety. (Federal Highway Administration 2017) The proposed project would provide a minimum 5-foot inside shoulder and a minimum 10-foot outside shoulder. From about post mile 10.7 to post mile 11.9 (State Park Drive to Park Avenue), and from post mile 12.3 to post mile 12.8 (Park Avenue to just south of Rosedale Avenue), the auxiliary lanes would be built by widening the existing pavement to the inside toward the median, including replacing the existing inside shoulder with standard cross slope. From about post mile 12.8 to post mile 13.2 (just south of Rosedale Avenue to Bay Avenue/Porter Street), the widening would occur to the outside of the corridor and would include replacing the outside shoulder. Outside widening is proposed in this area because the existing median is not wide enough to accommodate the auxiliary lane widening.

Bus-on-Shoulder Facilities

The project would involve the construction of transit-only shoulder lanes within interchanges (off-ramp to on-ramp). The shoulder improvements would allow buses to drive on the new auxiliary lanes between interchanges and the outside shoulder through interchanges. The outside barrier of both the right and left Park Avenue undercrossing would be replaced with a Manual for Assessing Safety Hardware-compliant barrier and railing. Bus-on-shoulder facilities would be provided in the northbound direction at the Park Avenue and Bay Avenue/Porter Street interchanges, and in the southbound direction at the State Park Drive, Park Avenue, and Bay Avenue/Porter Street interchanges. Special signing would be placed in advance of the interchanges where buses would operate on the shoulder. The signs would notify motorists that they are entering an area where freeway shoulders are for transit bus use only. Proposed pavement markings include “Transit Bus Only” placed on the shoulder at regular intervals.

Bus-on-shoulder operations would be accommodated through the interchanges by rebuilding or widening shoulders where they are not currently 12 feet wide.

Median Paving

Median widening for auxiliary lanes would consist of removing existing inside shoulders and paving the median with a standard cross slope. From about post mile 10.7 to post mile 11.9 (State Park Drive to Park Avenue) and from post mile 12.3 to post mile 13.0 (Park Avenue to Capitola Avenue), the project would include paving the entire median and replacing the existing thrie-beam barrier with a new concrete barrier at the center divider. Existing drainage systems, which currently collect runoff within the median and carry it into the existing cross culverts, would be abandoned, removed, or changed.

Retaining Walls

Two new retaining walls along northbound State Route 1 and two new retaining walls along southbound State Route 1, all next to the Capitola Avenue overcrossing, are proposed where existing hillsides need to be set back to allow for freeway widening. For the two new retaining walls along northbound State Route 1, the proposed wall north of the Capitola Avenue overcrossing would run about 682 feet, and the proposed wall south of the overcrossing would run about 206 feet. For the two new retaining walls along southbound State Route 1, the proposed wall north of the Capitola Avenue overcrossing would run about 502 feet, and the proposed wall south of the overcrossing would run about 223 feet. The proposed retaining walls would be set back far enough to allow for future construction of high-occupancy vehicle lanes as part of the corridor improvement project.

One existing retaining wall would be changed at the southbound on-ramp at the Bay Avenue/Porter Street interchange. Two existing retaining walls would be removed and replaced with new retaining walls at the northbound on-ramp and the southbound off-ramp at the Bay Avenue/Porter Street interchange.

Sound Barriers

Sound barriers ranging from 8 feet to 16 feet tall may be built along the northbound and southbound lanes of State Route 1.

Table 1.1 summarizes the sound barrier features identified in the Noise Study Report that could abate noise impacts and that were found in the Noise Abatement Decision Report to be reasonable and feasible, based on acoustic and non-acoustic factors.

Table 1.1 Build Alternative Sound Barriers

Noise Barrier	Preliminary Recommended Height Based On Noise Reduction (Feet)	Length (Feet)	Approximate Noise Barrier Location
Noise Barrier-S103	14	2,789	Southbound State Route 1, along the shoulder and right-of-way, post mile 10.6 to post mile 11.1.
Noise Barier-S106	16	1,148	Northbound State Route 1, along the shoulder and right-of-way, post mile 10.9 to post mile 11.1.
Noise Barier-S120	14	1,000	Northbound State Route 1, along the shoulder and right-of-way, post mile 11.9 to post mile 12.1.
Noise Barrier-S122	14	400	Northbound State Route 1, between the mainline and the northbound off-ramp at Park Avenue, post mile 12.0 to post mile 12.1.
Noise Barrier-S125	8	951	Southbound State Route 1, at the southbound off-ramp at Park Avenue and running along the shoulder and right-of-way, post mile 12.1 to post mile 12.3.
Noise Barrier-S128	14	1,654	Northbound State Route 1, along the shoulder and right-of-way, post mile 12.3 to post mile 12.6.
Noise Barrier-S129	10	735	Southbound State Route 1, along the shoulder and right-of-way, post mile 12.3 to post mile 12.5.
Noise Barrier-S132	12	1,152	Northbound State Route 1, along the shoulder and right-of-way, post mile 12.6 to post mile 12.8.
Noise Barrier-S136	10	630	Northbound State Route 1, along the shoulder and right-of-way, post mile 12.9 to post mile 13.0.

Mar Vista Drive Pedestrian and Bicycle Overcrossing

A new pedestrian and bicycle overcrossing is proposed across State Route 1 at Mar Vista Drive and would range from 14 feet to 16 feet wide. The proposed 800-foot-long multi-span structure would be a reinforced concrete box girder bridge or a reinforced concrete slab bridge.

To accommodate the Mar Vista Drive pedestrian and bicycle overcrossing, the McGregor Drive roadway would be widened to the south, and both the lanes and sidewalk would be shifted southward. High-visibility pedestrian crosswalks, markings, and signs would be added across Mar Vista Drive and McGregor Drive.

Capitola Avenue Overcrossing Bridge Replacement

The existing Capitola Avenue overcrossing, which is a four-span structure, would be replaced with a new two-span structure. The proposed bridge would be 48.3 feet wide, which is about 13 feet wider than the existing structure to accommodate standard sidewalks and the addition of bike lanes. The profile of the bridge would be raised to meet the 16.5-foot Caltrans vertical clearance standard. There are two structure types under consideration: precast prestressed concrete voided slab and cast-in-place post-tensioned concrete slab, both with cast-in-drilled-hole piles.

Utility Relocations

The overhead electric line and the waterline that run parallel to the Capitola Avenue overcrossing would require relocation.

The following utilities would not be affected by the project, but are within the project area:

- Overhead electric transmission lines.
- Underground electrical, gas, sanitary sewer, water, television/cable, telecommunication, storm drain, and oil lines.
- Water and gas line casings on existing bridge structures.
- Water, electric, telephone, and television lines.

Staging/Laydown Areas and Construction Access

No specific staging/laydown areas have been identified. However, areas within the existing median and areas between the mainline and interchange on-ramps and off-ramps may be used for staging/laydown by the contractor. Access to the construction areas would be from the interchanges at State Park Drive, Park Avenue, and Bay Avenue/Porter Street.

Construction Traffic Detours

Two lanes in each direction on State Route 1 would remain open to traffic for the majority of project construction. To demolish the existing four-span Capitola Avenue overcrossing and build its two-span replacement and build the Mar Vista Drive pedestrian and bicycle overcrossing, nighttime lane closures along State Route 1 would be necessary. Detours onto local streets would be provided during closures.

A Traffic Management Plan would be prepared to address traffic management during the construction period.

Construction Equipment and Techniques

The equipment necessary for project construction would include dump trucks, graders, excavators, backhoes, drilling rigs, cranes, pavers, and compactors, among other typical construction vehicles.

Temporary Construction Easements and Acquisitions

Temporary construction easements are expected during the construction of the sound barriers and may also be required for the contractor to access construction areas. Access to construction areas would be from the interchanges at State Park Drive, Park Avenue, and Bay Avenue/Porter Street. Temporary construction easements may be required from parcels along northbound and southbound State Route 1 between the State Park Drive and Bay Avenue/Porter Street interchanges. About half of these parcels are along northbound State Route 1 between Park Avenue and Bay Avenue/Porter Street.

Construction of the Mar Vista Drive pedestrian and bicycle overcrossing may require the permanent acquisition of partial or full parcels along northbound and southbound State Route 1 near Mar Vista Drive between State Park Drive and Park Avenue.

Standard Measures

This project contains a number of standard measures that are used on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. These measures are addressed in more detail in the Environmental Consequences sections in Chapter 2.

Traffic, Transportation, Bicycle, and Pedestrian Facilities

- **Standard Measure TR-1:** A Transportation Management Plan that addresses circulation for transit, bicycles, pedestrians, and private vehicles shall be prepared and implemented for the proposed project.

Cultural Resources

- **Standard Measure-CR-1:** If previously unidentified cultural materials are unearthed during construction, it is Caltrans' policy that work be stopped in that area until a qualified archaeologist can assess the significance of the find.
- **Standard Measure-CR-2:** The discovery of human remains is always a possibility during ground-disturbing activities. If human remains are discovered during construction, the contractor would stop work immediately and comply with California Health and Safety Code Section 7050.5 and other standard protocols.

Hydrology

- **Standard Measure HY-1**: Coordination with local, state, and federal water resources and floodplain management agencies would be conducted as necessary during all aspects of the proposed project.

Water Quality and Stormwater Runoff

- **Standard Measure WQ-1**: Comply with the conditions of the Construction General Permit, including the preparation and implementation of a Stormwater Pollution Prevention Plan.
- **Standard Measure WQ-2**: Implement temporary Construction Site Best Management Practices.
- **Standard Measure WQ-3:** Dewatering activities would comply with the Caltrans Standard Specifications, and, if required, a separate dewatering permit would be obtained before construction starts.
- **Standard Measure WQ-4**: Implement the California Office of Emergency Services' Hazardous Material Incident Contingency Plan, which provides a program for response to spills involving hazardous materials.
- **Standard Measure WQ-5**: Implement permanent stormwater treatment measures and design pollution prevention Best Management Practices.
- **Standard Measure WQ-6**: Implement treatment control Best Management Practices consistent with Caltrans' Municipal Separate Storm Sewer System permit.

Paleontology

- **Standard Measure PALEO-1: Stop Work if Paleontological Resources are Discovered.** If unexpected paleontological resources are discovered during project-related activities, work in the immediate vicinity of the discovery should be stopped until a qualified paleontologist can evaluate the find.

Air Quality and Greenhouse Gases

- **Standard Measure AQ-1:** The construction contractor shall apply water or dust palliative to the site and equipment as frequently as necessary to control fugitive dust emissions.
- **Standard Measure AQ-2:** The construction contractor shall spread soil binder on any unpaved roads used for construction purposes and on all project construction parking areas.
- **Standard Measure AQ-3:** The construction contractor shall wash off trucks as they leave the right-of-way as necessary to control fugitive dust emissions.
- **Standard Measure AQ-4:** The construction contractor shall properly tune and maintain construction equipment and vehicles.
- **Standard Measure AQ-5:** The construction contractor shall use low-sulfur fuel in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.

- **Standard Measure AQ-6:** The construction contractor shall develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- **Standard Measure AQ-7:** The construction contractor shall locate equipment and material storage sites as far away from residential and park uses as practical. Construction areas shall be kept clean and orderly.
- **Standard Measure AQ-8:** All on-road and off-road diesel equipment shall not idle for more than 5 minutes. The contractor shall post signs in the designated queuing areas and/or job sites to remind drivers and operators of the five-minute idling limit. For non-diesel equipment, idling time for lane closures during construction shall be restricted to 10 minutes in each direction.
- **Standard Measure AQ-9:** The construction contractor shall use track-out reduction measures, such as gravel pads, at project access points to minimize dust and mud deposits on roads affected by construction traffic.
- **Standard Measure AQ-10:** The construction contractor shall cover all transported loads of soils and wet materials before transport or provide adequate freeboard (space from the top of the material to the top of the truck) to reduce particulate matter (10 micrometers or smaller) and deposition of particulate matter during transportation.
- **Standard Measure AQ-11:** The construction contractor shall remove dust and mud that are deposited on paved, public roads due to construction activities and traffic to decrease particulate matter.
- **Standard Measure AQ-12:** The construction contractor shall route and schedule construction traffic to avoid peak travel times as much as possible to reduce congestion and related air quality impacts caused by idling vehicles along local roads.
- **Standard Measure AQ-13:** The construction contractor shall install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate matter in the area.

Biological Resources

- **Standard Measure BIO-1**: Protect migratory and nongame birds, their occupied nests, and their eggs by avoiding construction during the nesting season, stopping all work within a 100-foot radius of a discovery, notifying the project engineer, and implementing protective measures.
- **Standard Measure BIO-2**: Contractor-supplied biologists would be used to monitor regulated species, ensure construction activities comply with any applicable permits, licenses, agreements, and certifications, and prepare notifications and reports.

Transportation Demand Management and Transportation System Management Alternatives

The proposed project includes a number of transportation demand management and transportation system management features, including auxiliary lanes and bus-on-shoulder operations along the project corridor, a new pedestrian and bicycle overcrossing at Mar Vista Drive, and replacement of the Capitola Avenue overcrossing. Therefore, a separate transportation demand management or transportation system management alternative is not necessary.

1.4.2 No-Build (No-Action) Alternative

Under the No-Build (No-Action) Alternative, the existing lane configuration and width of State Route 1 would remain as it is. No widening of State Route 1 would occur, and auxiliary lanes, bus-on-shoulder improvements, and the Mar Vista Drive pedestrian and bicycle overcrossing would not be built. Additionally, the Capitola Avenue overcrossing would not be replaced. Therefore, there would be no changes to visual resources.

1.5 Comparison of Alternatives

After comparing and weighing the benefits and impacts of all feasible alternatives, the project development team, which includes Caltrans and other relevant stakeholders, has identified the Build Alternative as the preferred alternative, subject to public review. Final identification of a preferred alternative would occur after the public review and comment period.

After the public circulation period, all comments would be considered, and Caltrans would select a preferred alternative and make the final determination of the project's effect on the environment. Under CEQA, Caltrans would certify that the project complies with CEQA, prepare findings for all significant impacts identified, prepare a Statement of Overriding Considerations 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 before project approval. Caltrans would then file a Notice of Determination with the State Clearinghouse that would identify 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. Similarly, if Caltrans, as assigned by the Federal Highway Administration, determines the NEPA action does not significantly impact the environment, Caltrans would issue a finding of no significant impact. If it is determined that the project is likely to have a significant effect on the environment, an environmental impact statement would be prepared.

1.6 Alternatives Considered but Eliminated from Further Discussion

Several alternatives were considered but eliminated from further discussion.

1.6.1 Bus-on-Shoulder Improvements Only Alternative

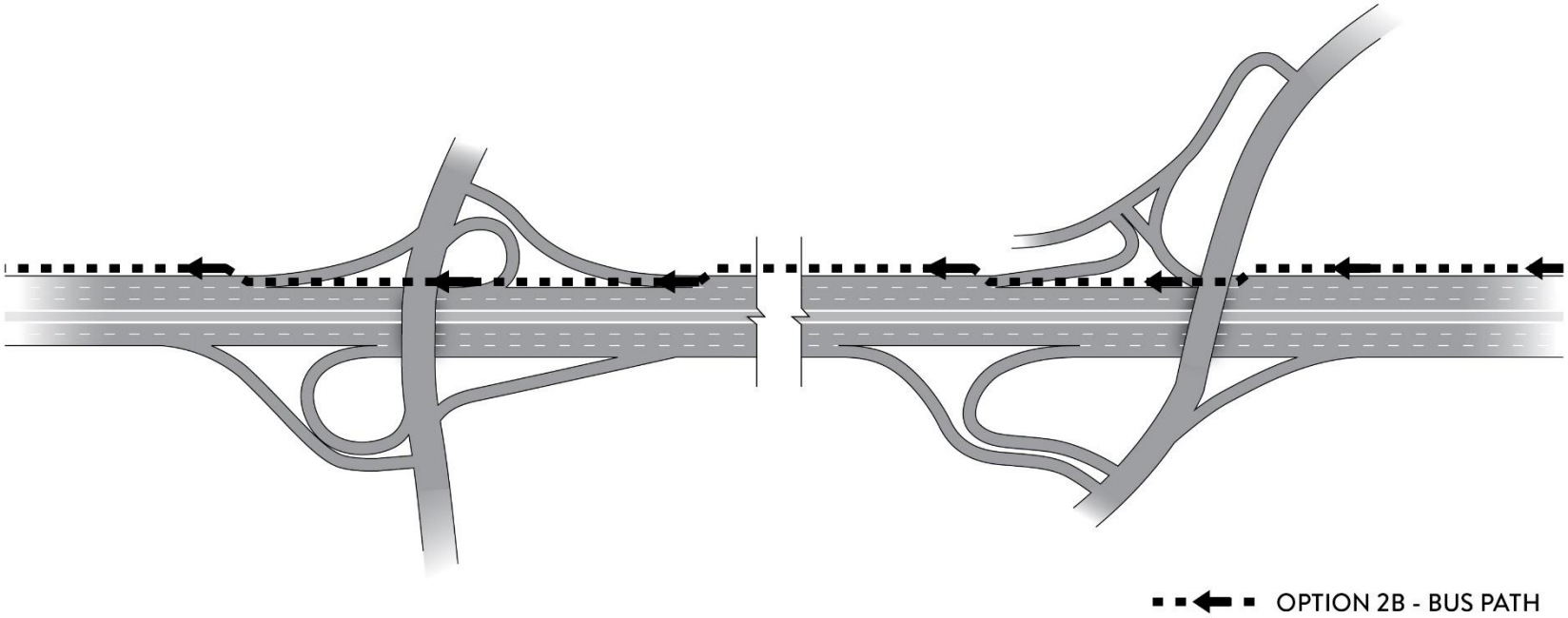
One alternative considered, but eliminated, was the bus-on-shoulder only improvement, without the construction of auxiliary lanes. This alternative was initially considered as Option 2B in the Monterey Bay Area Feasibility Study of Bus-on-Shoulder Operations on State Route 1 and the Monterey Branch Line project report completed in June 2018. With the bus-on-shoulder alternative, the bus would have operated in the shoulder of the freeway, and as the bus approached an off-ramp, it would have weaved out of the shoulder onto the outside lane to cross the ramp gore area and enter the shoulder within the interchange area. In this alternative, the shoulder would have been widened to 12-feet, the width of a full lane, and would have been located next to the outside (rightmost) lane. When crossing the on-ramp gore, buses would have reversed this operation, going from the shoulder within the interchange to the on-ramp lane and then onto the right shoulder next to the outside lane. See the Option 2B graphic for the operation of this alternative.

At the project limits, in the southbound direction, the existing outside shoulder width varies from 4.6 feet to 13.5 feet, and in the northbound direction, the outside shoulder width varies from 5.1 feet to 16 feet. The existing pavement structural section of the outside shoulder is not adequate to accommodate bus travel, so this alternative would have replaced and widened all of the outside shoulders through the project location to accommodate 12 feet for buses.

The Santa Cruz Metropolitan Transit District raised concerns about the amount of bus weaving and merging needed for this alternative.

This alternative was reviewed and rejected because the construction cost and environmental impacts are comparable to the construction cost of auxiliary lanes. The widening would still occur, and construction activities would result in similar impacts related to biological, cultural, and paleontological resources. However, the improvement would not alleviate congestion along the corridor and concerns about buses merging.

Figure 1-4 Option 2B—Bus Path



1.6.2 Outside Shoulder Widening Alternative

The outside shoulder widening alternative considered widening all auxiliary lanes toward the outside shoulder, leaving the number one and number two lanes as they are and would have only widened the outside for the proposed auxiliary lane. This alternative was reviewed and rejected for its substantial impacts on trees and embankment slopes next to State Route 1.

1.6.3 Bicycle and Pedestrian Overcrossing Alternative

The bicycle and pedestrian overcrossing alternative considered the construction of a new Capitola Avenue overcrossing to only accommodate bicycles and pedestrians. This alternative was reviewed and rejected because even though it would have provided additional pedestrian and bicycle amenities, it would not have met the purpose and need of the project related to reducing congestion in the State Route 1 corridor. Converting the Capitola Avenue overcrossing to a bicycle and pedestrian bridge would have altered existing patterns of vehicle circulation and would have rerouted existing users of this overcrossing to other nearby overcrossings. This would have increased congestion at those locations and would have possibly required more travel distance, which would have resulted in additional impacts to air quality.

1.6.4 Other Alternatives

Additionally, alternative geometric approach alignments were considered and rejected for the Mar Vista Drive pedestrian and bicycle overcrossing on the north and south sides of State Route 1. The Mar Vista Drive pedestrian and bicycle overcrossing was originally identified in the County of Santa Cruz General Plan in 1994. A pedestrian crossing at Mar Vista Drive was requested by the Mar Vista Elementary School community and the Seacliff Village community. In 2014, the Mar Vista Drive pedestrian and bicycle overcrossing was identified in the Sustainable Santa Cruz County Plan due to its proximity to schools and high population density. In 2017, the County of Santa Cruz conducted a feasibility assessment for the Mar Vista Drive pedestrian and bicycle overcrossing. Due to stakeholder feedback, another location (Porter-Sesnon and the California State Lands Commission property near post mile 11.3) was considered, but based on the site conditions, proximity to the creek and wetlands, and impact to private property, the location was not recommended for further study. The feasibility study reviewed a few ramp alternatives. On the north side of State Route 1, based on the results of community outreach conducted in July 2017, any ramp approach that would affect access to the properties along Mar Vista Drive would not be feasible, which eliminated any ramp approach that ran parallel to Mar Vista Drive. Ramp approaches that stay within a Santa Cruz County right-of-way would be limited to a spiral ramp or elevator tower at the very end

of the cul-de-sac. However, a spiral ramp would require an 8.33 percent slope and would not adhere to current best practices and design guidelines, such as the Caltrans Highway Design Manual. Additionally, the spiral ramp would need to include a short, straight approach, which would partially obstruct access to a property along Mar Vista Drive.

On the south side of State Route 1, an alternative approach alignment with a 5 percent grade was considered at McGregor Drive. This alternative was eliminated from consideration because the Sailfish Drive entrance to the Sea Breeze community would need to be relocated, or several switchback ramps would need to be introduced within the Sea Breeze corner property at Mar Vista Drive and McGregor Drive. It is not clear whether the Sea Breeze community would consider relocating one of their two vehicular entrances. Also, the benefits of adding switchback ramps to provide a reduced approach slope would likely be more than offset by additional costs, functional compromises introduced by switchback ramps, and visual and tree removal impacts. Additionally, several changes would be required to McGregor Drive to accommodate this approach, including removing a bicycle lane and adding a new crosswalk or mid-block crossing. However, these changes to McGregor Drive are not recommended for safety reasons.

Another possibility for the approach to the new overcrossing is a tower with an elevator and stairs, which would eliminate the need for an approach ramp. However, the construction and maintenance costs would be substantially higher for this alternative, which is why it was removed from consideration.

1.7 Permits and Approvals Needed

The following permits, licenses, agreements, and certifications may be required for project construction:

Table 1.2 Permits and Approvals

Agency	PLAC	Status
Regional Water Quality Control Board	Waste Discharge Requirement Permit	To be obtained before construction starts.
U.S. Fish and Wildlife Service	Section 7 Consultation	To be obtained before approval of the final environmental document.
California Department of Fish and Wildlife	California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement	To be obtained before construction starts.
California Coastal Commission	Coastal Development Permit	To be obtained before construction starts.
State Historic Preservation Office	National Historic Preservation Act Section 106 Concurrence	To be obtained before approval of the final environmental document.

References

CDM Smith. 2019. *State Route 1 Auxiliary Lane Bus-on-Shoulder Concept of Operations*. Santa Cruz County Regional Transportation Commission. May 23, 2019.

FHWA. 2017. *Freeway Management and Operations Handbook*. Chapter 5. Available: https://ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/chapter5.htm. Accessed September 4, 2020.

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

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. As a result, there is no further discussion about these issues in this document.

- **Existing and Future Land Use:** The project would not require substantial new right-of-way or property acquisition and, therefore, would not alter the existing surrounding land use or zoning patterns or affect existing or future uses. The project would require sliver acquisitions of about 0.48 acre divided among eight parcels. No impacts to homes, driveways, buildings, or backyards would occur as a result of these acquisitions. (Community Impact Assessment, September 2020) Therefore, no impact would occur, and this topic is not discussed further.
- **Consistency with State, Regional and Local Plans and Programs:** The proposed project would be subject to the County of Santa Cruz General Plan and Local Coastal Program (County of Santa Cruz 1994), Capitola General Plan (City of Capitola 2019a), Soquel Village Plan (County of Santa Cruz 1990), Aptos Village Plan (Santa Cruz County 2010), 2020 Santa Cruz County Regional Transportation Improvement Program: State Transportation Improvement Program (Santa Cruz County Regional Transportation Commission 2019), 2040 Santa Cruz County Regional Transportation Plan (Santa Cruz County Regional Transportation Commission 2018), and Santa Cruz County Bicycle Plan (County of Santa Cruz 2011). The project would be consistent with all applicable goals and policies contained in local and regional planning documents. (Community Impact Assessment, September 2020) Because the proposed project would reduce congestion, the objectives are consistent with adopted local planning goals and policies for improving the existing State Route 1 corridor. There would be no impacts, and this topic is not discussed further.
- **Parks and Recreational Facilities:** There are several parks within the project area, but the project would occur entirely within the existing right-of-way, and no land would be acquired from any parks or recreational facilities. Indirect, construction-related impacts could occur on a temporary and intermittent basis. (Community Impact Assessment, September 2020) Such impacts would be minimized by the implementation of Standard

Measure TR-1. Because there would be no direct or permanent impacts to parks and recreational facilities, this topic is not discussed further.

- **Community Character and Cohesion:** None of the communities or neighborhoods next to State Route 1 within the project corridor would experience a direct, permanent disruption in neighborhood cohesion as a result of the project. Implementation of Standard Measure TR-1 would reduce potential temporary construction impacts on the local community. (Community Impact Assessment, September 2020) Therefore, the proposed project would have a negligible effect on community cohesion, and this topic is not discussed further.
- **Environmental Justice:** Residents in the project area would benefit from congestion relief and enhanced accessibility, and the proposed project would not have disproportionately adverse effects on minority or low-income populations. Construction-related impacts from noise, traffic delays, and air quality emissions would be temporary and would be spread out over the entire corridor, not concentrated in any one place. (Community Impact Assessment, September 2020) The project would not result in disproportionate impacts on minority or low-income communities, and this topic is not discussed further.
- **Utilities and Emergency Services:** The project would require the relocation of the overhead electric line and waterline that run parallel to the Capitola Avenue overcrossing. Project construction could result in temporary impacts on utilities, such as an increase in utility demand and solid waste volume. However, construction activities would not cause a substantial increase in the existing electricity demand or require the development of new sources. No impacts on solid waste facilities are expected. (Community Impact Assessment, September 2020) Caltrans would work with utility providers to minimize outages during construction. Overall, the project would have a negligible effect on utilities and emergency services, and this topic is not discussed further.
- **Cultural Resources:** Surveys have concluded that there are no historical resources in the project area. Two previously identified archaeological resources are within the Area of Potential Effect, but an evaluation showed that the resources are not eligible for inclusion in the National Register of Historic Places and would not be disturbed by project earthwork. (Archaeological Survey Report, 2020)
- **Geology, Soils, Seismicity and Topography:** The project site is not within the “Alquist-Priolo Special Studies Zone,” and no known or mapped active fault passes through the project site. There is not potential for ground surface rupture. The project is in a seismically active area, but the liquefaction potential along the alignment was found to be low. There is a low risk for landslides because of the relatively flat topography. There is low erosion potential, and no new embankments are expected. (Preliminary Geotechnical Design Report, August 2020) All structures

would be designed to Caltrans' standards to withstand seismic shaking. Therefore, no impacts would occur, and this topic is not discussed further.

- **Plant Species:** No impacts on special-status plant species are expected because none were seen during appropriately timed botanical surveys conducted within the project's Biological Study Area. (Natural Environment Study, August 2020)
- **Agricultural and Forest Resources:** The County of Santa Cruz Planning and Zoning Geographic Information Systems Online show that there is a variety of land uses within the project area (see Figure 2-1). There are no land uses classified as farmland or forest land within the project area. (County of Santa Cruz 2019, City of Capitola 2010)
- **Mineral Resources:** Much of County of Santa Cruz is designated as Mineral Resource Zone 1. However, the project involves work within the existing, already disturbed right-of-way, and the project would not impede the extraction of any known mineral resources. This topic is not discussed further.
- **Wild and Scenic River:** According to the National Wild and Scenic Rivers System, there are no wild and scenic rivers in the project area. (National Wild and Scenic Rivers System Accessed September 4, 2020)

References

National Wild and Scenic Rivers System. 2020. California map. Available: https://www.rivers.gov/california.php. Accessed September 4, 2020.

2.1 Human Environment

2.1.1 Coastal Zone

Regulatory Setting

This project has the potential to affect resources protected by the Coastal Zone Management Act of 1972. The Coastal Zone Management Act is the primary federal law enacted to preserve and protect coastal resources. The Coastal Zone Management Act sets up a program under which coastal states are encouraged to develop coastal management programs. States with an approved coastal management plan are able to review federal permits and activities to determine if they are consistent with the state's management plan.

California has developed a coastal zone management plan and has enacted its own law, the California Coastal Act of 1976, to protect the coastline. The policies established by the California Coastal Act are similar to those for the Coastal Zone Management Act: they include the protection and expansion of public access and recreation; the protection, enhancement, and restoration of

environmentally sensitive areas; the protection of agricultural lands; the protection of scenic beauty; and the protection of property and life from coastal hazards. The California Coastal Commission is responsible for implementation and oversight under the California Coastal Act.

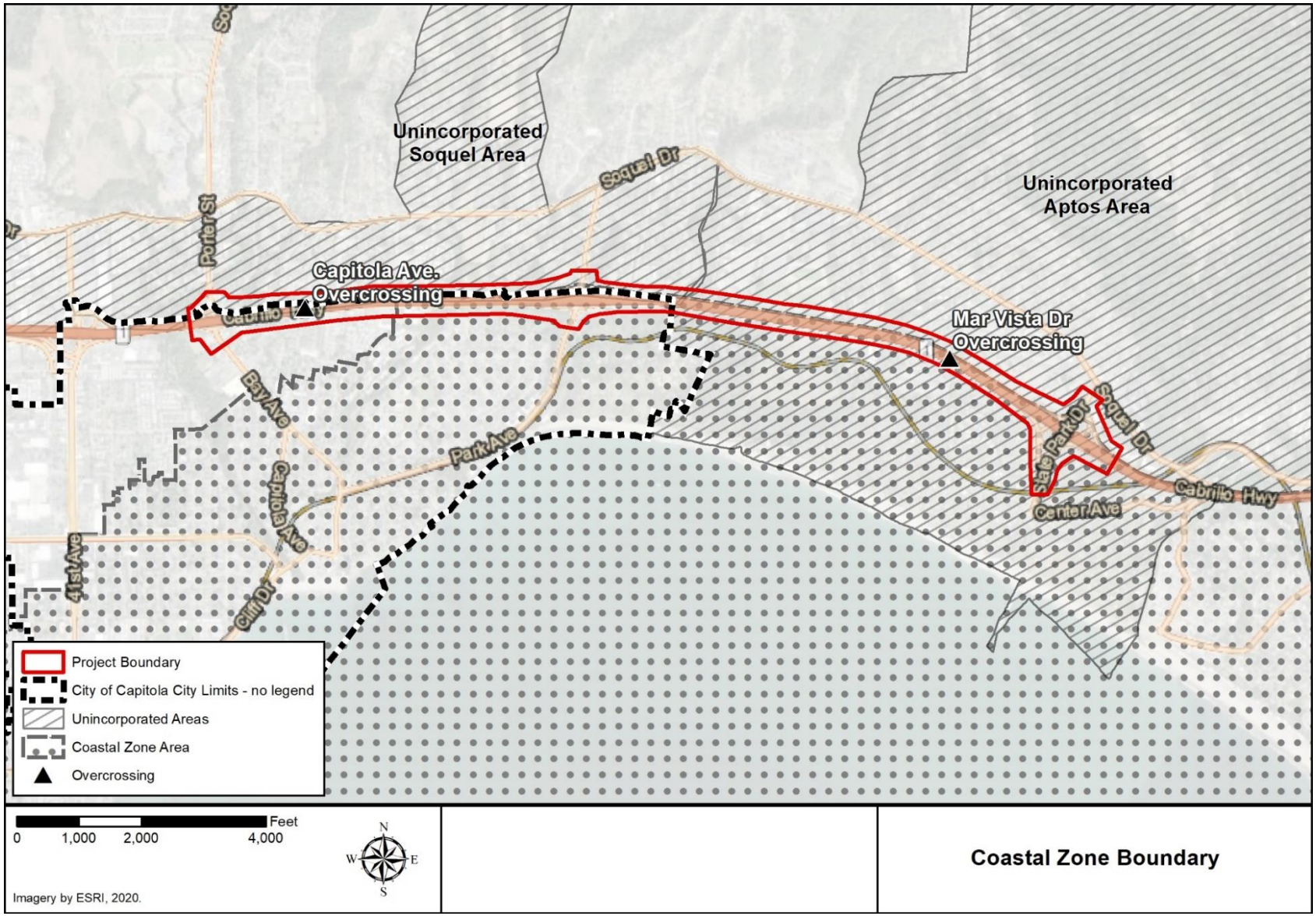
Just as the federal Coastal Zone Management Act delegates power to coastal states to develop their own coastal management plans, the California Coastal Act delegates power to local governments to enact their own local coastal programs. This project is subject to the City of Capitola and County of Santa Cruz's local coastal programs. Local coastal programs contain the ground rules for development and protection of coastal resources in their jurisdiction consistent with the California Coastal Act goals. A Federal Consistency Certification will be needed as well. The Federal Consistency Certification process will be initiated prior to the final environmental document and will be completed to the maximum extent possible during the NEPA process.

Affected Environment

This section was prepared using information from the Community Impact Assessment technical report prepared for the project in September 2020.

The project corridor spans several jurisdictional water features, including Ord Gulch, Borregas Creek, Potbelly Beach, Tannery Gulch, an unnamed tributary to Tannery Gulch, the Monterey Avenue drainage channel, Nobel Creek, and associated undeveloped riparian habitat corridors. The project corridor is about 0.3 mile to 0.9 mile north of the Pacific Ocean coastline and is partially within the Coastal Zone; the coastal zone boundary is shown in Figure 2-1.

Figure 2-1 Coastal Zone Boundary



Environmental Consequences

Tables 2.1 through 2.3 evaluate whether the proposed project is consistent with relevant policies from the local coastal programs of the County of Santa Cruz and the City of Capitola.

Table 2.1 Local Coastal Program Consistency Analysis-County of Santa Cruz 1994 General Plan and Local Coastal Program

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 5.10.2: Development within visual resources. Recognize that visual resources of Santa Cruz County possess diverse characteristics and that the resources worthy of protection may include, but are not limited to, ocean views, agricultural fields, wooded forests, open meadows, and mountain hillside views. Require projects to be evaluated against the context of their unique environment and regulate structure height, setbacks, and design to protect these resources consistent with the objectives and policies of this section. Require discretionary review for all development within the visual resource area of State Route 1, outside of the urban/rural boundary, as designated in the general plan/local coastal program visual resources map and apply the design criteria of Section 13.20.130 of Santa Cruz County's zoning ordinance to such development.	The proposed project would be potentially inconsistent with policy 5.10.2. The proposed project would result in visual impacts from vegetation removal, widening the cross section of State Route 1, and building soundwalls and retaining walls, which would range from low to moderate-high levels of visual quality change. Viewers in the corridor would have moderate-high levels of viewer response to changes. AMM-VA-1 through AMM-VA-5, AMM-VA-11 through AMM-VA-13, and mitigation measures VA-14 through VA-16 would reduce impacts related to vegetation removal. Mitigation measures VA-6 through VA-10 would reduce impacts related to soundwalls and other infrastructure by applying design treatments; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.10.2 because it would not result in development within visual resources or change views of surrounding visual resources.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 5.10.4: Preserving natural buffers. Preserve the vegetation and landform of natural wooded hillsides that serve as a backdrop for new development. Also, comply with policy 8.6.6 regarding the protection of ridgetops and natural landforms.	The proposed project would be potentially inconsistent with policy 5.10.4. The proposed project would result in visual impacts from vegetation removal, including impacts on riparian forest, coast live oak woodland, and eucalyptus woodland habitat, ranging from low to moderate-high levels of visual quality change. Viewers in the corridor would have moderate-high levels of viewer response to changes. AMMs VA-1 through VA-5, AMMs VA 11 through VA-13, and mitigation measures VA-14 through VA-16 would reduce impacts related to vegetation removal. Mitigation measures VA-6 through VA-10 would reduce impacts related to soundwalls and other infrastructure by applying design treatments; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.10.4 because it would not result in adverse impacts on natural buffers, vegetation, or landforms.
Policy 5.10.6: Where public ocean vistas exist, require that these vistas be retained to the maximum extent possible as a condition of approval for any new development.	The proposed project would be consistent with policy 5.10.6 because it would not obstruct public ocean vistas.	The No-Build (No-Action) Alternative would be consistent with policy 5.10.6 because it would not obstruct public ocean vistas.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 5.10.8: Significant tree removal ordinance. Maintain the standards in Santa Cruz County's existing ordinance, which regulates the removal of significant trees and other major vegetation in the Coastal Zone and provides appropriate protection for significant trees and other major vegetation in areas of Santa Cruz County within the Urban Services Line.	Within the jurisdiction of Santa Cruz County, "significant" trees are identified as single-trunk trees with a diameter at breast height of 20 inches or greater, clumps with more than four trunks with a diameter at breast height of 12 inches each, and all trees in certain designated biotic areas. The proposed project would be potentially inconsistent with policy 5.10.8 because the project may require the removal of "significant" trees. Mitigation related to the protection of tree removal would be consistent with local coastal program regulations. AMM-VA-2 through AMM-VA-5, AMM-VA-12, AMM-VA-16, AMM-NC-2, and AMM-NC-9 would reduce impacts to trees; however, a potential inconsistency would remain. The full of these avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.10.8 because it would not require the removal of trees or other major vegetation within the Coastal Zone.
Policy 5.1.4: Protection of sensitive habitats. Implement the protection of sensitive habitats by maintaining the existing sensitive habitat protection ordinance. The ordinance identifies sensitive habitats, determines the uses that are allowed in and next to sensitive habitats, and specifies required performance standards for land in or next to these areas. Any amendments to this ordinance shall require a finding that sensitive habitats shall be afforded equal or greater protection by the amended language.	The proposed project would be potentially inconsistent with policy 5.1.4. The jurisdictional delineation identified potentially jurisdictional Coastal Zone aquatic resources within the project area. They include 5.286 acres of Coastal Zone Riparian Non-Wetlands and 0.091 acre of Coastal Zone Stream, totaling 5.377 acres that may fall under the jurisdiction of the California Coastal Commission and may be considered environmentally sensitive habitat areas under the local coastal program of the County of Santa Cruz and/or the City of Capitola. The proposed project has the potential to result in temporary and permanent impacts on Environmentally Sensitive Habitat Areas. AMM- NC-1 through AMM-NC-11 and mitigation measure NC-8 would reduce impacts to environmentally sensitive habitat areas; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.1.4 because no impacts on sensitive habitats would occur.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 5.1.6: Development within sensitive habitats. Sensitive habitats shall be protected against any significant disruption of habitat values. Any proposed development within or next to these areas must maintain or enhance the functional capacity of the habitat. Reduce in scale, redesign, or, if no other alternative exists, deny any project that cannot sufficiently mitigate significant adverse impacts on sensitive habitats unless approval of a project is legally necessary to allow reasonable use of the land.	The proposed project would be potentially inconsistent with policy 5.1.6. The jurisdictional delineation identified potentially jurisdictional Coastal Zone aquatic resources within the project area. They include 5.286 acres of Coastal Zone Riparian Non-Wetlands and 0.091 acre of Coastal Zone Stream, totaling 5.377 acres that may fall under the jurisdiction of the California Coastal Commission and may be considered environmentally sensitive habitat areas under the local coastal program of the County of Santa Cruz and/or the City of Capitola. The proposed project has the potential to result in temporary and permanent impacts on environmentally sensitive habitat areas. AMMs NC-1 through NC-11 and mitigation measure NC-8 would reduce impacts to environmentally sensitive habitat areas; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.1.6 because no impacts on sensitive habitats would occur.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 5.2.2: Riparian corridor and wetland protection ordinance. Implement the protection of riparian corridors and wetlands through the Riparian Corridor and Wetland Protection ordinance to ensure no net loss of riparian corridors and riparian wetlands. The ordinance identifies and defines riparian corridors and wetlands, determines the uses that are allowed in and next to these habitats, and specifies required buffer setbacks and performance standards for land in and next to these areas. Any amendments to this ordinance shall require a finding that riparian corridors and wetlands shall be afforded equal or greater protection by the amended language.	The proposed project would be potentially inconsistent with policy 5.2.2. Potentially jurisdictional U.S. Army Corps of Engineers waters of the U.S. (other waters), Regional Water Quality Control Board waters of the State (streambed and riparian non-wetlands), California Department of Fish and Wildlife streams and riparian areas, and Coastal Zone/California Coastal Commission streams and riparian non-wetlands were identified within the project corridor, associated with creeks or drainages. The proposed project has the potential to result in temporary and permanent impacts on riparian and wetland resources. AMMs NC-1 through NC-11 and mitigation measure NC-8 would reduce impacts to riparian and wetland resources; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.2.2 because no impacts on riparian habitat or wetlands would occur.
Policy 5.2.3: Activities within riparian corridors and wetlands. Development activities, land alteration, and vegetation disturbance within riparian corridors and wetlands and required buffers shall be prohibited unless an exception is granted per the Riparian Corridor and Wetlands Protection ordinance. As a condition of riparian exception, require evidence of approval for development from the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and other federal or state agencies that may have regulatory authority over activities within riparian corridors and wetlands.	The proposed project would be potentially inconsistent with policy 5.2.3. Potentially jurisdictional U.S. Army Corps of Engineers waters of the U.S. (other waters), Regional Water Quality Control Board waters of the State (streambed and riparian non-wetlands), California Department of Fish and Wildlife streams and riparian areas, and Coastal Zone/California Coastal Commission streams and riparian non-wetlands were identified within the project corridor, associated with creeks or drainages. The proposed project has the potential to result in temporary and permanent impacts on riparian and wetland resources. AMMs NC-1 through NC-11 and mitigation measure NC-8 would reduce impacts to riparian and wetland resources; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.2.3 because no impacts on riparian habitat or wetlands would occur.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 5.2.5: Setbacks from wetlands. Prohibit development within the 100-foot riparian corridor of all wetlands. Allow exceptions to this setback only where consistent with the Riparian Corridor and Wetlands Protection ordinance, and in all cases, maximize the distance between proposed structures and wetlands. Require measures to prevent water quality degradation from nearby land uses, as outlined in the water resources section.	The proposed project would be potentially inconsistent with policy 5.2.5. Potentially jurisdictional U.S. Army Corps of Engineers waters of the U.S. (other waters), Regional Water Quality Control Board waters of the State (streambed and riparian non-wetlands), California Department of Fish and Wildlife streams and riparian areas, and Coastal Zone/California Coastal Commission streams and riparian non-wetlands were identified within the project corridor, associated with creeks or drainages. The proposed project has the potential to result in temporary and permanent impacts on riparian and wetland resources. AMMs NC-1 through NC-11 and mitigation measure NC-8 would reduce impacts to riparian and wetland resources; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 5.2.5 because no impacts on riparian habitat or wetlands would occur.
Policy 5.19.3: Development around archaeological resources. Protect archaeological resources from development by restricting improvements and grading activities to portions of the property not containing these resources, where feasible, or by the preservation of the site through project design and/or use restrictions, such as covering the site with earthfill to a depth that ensures the site will not be disturbed by development, as determined by a professional archaeologist.	The proposed project would avoid known archaeological sites and is therefore consistent with policy 5.19.3. In the event of an inadvertent discovery, appropriate protocols would be implemented, including work stoppage, until a qualified archaeologist can evaluate the discovery.	The No-Build (No-Action) Alternative would be consistent with policy 5.19.3 because no ground disturbance or potential impacts on archaeological resources would occur.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 3.14.2: Priority to recreational improvements. In the development of transportation improvement programs, consider giving priority to road improvements that provide access to recreational resources.	The proposed project would be consistent with policy 3.14.2 by easing congestion, reducing delay, providing efficient public transit facilities, and creating and improving pedestrian and bicycle facilities within the project corridor, which would provide greater access to recreational resources.	The No-Build (No-Action) Alternative would be inconsistent with policy 3.14.2 because the project corridor would continue to exceed capacity and experience worsened congestion and access. Public transit, pedestrian, and bicycle facilities would not be improved.

Table 2.2 Local Coastal Program Consistency Analysis- County of Santa Cruz Riparian Corridor and Wetlands Protection Ordinance (Chapter 16.30 of the Santa Cruz County Code)

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
County of Santa Cruz Riparian Corridor and Wetlands Protection Ordinance (Chapter 16.30 of the Santa Cruz County Code). The purpose of this Ordinance is to minimize and to eliminate any development activities in the riparian corridor, preserve, protect, and restore riparian corridors for: protection of wildlife habitat; protection of water quality; protection of aquatic habitat; protection of open space, cultural, historical, archaeological and paleontological, and aesthetic values; transportation and storage of floodwaters; prevention of erosion; and to implement the policies of the General Plan and the Local Coastal Program Land Use Plan.	The proposed project would be potentially inconsistent with the County of Santa Cruz Riparian Corridor and Wetlands Protection Ordinance. Potentially jurisdictional U.S. Army Corps of Engineers waters of the U.S. (other waters), Regional Water Quality Control Board waters of the State (streambed and riparian non-wetlands), California Department of Fish and Wildlife streams and riparian areas, and Coastal Zone/California Coastal Commission streams and riparian non-wetlands were identified within the project corridor, associated with creeks or drainages. The proposed project has the potential to result in temporary and permanent impacts on riparian and wetland resources and be inconsistent with buffers established by this ordinance. AMMs NC-1 through NC-11 and mitigation measure NC-8 would reduce impacts to riparian and wetland resources; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with the County of Santa Cruz Riparian Corridor and Wetlands Protection Ordinance because no impacts on riparian habitat or wetlands would occur.

Table 2.3 Local Coastal Program Consistency Analysis-City of Capitola Local Coastal Program (1981; Revised 2005)

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 1-1. It shall be the policy of the City of Capitola to maintain and enhance access to Capitola Beach, Capitola Village, and Capitola Wharf while maintaining and enhancing the existing character of Capitola Village and the surrounding residential areas. The intensity of new development shall be limited to the availability of parking and other alternative transportation systems, such as a shuttle bus and remote parking.	The proposed project would be consistent with policy 1-1 by easing congestion, reducing delay, providing efficient public transit facilities, and creating and improving pedestrian and bicycle facilities within the project corridor. The project would not obstruct or otherwise adversely affect access to Capitola Beach, Capitola Village, or Capitola Wharf. Temporary street closures would be required within the City of Capitola during construction, including the Park Avenue northbound and southbound on-ramps/off-ramps, the Bay Avenue/Porter Street northbound and southbound on-ramps/off-ramps, and the Capitola Avenue overcrossing. Temporary closures would affect vehicle, pedestrian, and bicycle access on the identified routes; however, detours would be provided to ensure access to Capitola Beach, Capitola Village, and Capitola Wharf is maintained during construction. Ultimately, the project would provide improved access to these resources for bicycles and pedestrians through the improved Capitola Avenue overcrossing, would not prohibit or otherwise adversely affect access to these resources, and would not adversely affect the existing character of Capitola Village. AMMs VA-1 through VA-5, AMMs VA 11 through VA-13, and mitigation measures VA-14 through VA-16 would reduce impacts related to vegetation removal. Mitigation measures VA-6 through VA-10 would reduce impacts related to soundwalls and other infrastructure by applying design treatments. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 1-1. The No-Build (No-Action) Alternative would not prohibit or otherwise adversely affect access to Capitola Beach, Capitola Village, or Capitola Wharf or adversely affect the existing character of Capitola Village.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 1-3. It shall be the policy of the City of Capitola to provide for the protection, preservation, and proper disposition (where necessary) of archaeological, historical, and paleontological resources within the city. This policy shall be implemented in cooperation with the landowners, developers, State Historic Preservation Office, and the [University of California, Santa Cruz] Archaeological Research Center.	The proposed project would avoid known archaeological sites and is therefore consistent with policy 1-3. In the event of an inadvertent discovery, appropriate protocols would be implemented, including work stoppage, until a qualified archaeologist can evaluate the discovery. The proposed project has the potential to result in impacts on paleontological resources. Impacts would be reduced through the development and implementation of a paleontological mitigation plan (monitoring during certain earthwork operations) and other mitigation measures.	The No-Build (No-Action) Alternative would be consistent with policy 1-3 because no ground disturbance or potential impacts on archaeological or paleontological resources would occur.
Policy 2-18. Because of the environmental sensitivity of the natural ecosystem along the creek, the City of Capitola will maintain existing pathways and park sites for public use but will prevent further disruption that might occur because of the expansion of path systems along Soquel Creek.	The proposed project would be consistent with policy 2-18. The proposed changes to the State Route 1 corridor would not alter existing pathways or park sites or create new or expanded path systems within the natural ecosystem of Soquel Creek.	The No-Build (No-Action) Alternative would be consistent with policy 2-18. The No-Build (No-Action) Alternative would not alter existing pathways or park sites or create new or expanded path systems within the natural ecosystem of Soquel Creek.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 3-1. It shall be the policy of the City of Capitola to maintain the natural features, visual resources, and unique character of the Capitola Village. This includes maintenance of the particular scale and character of Capitola Village, retaining its special ability to serve both Capitola residents and visitors, protecting its natural features and views, and recognizing its historical continuity extending from the Camp Capitola period through the present. A commitment shall be made to maintaining the level of current activity in the Central Village area and/or intensifying activity and increasing capacity only in ways consistent with the current scale and character of Capitola Village.	The proposed project would be potentially inconsistent with policy 3-1. The proposed project would result in visual impacts from vegetation removal, widening the cross section of State Route 1, and building soundwalls and retaining walls, which would range from low to moderate-high levels of visual quality change. Viewers in the corridor would have moderate-high levels of viewer response to changes. AMMs VA-1 through VA-5, AMMs VA-11 through VA-13, and mitigation measures VA-14 through VA-16 would reduce impacts related to vegetation removal. Mitigation measures VA-6 through VA-10 would reduce impacts related to soundwalls and other infrastructure by applying design treatments; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 3-1. The No-Build (No-Action) Alternative would not alter the natural features, visual resources, or the character of the Capitola Village.
Policy 3-5. Permitted development shall not block or detract from public views to and along Capitola's shoreline.	The proposed project would be consistent with policy 3-5 because it would not obstruct public views of Capitola's shoreline.	The No-Build (No-Action) Alternative would be consistent with policy 3-5 because it would not obstruct public views of Capitola's shoreline.

Local Coastal Program Policies	Consistency Analysis: Build Alternative	Consistency Analysis: No-Build (No-Action) Alternative
Policy 6-3. It shall be the policy of the City of Capitola to maintain the maximum amount of native vegetation along Soquel Creek and other riparian areas, and to strongly support the California Department of Fish and Game in requiring a minimum flow that will support a healthy riparian habitat and permanent fishing resource in Soquel Creek.	The proposed project would be potentially inconsistent with policy 6-3. The proposed project has the potential to result in temporary and permanent impacts on a riparian forest. Permanent impacts would be limited to about 0.192 acre of riparian forest, 0.185 acre of coast live oak woodland, and 0.028 acre of eucalyptus woodland. AMMs NC-1 through NC-11 and mitigation measure NC-8 would reduce impacts to riparian and wetland resources; however, a potential inconsistency would remain. The full text of avoidance, minimization, and/or mitigation measures is included in Appendix B.	The No-Build (No-Action) Alternative would be consistent with policy 6-3. No native vegetation within the Soquel Creek corridor would be removed or otherwise adversely impacted.
Policy 6-5. The City of Capitola shall, as a condition of new development, ensure that runoff does not significantly impact the water quality of Capitola's creeks and wetlands through increased sedimentation, biochemical degradation, or thermal pollution.	The proposed project would be consistent with policy 6-5. The project would involve the replacement and reconstruction of the existing ditch/toe gutter system to ensure runoff is collected and controlled in a manner that would not result in adverse impacts on water quality. However, construction activities have the potential to generate runoff, which could impact the water quality of nearby creeks. Adherence to Best Management Practices and standard measures HY-1 and WQ-1 through WQ-6 would ensure runoff would not impact water quality.	The No-Build (No-Action) Alternative would be consistent with policy 6-5 because the existing runoff system would remain in place, and no changes would occur.

Build Alternative

As shown in Tables 2.1 through 2.3, the Build Alternative would potentially be inconsistent with policies from the County of Santa Cruz and City of Capitola local coastal programs regarding visual resources, biological resources, wetland and creek protection, and historical resources.

Additionally, the proposed project would be potentially inconsistent with policies from the City of Capitola's local coastal program regarding paleontological resources, natural features, visual resources, native vegetation areas, riparian areas, and water quality. However, avoidance, minimization, and/or mitigation measures are identified below to address the potential inconsistencies. The proposed project would be consistent with other policies from the local coastal programs because it would preserve park and recreational land uses and improve access to these resources by

decreasing congestion and delay along State Route 1. Because the project extends across the Coastal Zone, a Coastal Development Permit from the County of Santa Cruz and City of Capitola would be required. Additionally, consultation with the California Coastal Commission regarding discharges into Critical Coastal Areas and a federal consistency determination would be needed.

No-Build (No-Action) Alternative

As shown in Tables 2.1 through 2.3 the No-Build (No-Action) Alternative would be consistent with most Coastal Zone policies. However, the No-Build (No-Action) Alternative would be inconsistent with policies that relate to improving access to coastal and recreational resources because traffic conditions would continue to worsen along State Route 1 and on nearby local streets. The No-Build (No-Action) Alternative would result in worsened congestion and would not improve pedestrian or bicycle facilities, public transit facilities, access to beaches, or recreational land uses.

Avoidance, Minimization, and/or Mitigation Measures

Project avoidance, minimization, and/or mitigation measures that would reduce impacts on the Coastal Zone are described above in Tables 2.1 through 2.3. No other measures related to the Coastal Zone are required.

2.1.2 Growth

Regulatory Setting

The Council on Environmental Quality regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The Council on Environmental Quality regulations (40 Code of Federal Regulations 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.

The California Environmental Quality Act (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…"

Affected Environment

Caltrans and Federal Highway Administration guidance indicate the need for a first-cut analysis of the project to determine the likelihood of growth-related impacts. Detailed growth analysis is provided in the Community Impact Assessment prepared in September 2020. (SWCA 2020) The growth analysis looked at current demographic trends, reviewed local land use plans and policies, and sought opinions of local planners and officials. A scoping meeting was held for the proposed project on October 23, 2019; local officials did not have comments or concerns related to growth. The Regional Transportation Commission formed an expert panel of stakeholders and contacted representatives from colleges, local property developers, planners, and planning officials from potentially affected jurisdictions on August 25, 2020, and requested their participation in an expert panel interview to gather their opinions about the growth potential for the region.

Environmental Consequences

How, if at all, does the project potentially change accessibility?

Accessibility reflects both the attractiveness of potential destinations and ease of reaching them, which, in turn, are related to land use and circulation issues. According to the Traffic Study prepared for the proposed project (CDM Smith 2020), proposed improvements would improve congestion and reduce travel times between Santa Cruz and Watsonville by 22 minutes in the northbound direction and 8 minutes in the southbound direction during the morning peak travel period, and would reduce travel times by 20 minutes in the northbound direction and 15 minutes in the southbound direction during the evening peak travel period in the opening year (2025). The project would reduce travel times between Santa Cruz and Watsonville by 22 minutes in the northbound direction and 8 minutes in the southbound direction during the morning peak travel period and would reduce travel times by 19 minutes in the northbound direction and 12 minutes in the southbound direction during the evening peak travel period in the year 2046—20 years after construction completion. Improved congestion and reduced travel times on State Route 1 between Santa Cruz and Watsonville could improve access between employment centers and areas that have the potential to support new growth, such as the cities of Watsonville, Salinas, and Marina, and the communities of Live Oak, Aptos, and Freedom.

The Build Alternative would make important areas of the Santa Cruz region more accessible in terms of travel times and travel behavior, especially for commuters and transit riders traveling north during the morning peak travel period and south during the evening peak travel period. The proposed project could change the number of trips experienced at specific locations, travel speeds and travel times, and congestion and Level of Service within the study area and increase the appeal of housing in more affordable areas in the southern portion of the County of Santa Cruz and northern Monterey County.

How, if at all, do the project type, project location, and growth pressure potentially influence growth?

Project Type

Certain transportation project types, such as auxiliary lane projects in a highly urbanized area with low growth rates and little remaining development capacity, are unlikely to cause growth-related impacts. Other types of projects, such as the construction of new highways, may have more potential for such impacts. Typically, projects that create a new facility or access require an analysis of growth-related impacts.

The Build Alternative would provide auxiliary lanes on the northbound and southbound sides of State Route 1, extending about 2.7 miles between the State Park Drive and Bay Avenue/Porter Street interchanges. Additionally, the Build Alternative would replace the Capitola Avenue overcrossing and involve the construction of a pedestrian and bicycle overcrossing across State Route 1 at Mar Vista Drive. Bus-on-shoulder operations would be accommodated through the State Route 1 interchanges (off-ramp to on-ramp) by rebuilding or widening shoulders where shoulders are not currently wide enough for bus operation. The Build Alternative would not provide new roads or new access to areas that are currently inaccessible. The Build Alternative would relieve existing and future freeway traffic congestion, add limited capacity to the constrained existing freeway, and provide alternative modes of travel that do not currently exist along this freeway. Following the completion of the project, State Route 1 may be more attractive for existing and potential future freeway users compared to the current condition. However, proposed improvements would occur along a short section of an existing freeway corridor, addressing projected traffic volumes and encouraging drivers to use public transit.

As discussed previously, auxiliary lane projects in a highly urbanized area with low growth rates and little remaining development capacity are unlikely to cause growth-related impacts. Based on the project type, the urbanized condition of the project area, and the constraints to growth, the proposed project is not expected to result in direct impacts related to growth in the form of providing access to new areas that are currently inaccessible. However, it is possible that the project, including the associated increased capacity and reduced travel times, could make areas surrounding employment centers where developable land is still available, more appealing for future development if peak travel commute times are reduced. This could result in indirect effects related to growth in the form of growth pressure on surrounding areas that can support future growth.

Project Location

Another important screening factor is project location; that is, whether a project is in an urban, suburban, urban/suburban fringe, or a rural area and whether the project location could influence growth. The project is in an urban area with little remaining developable land. Although the land is urban and

primarily built out, the project area is a highly desirable community in which to live. As a result, housing pressure in the area is high, and prices have increased. Supply is limited and affordable housing for the local community and workforce has become a priority. As confirmed by the expert panel of stakeholders and contacted representatives from colleges, local property developers, planners, and planning officials from potentially affected jurisdictions, growth in the local job centers, such as the cities of Santa Cruz and Capitola, is limited to infill development due to the lack of developable land designated for future residential or commercial development. Infill development in these areas is expected to be planned development that would occur independently of improvements along State Route 1. The areas that have the potential to support new growth generally include the outlying areas in the southern portion of the County of Santa Cruz and the northern portion of Monterey County, in the cities of Watsonville and Marina, and the unincorporated communities of Live Oak, Aptos, and Freedom, where developable land designated for residential and commercial use is still available. These areas are planned for future growth through the gradual development of higher density housing, which will support planned job growth in the nearby employment centers, within and near the City of Santa Cruz.

The Build Alternative would not directly promote additional growth within the region. However, the Build Alternative could indirectly contribute to growth pressure in the region by making certain outlying areas in the vicinity of the City of Santa Cruz more appealing for future growth. The Build Alternative would do this by reducing congestion, which would result in reduced travel time for commuters traveling to Santa Cruz from areas south where development could occur. Planned growth in the region is not dependent on the proposed project and is not expected to be substantially influenced by the proposed project.

Therefore, in terms of project location, the proposed project would not be expected to result in direct growth-related impacts. However, it could result in indirect impacts in the form of growth pressure for areas in the vicinity of the City of Santa Cruz, where additional development could occur.

Growth Pressure

As discussed above, the project is not expected to result in direct impacts related to growth. However, due to the high desirability and demand for housing in the area, the reduced congestion and travel time on State Route 1 between Santa Cruz and Watsonville could indirectly contribute to growth pressure in areas where additional growth could occur. Growth in the cities of Santa Cruz and Capitola is expected to be limited to planned infill development that would occur independently of State Route 1 improvements. Additionally, based on responses from the expert panel, it is evident that recent changes to state housing laws have started to put pressure on local jurisdictions to implement their housing elements and provide affordable housing. The cities of Watsonville and Marina and the unincorporated

communities of Live Oak, Aptos, and Freedom have been identified as having developable land remaining that would be suitable for future development. Therefore, the project could indirectly contribute to growth pressure in those areas by reducing commute times during peak travel periods from those areas to employment centers in the City of Santa Cruz and surrounding areas.

Whether or not project-related growth is "reasonably foreseeable."

Based on the urban and build-out condition of the project area and the project type, the project is not expected to result in direct impacts related to growth. However, due to the high desirability and demand for housing in the area, it is reasonably foreseeable that the reduced congestion and travel time on State Route 1 between Santa Cruz and Watsonville could indirectly contribute to growth pressure in areas where additional growth could occur. The project would not remove or change existing obstacles to growth, such as the availability of water or other utilities or service systems, the presence of resource constraints, public attitudes toward growth, land use policy or zoning constraints, or other market constraints. Therefore, growth that could occur is expected to be in the form of planned growth, not unplanned growth. This planned growth is expected to occur in areas where developable land that is already zoned or designated for residential and/or commercial land uses is available. Based on a review of applicable planning documents and feedback from the expert panel, planned growth is reasonably foreseeable in the cities of Watsonville and Marina and the unincorporated communities of Live Oak, Aptos, and Freedom.

If there is project-related growth, how, if at all, will that impact resources of concern?

Future planned development in the cities of Santa Cruz and Capitola and surrounding developed areas is expected to be limited to infill development. Infill development is not expected to result in impacts on resources of concern other than water if water availability is constrained at the time of future development. Future infill development projects would be subject to environmental review and would be required to identify adequate water supplies before development. Therefore, impacts related to water supply from infill development projects are not expected to be significant.

New development or redevelopment is expected to occur in the form of planned development within existing undeveloped areas that are zoned or otherwise designated for residential and/or commercial development in the cities of Watsonville and Marina and the unincorporated communities of Live Oak, Aptos, and Freedom. Such areas that meet these criteria have been identified to evaluate the potential for impacts on resources of concern.

Some areas identified for potential future development are currently undeveloped, and some of them are entirely disturbed and surrounded by

existing development. Within those areas, impacts to resources of concern other than water supply are not expected. Other areas where development could occur are next to and may support habitats for special-status species. Important resources of concern that have the potential to be impacted include riparian and freshwater emergent wetland habitats; grassland and woodland habitats; nesting habitat for migratory birds; burrowing owl habitat; designated critical habitat and documented communities of Santa Cruz tarplant, and robust spineflower; suitable habitat and documented communities of sand-loving wallflower, sandmat manzanita, Kellogg's horkelia, Monterey spineflower, white-rayed pentachaeta, and Eastwood's goldenbush; and habitat suitable for Townsend's big-eared bat and pallid bat.

Each new development project would be subject to discretionary approval and environmental review and would be required to identify adequate sources of water supply, as well as any other potential impacts to resources of concern, before approval and development. Projects would be required to comply with the measures in local regulating plans that are designed to protect resources of concern, which may include, but are not limited to:

- Implementing design guidelines, building height limitations and minimum setback standards, screening measures, landscaping and replanting measures, and review by local design boards to protect the visual character and scenic resources;
- Designating areas of high archaeological sensitivity and requiring reconnaissance by a qualified archaeologist and, where artifacts are identified, and requiring measures that would protect and preserve such resources; and
- Designating habitat reserve or other identified sensitive areas, requiring adequate buffer distances to protect sensitive habitats, minimizing the need for grading, requiring Sediment Control Best Management Practices, requiring replanting with a native seed mix, and protecting or providing wildlife corridors or connections between sensitive habitat and other natural open space areas to avoid adverse impacts to biological resources.

Additionally, coordination with agencies with regulatory authority over sensitive habitats, such as the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Central Coast Regional Water Quality Control Board for wetland and water resources, would ensure potential impacts are adequately evaluated and mitigated.

In conclusion, based on the 2018 Association of Monterey Bay Area Governments Regional Growth Forecast, review of local planning documents, and input from the expert panel, it is possible that the peak travel time savings and reduced congestion that would result from the implementation of the project could make certain areas that still have the potential to support future

growth more appealing for residents commuting to local employment in and surrounding the City of Santa Cruz. The project could indirectly contribute to growth pressure in the cities of Watsonville and Marina and the unincorporated communities of Live Oak, Aptos, and Freedom, where future growth could occur. Within those areas, if future growth does occur and is indirectly influenced by the project, the project would require independent environmental review, and potential impacts to resources of concern would require evaluation and mitigation, as necessary, to avoid and/or minimize potential impacts. The project is not expected to result in growth-related effects that would result in significant impacts on resources of concern; therefore, no further analysis is necessary.

No-Build (No-Action) Alternative

State Route 1 would not experience any improvements under the No-Build (No-Action) Alternative, and congestion and delay would continue to worsen. Accessibility and transportation capacity and modes would not be improved, and no unplanned growth would occur, so there would be no growth impacts under the No-Build (No-Action) Alternative.

Avoidance, Minimization, and/or Mitigation Measures

The project would not result in adverse impacts related to growth within the project study area; therefore, avoidance, minimization, and/or mitigation measures would not be required.

2.1.3 Traffic and Transportation/Pedestrian and Bicycle Facilities

Regulatory Setting

Caltrans, as assigned by the Federal Highway Administration, 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 Code of Federal Regulations 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 expected 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 freeway users who share the facility.

In July 1999, the U.S. Department of Transportation issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the U.S. Department of Transportation regulations (49 Code of Federal Regulations 27) implementing Section 504 of the Rehabilitation Act (29 U.S. Code 794). The Federal Highway Administration 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 Americans with

Disabilities Act requirements to federal-aid projects, including Transportation Enhancement Activities.

Affected Environment

This section was prepared using information from the Community Impact Assessment in September 2020, and Traffic Operations Analysis Report prepared for the project in April 2020.

Existing Freeway Facilities

State Route 1 connects the coastal communities on the northern and central California coast. State Route 1 varies between a two-lane freeway in rural areas of the coast to multiple lanes in urban areas. In the project study area, State Route 1 is a four-lane freeway with annual average daily traffic from about 74,500 at the southern project limit near Larkin Valley Road and San Andreas Road to about 111,400 at the northern limit near Morrissey Boulevard. North and west of the project area, State Route 1 connects with State Route 17 and State Route 9 and extends across the City of Santa Cruz on city streets before becoming a two-lane freeway along the coast north of the City of Santa Cruz. State Route 1, south of the project area, is a six-lane freeway through the City of Watsonville, returning to a two-lane highway in northern Monterey County.

Other major streets in the project area include 41st Avenue, Porter Street and Bay Avenue, Soquel Avenue, Soquel Drive, Rio Del Mar Boulevard, State Park Drive, and Park Avenue. In the County of Santa Cruz, 41st Avenue crosses State Route 1 about 0.4 mile west of the project limits. Porter Street and Bay Avenue cross State Route 1 at the western end of the project limits. Soquel Avenue crosses State Route 1 and becomes Soquel Drive about 1.4 miles west of the project limits. Soquel Drive runs parallel to State Route 1 to the north of the freeway. Rio Del Mar Boulevard crosses State Route 1 about 1.4 miles east of the project limits. State Park Drive crosses State Route 1 at the eastern end of the project limits, and Park Avenue crosses State Route 1 within the project limits.

Existing Transit Facilities

The Santa Cruz Metropolitan Transit District is the main transit provider in the County of Santa Cruz. The Santa Cruz Metropolitan Transit District operates urban collector, express, and urban local bus feeder routes in the project area, including the Express Bus Route 91—Watsonville to Santa Cruz Commuter Express—Route 55 in mid-County; and Routes 69A, 69W, and 71 in the Capitola Road/Santa Cruz/Watsonville area. The Santa Cruz Metropolitan Transit District also offers shared-ride, door-to-door paratransit service as a complement to its regular fixed-route bus service. In addition to its scheduled bus services, Santa Cruz Metropolitan Transit District also provides shuttle services within the project area, which operate during the summer and provide access to beaches in Capitola and Santa Cruz.

Coverage in the project area includes Cabrillo College, Capitola Mall, Dominican Hospital, and Seacliff State Beach.

State Route 17 express bus service serves a San Jose-based transit market between Soquel Drive and downtown San Jose. Jointly operated by Santa Cruz Metropolitan Transit District, National Railroad Passenger Corporation (Amtrak), and the Santa Clara Valley Transportation Authority, the express service has seven northbound weekday trips originating at the Soquel Park and Ride Station and five southbound weekday trips terminating at this station.

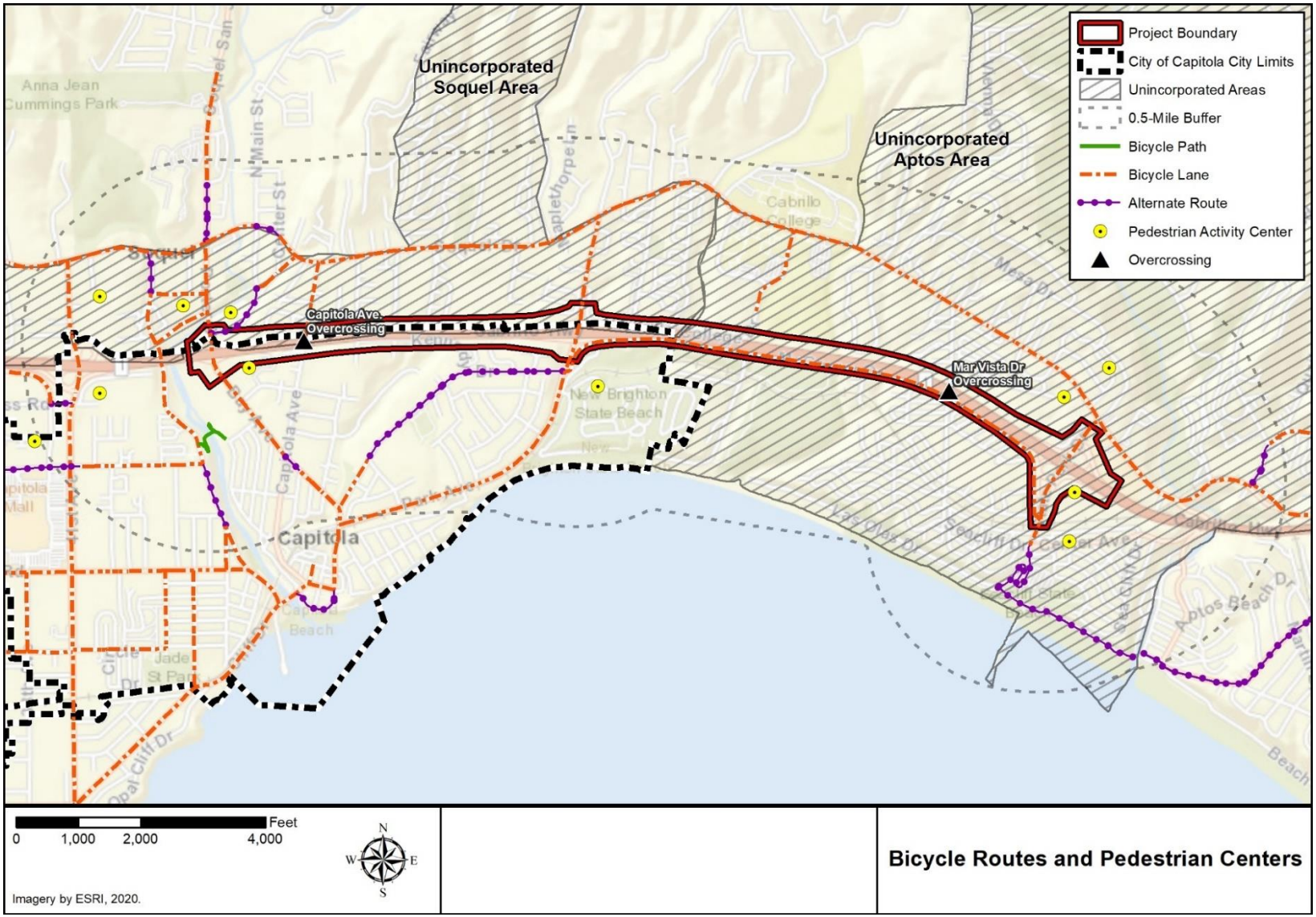
At present, congestion within the project corridor and surrounding areas causes service delays that make transit operations less efficient. There are currently insufficient incentives to increase transit service in the State Route 1 corridor because congestion threatens reliability and cost-effective transit service delivery. This trend of increasing congestion and delay on State Route 1 within the project corridor is expected to continue.

Existing Pedestrian and Bicycle Facilities

There are currently limited overcrossings for pedestrians and bicyclists to safely navigate across State Route 1 in the project corridor. Portions of the project area are designated as regional bicycle routes. Within the project corridor, bike lanes currently extend along the southern side of State Route 1 from State Park Drive to Park Avenue. At the State Route 1/Park Avenue interchange, a bike lane crosses State Route 1. Bike lanes on Park Avenue connect bicyclists to bike lanes on Soquel Drive, which runs parallel to State Route 1 in the project area, and to bike lanes on other streets in the project vicinity. Many of Santa Cruz County's major collector and arterial roadways have been established as Class 2 bikeways (bike lanes) with a focus on developing bicycle facilities in the higher density urban areas and urban corridors of Santa Cruz County. However, there are few Class 1 bikeways (bike paths) in the County of Santa Cruz. Currently, Santa Cruz County has about 92 miles of bike lanes and 8 miles of bike paths.

The existing pedestrian network includes paths along beaches and cliff areas, as well as walkways through neighborhoods such as Depot Hill, Capitola Village, and the Jewel Box. Pedestrians can walk from the lagoon area of Soquel Creek to Perry Park following a footpath along the creek and then walk along Riverview Drive for the rest of the way. Other existing pedestrian routes run along 41st Avenue, Portola Drive, Capitola Road, Brommer Street, Jade Street, Wharf Road, Bay Avenue, Monterey Avenue, and Park Avenue. Figure 2-2 shows the existing pedestrian and bicycle facilities in the project vicinity.

Figure 2-2 Existing Pedestrian and Bicycle Facilities in the Project Vicinity



Methodology

The project study area for the Traffic Operations Analysis Report includes the nine freeway mainline segments within the project limits that are listed below. The endpoints of the mainline segments analyzed in this report include on-ramps; off-ramps; merge areas, which are the points on a roadway where vehicle traffic accelerates to join the flow of traffic in the mainline segment; and diverge areas, which are the points on a roadway where vehicle traffic separates from the flow of traffic to decelerate and exit a mainline segment. Figures 2-3 and 2-4 show the northbound and southbound segments analyzed in the Traffic Operations Analysis Report. The Traffic Operations Analysis Report included additional mainline segments located upstream and downstream of the project limits; see this report for additional details. The peak periods, which are the times of day with the most traffic, were seen from 6:00 a.m. to 12:00 p.m. (the morning peak period) and 2:00 p.m. to 8:00 p.m. (the evening peak period).

Northbound Segments:

1. Rio Del Mar Boulevard to State Park Drive Off-ramp
2. State Park Drive Off-ramp to State Park Drive Southern On-ramp
3. State Park Drive Southern On-ramp to State Park Drive Northern On-ramp
4. State Park Drive Northern On-ramp to Park Avenue Off-ramp
5. Park Avenue Off-ramp to Park Avenue On-ramp
6. Park Avenue On-ramp to Bay Avenue/Porter Street (merge area)
7. Park Avenue On-ramp to Bay Avenue/Porter Street (diverge area)
8. Bay Avenue/Porter Street Off-ramp to Bay Avenue/Porter Street On-ramp
9. Bay Avenue/Porter Street On-ramp to 41st Avenue Off-ramp

Southbound Segments:

1. 41st Avenue On-ramp to Bay Avenue/Porter Street Off-ramp
2. Bay Avenue/Porter Street Off-ramp to Bay Avenue/Porter Street On-ramp
3. Bay Avenue/Porter Street On-ramp to Park Avenue Off-ramp (merge area)
4. Bay Avenue/Porter Street On-ramp to Park Avenue Off-ramp (diverge area)
5. Park Avenue On-ramp to Park Avenue Off-ramp
6. Park Avenue Off-ramp to State Park Drive Off-ramp
7. State Park Drive Off-ramp to State Park Drive Northern On-ramp
8. State Park Drive Northern Off-ramp to State Park Drive Southern On-ramp
9. State Park Drive Southern On-ramp to Rio Del Mar Boulevard Off-ramp

The Traffic Operations Analysis Report's operational analysis evaluated existing conditions in the year 2019 and future traffic conditions for the years 2025 and 2045. The project is scheduled to be completed in 2025; therefore, the operational analysis uses the year 2025 to analyze traffic in the project's opening year. The operational analysis also evaluated conditions in the year 2045 to reflect an estimated 20-year design life for the project, representing the project's horizon year.

Existing weekday morning and evening period and daily total traffic volumes were estimated using historical (2013 to 2019) Caltrans mainline annual average daily traffic and weekday hourly mainline traffic counts, and Santa Cruz County Regional Transportation Commission's October 2016 weekday 15-minute interval mainline traffic counts. Mainline traffic counts include traffic on a roadway's main lanes of travel, as opposed to traffic at a roadway's entry and exit points. Future (2025 and 2045) weekday morning and evening period and daily total traffic volumes were estimated using existing (2019) traffic volume estimates and growth rates per year by time period (morning peak, evening peak, and off-peak) based on the Association of Monterey Bay Area Governments' model developed for the 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy. The Association of Monterey Bay Area Governments developed the growth rates per year used in this analysis to allow for the consideration of population growth in an analysis of future traffic conditions.

Traffic operations were analyzed using multiple performance measures. A corridor-wide operational performance summary (including the freeway mainline segments within the project limits and upstream of the project limits) assessed traffic conditions in terms of model volumes in vehicles per hour, vehicle miles traveled, vehicle hours traveled, and delay in minutes of delay per vehicle.

- **Level of Service:** Level of Service is an indicator of the operating performance of a roadway. It rates congestion and varies on a scale from Level of Service A to Level of Service F, where Level of Service A represents free-flow operations at free-flow speeds and Level of Service F, a roadway is considered overcapacity and operates at forced-flow, jammed conditions. Per Caltrans' criteria, to indicate a satisfactory operating condition, the traffic analysis used Level of Service D or better (Level of Service A, B, C, or D) and an average speed of 45 miles per hour higher during the peak period analysis. A type of traffic model, FREQ, was used to analyze the freeway performance in terms of Level of Service and average speed under each scenario.

Figure 2-3 Northbound Segments Analyzed in Traffic Operations Analysis Report

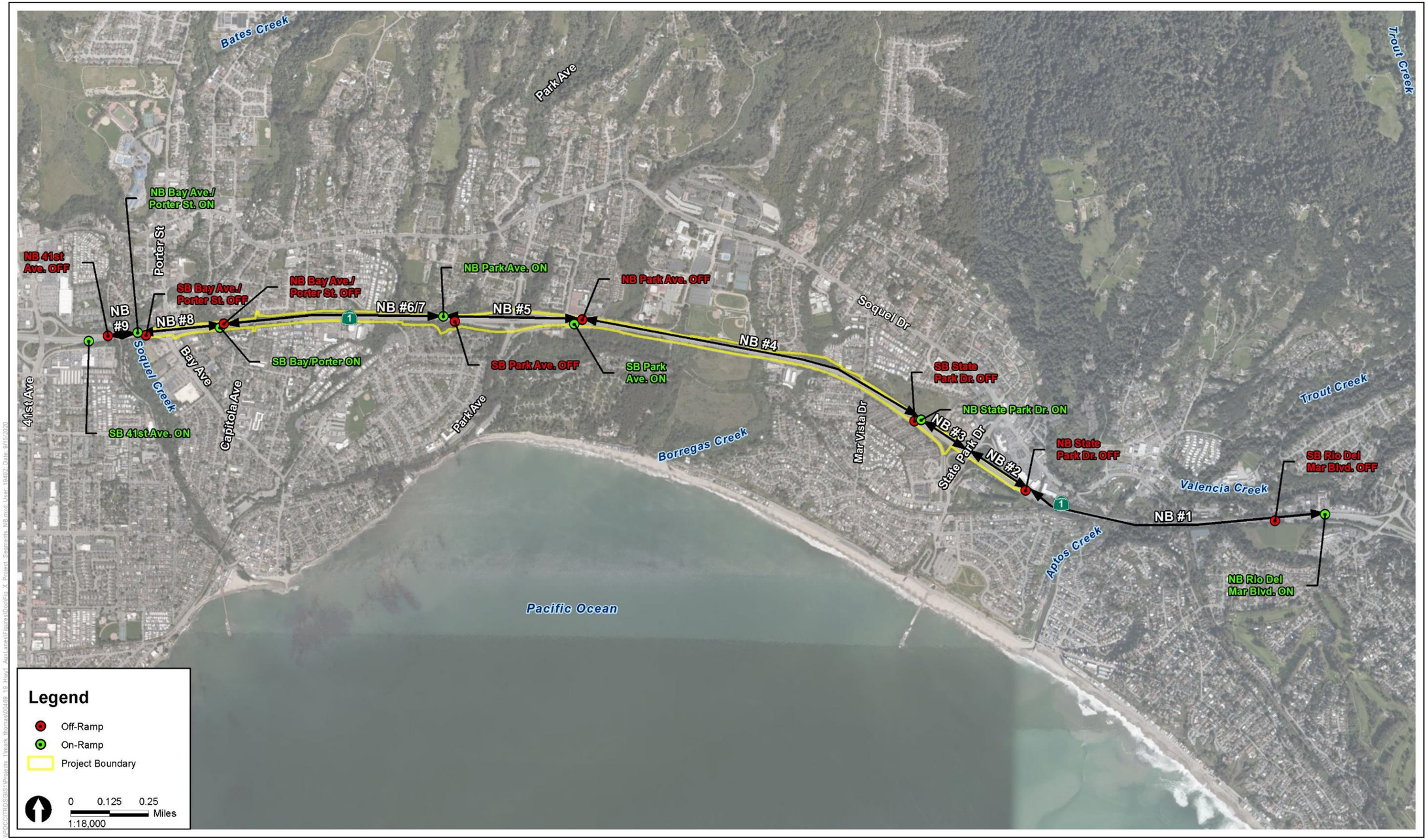
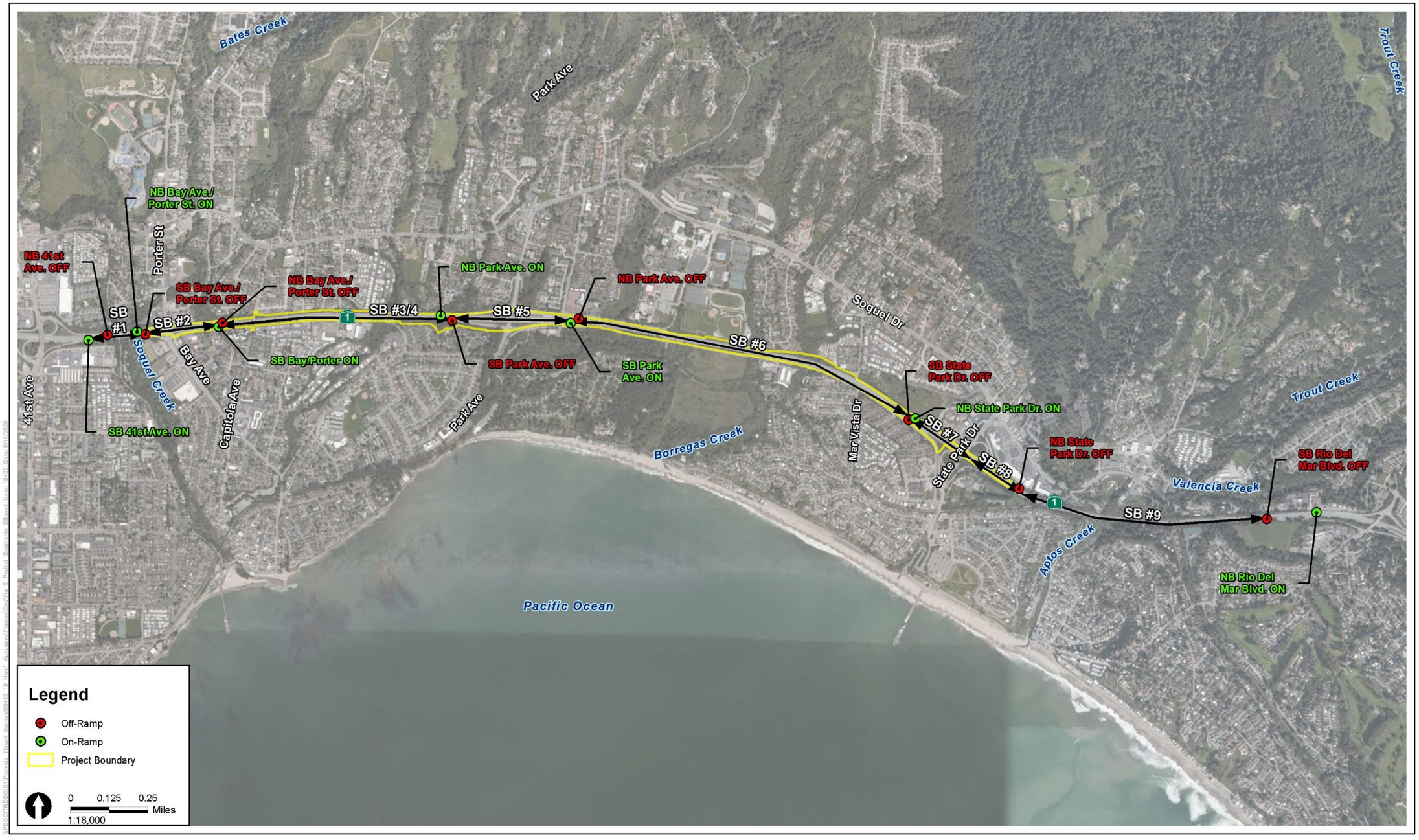


Figure 2-4 Southbound Segments Analyzed in Traffic Operations Analysis Report



- **Vehicle Miles Traveled:** Vehicle miles traveled represents the number of miles traveled by a vehicle or group of vehicles; this measurement can be narrowed to miles traveled on a specific roadway. A comparison of a roadway's vehicle miles traveled at a peak traffic period with its vehicle miles traveled at a time period with free-flow speed enables an analysis of traffic congestion.
- **Vehicle Hours Traveled:** Measurement of vehicle hours traveled enables analysis of traffic congestion by multiplying the number of vehicles by the travel time of those vehicles on a given segment of a roadway. Vehicle hours traveled is an indicator of how additional travel demand influences congestion in the system from a travel time standpoint. It is commonly used as a system-wide measurement of travel demand.
- **Delay**: Delay is calculated using a comparison of travel times and travel speeds in congested time periods (e.g., peak periods) with travel times and travel speeds in traffic operating at free-flow speeds. Delay is measured in minutes per vehicle.

Existing Year Traffic Conditions

The existing conditions (2019) analysis was conducted for all of the mainline segments included in the Traffic Operations Analysis Report during the weekday morning and evening peak periods. At present, northbound State Route 1 operates at Level of Service E during the morning peak period and Level of Service C during the evening peak period. The average delay on northbound State Route 1 is 3 minutes per vehicle during the morning peak period and 0 minutes per vehicle during the evening peak period. Southbound State Route 1 operates at Level of Service C during the morning peak period and Level of Service D during the evening peak period. The average delay on southbound State Route 1 is 1 minute per vehicle during the morning peak period and 2 minutes per vehicle during the evening peak period. Tables 2.4 through 2.7 summarize existing traffic conditions on State Route 1 in the project corridor.

When evaluating the model outputs against the criteria set for the Level of Service and average speed, the existing (2019) scenario does not achieve satisfactory freeway operational performance on the northbound during the morning peak period.

Table 2.4 Summary of Existing Corridor-Wide Operational Performance-State Route 1 Northbound Morning Peak Period

Performance Measure	Existing (2019) No-Build
Volume (vehicles per hour)	3,353
Vehicle Miles Traveled	128,023
Vehicle Hours Traveled	2,958
Level of Service	E
Average Speed (miles per hour)	43
Delay (minutes per vehicle)	3

Source: Traffic Operations Analysis Report.

Table 2.5 Summary of Existing Corridor-Wide Operational Performance-State Route 1 Northbound Evening Peak Period

Performance Measure	Existing (2019) No-Build
Volume (vehicles per hour)	2,565
Vehicle Miles Traveled	102,195
Vehicle Hours Traveled	1,660
Level of Service	C
Average Speed (miles per hour)	62
Delay (minutes per vehicle)	0

Source: Traffic Operations Analysis Report.

Table 2.6 Summary of Existing Corridor-Wide Operational Performance-State Route 1 Southbound Morning Peak Period

Performance Measure	Existing (2019) No-Build
Volume (vehicles per hour)	3,064
Vehicle Miles Traveled	140,547
Vehicle Hours Traveled	2,395
Level of Service	C
Average Speed (miles per hour)	59
Delay (minutes per vehicle)	1

Source: Traffic Operations Analysis Report.

Table 2.7 Summary of Existing Corridor-Wide Operational Performance-State Route 1 Southbound Evening Peak Period

Performance Measure	Existing (2019) No-Build
Volume (vehicles per hour)	3,239
Vehicle Miles Traveled	142,352
Vehicle Hours Traveled	2,793
Level of Service	D
Average Speed (miles per hour)	51
Delay (minutes per vehicle)	2

Source: Traffic Operations Analysis Report.

The Level of Service on the mainline segments varies along the length of State Route 1. Typically, densities are higher and average speeds are lower upstream of a bottleneck, and densities are lower and average speeds are higher downstream of a bottleneck. Tables 2.8 and 2.9 show the Level of Service by State Route 1 mainline segment and time period under the existing (2019) No-Build and existing (2019) Build scenarios in the northbound and southbound directions. In the northbound morning and southbound evening peak periods, the project would improve operating conditions locally, within the project limits, and along the corridor. In the northbound evening and southbound morning peak periods, the project would improve operating conditions mostly locally.

Regarding Table 2.8 and Table 2.9, see the Traffic Operations Analysis Report for all data for the corridor-wide mainline segments.

Table 2.8 Existing Level of Service on Northbound State Route 1 by Mainline Segment and Time Period for Existing (2019) No-Build

Segment Number	Mainline Segment	Morning Peak Period Level of Service	Evening Peak Period Level of Service
1	Rio Del Mar Boulevard to State Park Drive	E	C
2	State Park Drive Off-ramp to State Park Drive Southern On-ramp	E	B
3	State Park Drive Southern On-ramp to State Park Drive Northern On-ramp	E	C
4	State Park Drive Northern On-ramp to Park Avenue	E	C
5	Park Avenue	E	C
6	Park Avenue to Bay Avenue/Porter Street (merge area)	E	D
7	Park Avenue to Bay Avenue/ Porter Street (diverge area)	E	D
8	Bay Avenue/Porter Street	E	C
9	Bay Avenue/Porter Street to 41st Avenue	C	C
Not Applicable	Within Project Limits	E	C
Not Applicable	Corridor-Wide (upstream and downstream)	E	C

Source: Traffic Operations Analysis Report.

Table 2.9 Existing Level of Service on Southbound State Route 1 by Mainline Segment and Time Period for Existing (2019) No-Build

Segment Number	Mainline Segment	Morning Peak Period Level of Service	Evening Peak Period Level of Service
1	Bay Avenue/Porter Street to 41st Avenue	C	D
2	Bay Avenue/Porter Street	D	E
3	Park Avenue to Bay Avenue/Porter Street (diverge area)	D	E
4	Park Avenue to Bay Avenue/Porter Street (merge area)	D	E
5	Park Avenue	C	E
6	State Park Drive Off-ramp to Park Avenue	C	D
7	State Park Drive Northern On-ramp to State Park Drive Off-ramp	C	E
8	State Park Drive Southern On-ramp to State Park Drive Northern On-ramp	C	E
9	Rio Del Mar Boulevard to State Park Drive Southern On-ramp	C	D
Not Applicable	Within Project Limits	C	E
Not Applicable	Corridor-Wide (upstream and downstream)	C	D

Source: Traffic Operations Analysis Report.

Environmental Consequences

Build Alternative

Temporary Construction Impacts

Temporary lane and street closures during construction could affect local access, parking, and circulation within the project corridor. Construction of the project would result in limited access to existing pedestrian and bicycle facilities within the project corridor during construction activities; however, short-term impacts on these facilities during construction would be minimized through the development and implementation of the Traffic Management Plan.

Temporary closures would be required at the State Park Drive southbound off-ramp and northbound on-ramp, the Park Avenue southbound and northbound off-ramps/on-ramps, and the Bay Avenue/Porter Street southbound and northbound off-ramps/on-ramps. Each ramp may be closed for a period of two to three months during construction; however, ramp closures would be staged so that successive off-ramps or on-ramps are not closed at the same time to minimize impacts on motorists. There would also be temporary overnight closures of either direction of State Route 1 for falsework erection/removal and removal of the existing overcrossing. The Capitola Avenue overcrossing would also be closed to traffic while the structure is under construction. During the construction working hours in the vicinity of the new Mar Vista Drive pedestrian and bicycle overcrossing, McGregor Drive would require one-way traffic control with temporary flagging.

Additionally, on-street parking near the intersection of Mar Vista Drive and McGregor Drive would need to be restricted for a period of six to eight months. However, no permanent parking impacts are expected. At Mar Vista Drive and McGregor Drive, street and sidewalk improvements may be temporarily restricted to pedestrian and bicycle travel; however, the project would result in a permanent beneficial effect by enabling pedestrian and bicycle travel via the new Mar Vista Drive pedestrian and bicycle overcrossing.

Temporary impacts related to access, circulation, and parking would be avoided and minimized as much as feasible through the development and implementation of a Traffic Management Plan (Standard Measure TR-1) during construction. The purpose of the Traffic Management Plan would be to identify suitable detours and traffic rerouting measures to reduce temporary impacts related to access, circulation, and parking during construction. The Traffic Management Plan would be developed during the design phase with participation from local agencies, transit and shuttle services, local communities, business associations, and affected drivers. Early and well-publicized announcements and other public information measures would be made to communicate road closures, impacts on pedestrian and bicycle facilities, detours, parking restrictions, the construction schedule, and other pertinent travel information. The public awareness campaign would help minimize confusion, inconvenience, and traffic congestion during construction. Goals of the Traffic Management Plan would include:

- Minimize nighttime construction in residential areas.
- Minimize daytime construction impacts on commercial and recreational areas.
- Implement a public outreach program to keep the public informed of the construction schedule and scheduled parking and roadway closures, including detour routes and, if available, alternative parking.
- In the event of temporary obstruction of any pedestrian walkways or bicycle paths, identify nearby alternate routes, including pedestrian routes that meet Americans with Disabilities Act requirements, as appropriate.
- Include an evaluation of potential impacts as a result of diverting traffic to alternate routes. The Traffic Management Plan shall include measures to minimize, avoid, and/or mitigate impacts on alternate routes, such as agreements with local agencies to provide enhanced infrastructure on arterial roads or intersections to deal with detoured traffic. The Traffic Management Plan may also provide for contracting with local agencies for traffic personnel, especially for special event traffic through or near the construction zone.
- Coordinate with transit and private shuttle services to plan for any rerouting and any necessary avoidance and/or minimization measures to be incorporated in the Traffic Management Plan.

Permanent Impacts

The project proposes bus-on-shoulder operations, which would be accommodated through the interchanges (off-ramp to on-ramp) by rebuilding or widening shoulders where shoulders are not currently wide enough for bus operation. By implementing bus-on-shoulder operations, the Build Alternative would enable buses to use the shoulder lane to avoid traffic and congestion and shorten travel time. The Build Alternative would include the provision of increased bus services from four buses per day to 16 buses per day on State Route 1 by 2045. This would result in a reduction of 310 vehicles per day on State Route 1 in each direction, which is roughly 0.5 percent of the mainline average traffic volume under the No-Build (No-Action) Alternative conditions.

Pedestrian and Bicycle Facilities

Implementation of the Build Alternative would result in long-term benefits to pedestrians and bicyclists by replacing the Capitola Avenue overcrossing with a structure containing improved pedestrian and bicycle facilities and building a new pedestrian and bicycle overcrossing at Mar Vista Drive. The newly built Capitola Avenue overcrossing structure would have a wider cross section with an increased pedestrian walkway width and would enable the addition of bike lanes. The added bike lanes would connect to existing Class 2 bike lanes on nearby segments of Capitola Avenue. This is expected to improve the Level of Service for all modes of transportation and reduce the level of stress for bicyclists. The proposed Mar Vista Drive overcrossing would be dedicated solely to bicyclists and pedestrians. Together, these two overcrossings would increase pedestrian and bicycle connectivity in this area of State Route 1. The new Capitola Avenue overcrossing would connect to the Class 2 bike lanes that currently exist on both sides of the existing Capitola Avenue overcrossing. The Mar Vista Drive overcrossing would connect bicycle and pedestrian users to the existing Class 2 bike lanes on Soquel Drive, which runs perpendicular to Mar Vista Drive to the north of State Route 1 and to the Class 2 bike lanes on McGregor Drive, which run parallel to the southern side of State Route 1 within the project corridor.

Opening Year (2025) Traffic Operations

Within the project limits, average weekday mainline traffic in the State Route 1 northbound and southbound directions under No-Build conditions is expected to grow between the existing year (2019) and the opening year (2025) by 4.5 percent and 4.7 percent, respectively. Average weekday on-ramp traffic in the State Route 1 northbound and southbound directions under No-Build conditions is expected to grow between the existing year (2019) and the opening year (2025) by 2.5 percent and 3.9 percent, respectively. Average weekday off-ramp traffic in the State Route 1 northbound and southbound directions under No-Build conditions is expected to grow between the existing year (2019) and the opening year (2025) by 2.2 percent and 2.4 percent, respectively.

The auxiliary lanes that would be added by the project are expected to induce additional mainline average demand of 390 vehicles/day in each direction, which is about 0.7 percent of the mainline average traffic volume under the opening year (2025) No-Build conditions. However, the bus service changes resulting from the project would avoid an average of 80 vehicles per day in each direction of travel under the 2025 Build conditions. This decrease in traffic is about 0.1 percent of the mainline average traffic volume.

A corridor-wide operational performance summary (including the freeway mainline segments within the project limits and upstream of the project limits) in terms of model volumes (in vehicles per hour), vehicle miles traveled, vehicle hours traveled, average speed (in miles per hour), and delay (in minutes per vehicle) is provided in Tables 2.10 through 2.13. When evaluating the model outputs against the criteria set for the Level of Service and average speed, the opening year (2025) No-Build scenario fails to achieve satisfactory freeway operational performance during the northbound morning and southbound evening peak periods. However, the opening year (2025) Build scenario would achieve satisfactory freeway operational performance in all directions of movement and time periods. Implementation of the opening year (2025) Build scenario is projected to result in a delay reduction of 2 minutes per vehicle in the morning peak period on northbound State Route 1 and the evening peak period on southbound State Route 1.

The project would also reduce vehicle hours traveled in the project corridor. The total reduction in vehicle hours traveled during peak periods attributable to the project is projected to be 904 vehicle hours per weekday in the opening year (2025). Tables 2.10 through 2.13 show the reductions in vehicle hours traveled and vehicle miles traveled attributable to the project for the project's opening year (2025).

Table 2.10 Summary of Corridor-Wide Operational Performance during Northbound Morning Peak Period, Opening Year (2025) No-Build versus Opening Year (2025) Build

Performance Measure	Opening Year (2025) No-Build	Opening Year (2025) Build
Volume (vehicles per hour)	3,397	3,394
Vehicle Miles Traveled	129,700	129,603
Vehicle Hours Traveled	2,942	2,576
Level of Service	E	D
Average Speed (miles per hour)	44	50
Delay (minutes per vehicle)	3	1

Source: Traffic Operations Analysis Report.

Table 2.11 Summary of Corridor-Wide Operational Performance during Northbound Evening Peak Period, Opening Year (2025) No-Build versus Opening Year (2025) Build

Performance Measure	Opening Year (2025) No-Build	Opening Year (2025) Build
Volume (vehicles per hour)	2,681	2,728
Vehicle Miles Traveled	106,809	108,681
Vehicle Hours Traveled	1,743	1,763
Level of Service	C	C
Average Speed (miles per hour)	61	62
Delay (minutes per vehicle)	0	0

Source: Traffic Operations Analysis Report.

Table 2.12 Summary of Corridor-Wide Operational Performance during Southbound Morning Peak Period, Opening Year (2025) No-Build versus Opening Year (2025) Build

Performance Measure	Opening Year (2025) No-Build	Opening Year (2025) Build
Volume (vehicles per hour)	3,218	3,268
Vehicle Miles Traveled	147,567	149,893
Vehicle Hours Traveled	2,586	2,489
Level of Service	C	C
Average Speed (miles per hour)	57	60
Delay (minutes per vehicle)	2	1

Source: Traffic Operations Analysis Report.

Table 2.13 Summary of Corridor-Wide Operational Performance during Southbound Evening Peak Period, Opening Year (2025) No-Build versus Opening Year (2025) Build

Performance Measure	Opening Year (2025) No-Build	Opening Year (2025) Build
Volume (vehicles per hour)	3,381	3,447
Vehicle Miles Traveled	148,598	151,523
Vehicle Hours Traveled	3,908	3,447
Level of Service	E	D
Average Speed (miles per hour)	38	44
Delay (minutes per vehicle)	6	4

Source: Traffic Operations Analysis Report.

Table 2.14 shows the Level of Service by State Route 1 mainline segment and time period under the opening year (2025) No-Build and Build scenarios in the northbound and southbound directions. In the northbound morning and southbound morning peak periods, the project would improve operating conditions locally, within the project limits, and corridor-wide. In the northbound evening peak period, the project would improve operating conditions mostly locally.

In the southbound evening peak period, the project improves the operating conditions on the mainline segments upstream to the project limits and in the entering mainline segment of the project limits while worsening the operating conditions the departing mainline segment of the project limits. This is because the project would eliminate an existing bottleneck within the project limits, resulting in the traffic service rate improving, and queues formed in the mainline segments upstream of the project limits would shorten. At the same time, the traffic inflow rate to the mainline segments downstream of the project limits would increase. If this results in the ratio of the volume to the capacity of the mainline segments downstream of the project limits exceeding 1.0, then a new bottleneck may be formed. In cases where there is an existing downstream bottleneck, the conditions in the project limits would worsen, although conditions farther upstream of the project limits would improve.

Regarding Table 2.14, see the Traffic Operations Analysis Report for all data for the corridor-wide mainline segments.

Table 2.14 Level of Service on State Route 1 by Mainline Segment and Time Period, Opening Year (2025) No-Build versus Opening Year (2025) Build

Mainline Segment	Direction	Opening Year (2025) No-Build Morning Peak Period Level of Service	Opening Year (2025) No-Build Evening Peak Period Level of Service	Opening Year (2025) Build Morning Peak Period Level of Service	Opening Year (2025) Build Evening Peak Period Level of Service
Rio Del Mar Boulevard to State Park Drive	Northbound	E	C	E	C
Rio Del Mar Boulevard to State Park Drive	Southbound	C	D	C	D
State Park Drive to Northbound/Southbound State Park Drive	Northbound	E	C	D	C
State Park Drive to Northbound/Southbound State Park Drive	Southbound	C	F	C	F
Northbound State Park Drive to Southbound State Park Drive	Northbound	E	C	D	C
Northbound State Park Drive to Southbound State Park Drive	Southbound	C	E	C	F
Southbound State Park Drive to Park Avenue	Northbound	E	C	C	B
Southbound State Park Drive to Park Avenue	Southbound	D	E	B	F

Mainline Segment	Direction	Opening Year (2025) No-Build Morning Peak Period Level of Service	Opening Year (2025) No-Build Evening Peak Period Level of Service	Opening Year (2025) Build Morning Peak Period Level of Service	Opening Year (2025) Build Evening Peak Period Level of Service
Park Avenue	Northbound	E	C	D	C
Park Avenue	Southbound	C	F	C	E
Park Avenue to Bay Avenue/ Porter Street (merge area)	Northbound	E	D	D	B
Park Avenue to Bay Avenue/ Porter Street (merge area)	Southbound	D	F	C	C
Park Avenue to Bay Avenue/Porter Street (diverge area)	Northbound	F	D	D	B
Park Avenue to Bay Avenue/Porter Street (diverge area)	Southbound	D	F	C	D
Bay Avenue/Porter Street	Northbound	E	C	E	C
Bay Avenue/Porter Street	Southbound	E	F	D	C
Bay Avenue/Porter Street to 41st Avenue	Northbound	D	C	D	C
Bay Avenue/Porter Street to 41st Avenue	Southbound	D	F	C	C
Within Project Limits	Northbound	E	C	D	C
Within Project Limits	Southbound	D	E	C	E
Corridor-Wide (upstream and downstream)	Northbound	E	C	D	C
Corridor-Wide (upstream and downstream)	Southbound	C	E	C	D

Source: Traffic Operations Analysis Report.

Horizon Year (2045) Traffic Operations

Within the project limits, average weekday mainline traffic in the State Route 1 northbound and southbound directions under the No-Build conditions is expected to grow between the existing year (2019) and the horizon year (2045) by 17.6 percent and 19.1 percent, respectively. Average weekday on-ramp traffic in the State Route 1 northbound and southbound directions under No-Build conditions is expected to grow between the existing year (2019) and the horizon year (2045) by 9.5 percent and 14.6 percent, respectively. Average weekday off-ramp traffic in the State Route 1 northbound and southbound directions under No-Build conditions is expected to grow between the existing year (2019) and horizon year (2045) by 8.2 percent and 9.8 percent, respectively.

The auxiliary lanes that would be added as part of the project are expected to induce additional mainline average demand of 435 vehicles per day on average in each direction, which is about 0.7 percent of the mainline average traffic volume under the horizon year (2045) No-Build conditions. However, the bus service changes resulting from the project would avoid 310 vehicles per day in each direction of travel under the 2045 Build conditions. This is about 0.5 percent of the mainline average traffic volume under the 2045 No-Build conditions.

A corridor-wide operational performance summary (including the freeway mainline segments within the project limits and upstream of the project limits) in terms of model volumes (in vehicles per hour), vehicle miles traveled, vehicle hours traveled, average speed (in miles per hour), and delay (in minutes per vehicle) is provided in Tables 2.15 through 2.18. When evaluating the model outputs against the criteria set for the Level of Service and average speed, the horizon year (2045) No-Build scenario fails to meet the freeway operational performance (Level of Service, average speed) criteria during the northbound morning, southbound morning, and southbound evening peak periods. However, the horizon year (2045) Build scenario would meet the freeway operational performance (Level of Service, average speed) criteria in all directions of movement and time periods except the southbound evening peak period. Implementation of the horizon year (2045) Build scenario is projected to result in the following delay reductions:

- One minute per vehicle in the morning peak period on northbound State Route 1.
- Six minutes per vehicle in the morning peak period on southbound State Route 1.
- Two minutes per vehicle in the evening peak period on southbound State Route 1.

The project also benefits road users by reducing the vehicle hours traveled, which are substantial in the southbound morning peak period. The total reduction in vehicle hours traveled during peak periods attributable to the project is projected to be 2,924 vehicle hours per weekday in the horizon year (2045). Tables 2.15 through 2.18 show the reductions in vehicle hours traveled and vehicle miles traveled attributable to the project for the project's horizon year (2045).

Table 2.15 Summary of Corridor-Wide Operational Performance during Northbound Morning Peak Period, Horizon Year (2045) No-Build versus Horizon Year (2045) Build

Performance Measure	Horizon Year (2045) No-Build	Horizon Year (2045) Build
Volume (vehicles per hour)	3,330	3,317
Vehicle Miles Traveled	127,152	126,633
Vehicle Hours Traveled	3,092	2,599
Level of Service	E	D
Average Speed (miles per hour)	41	49
Delay (minutes per vehicle)	3	2

Source: Traffic Operations Analysis Report.

Table 2.16 Summary of Corridor-Wide Operational Performance during Northbound Evening Peak Period, Horizon Year (2045) No-Build versus Horizon Year (2045) Build

Performance Measure	Horizon Year (2045) No-Build	Horizon Year (2045) Build
Volume (vehicles per hour)	3,151	3,186
Vehicle Miles Traveled	125,519	126,945
Vehicle Hours Traveled	2,299	2,296
Density	29.0	26.0
Level of Service	D	D
Average Speed (miles per hour)	55	55
Delay (minutes per vehicle)	1	1

Source: Traffic Operations Analysis Report.

Table 2.17 Summary of Corridor-Wide Operational Performance during Southbound Morning Peak Period, Horizon Year (2045) No-Build versus Horizon Year (2045) Build

Performance Measure	Horizon Year (2045) No-Build	Horizon Year (2045) Build
Volume (vehicles per hour)	3,456	3,655
Vehicle Miles Traveled	158,491	167,615
Vehicle Hours Traveled	5,113	2,935
Density	47.5	25.5
Level of Service	F	C
Average Speed (miles per hour)	31	57
Delay (minutes per vehicle)	8	2

Source: Traffic Operations Analysis Report.

Table 2.18 Summary of Corridor-Wide Operational Performance during Southbound Evening Peak Period, Horizon Year (2045) No-Build versus Horizon Year (2045) Build

Performance Measure	Horizon Year (2045) No-Build	Horizon Year (2045) Build
Volume (vehicles per hour)	3,508	3,708
Vehicle Miles Traveled	154,199	162,989
Vehicle Hours Traveled	7,989	7,739
Density	69.7	64.5
Level of Service	F	F
Average Speed (miles per hour)	19	21
Delay (minutes per vehicle)	17	15

Source: Traffic Operations Analysis Report.

Table 2.19 shows the Level of Service by State Route 1 mainline segment and time period under the horizon year (2045) No-Build and Build scenarios in the northbound and southbound directions, respectively. In the northbound morning, northbound evening, and southbound morning peak periods, the project would improve operating conditions locally, within the project limits, and corridor-wide. In the southbound evening peak period, the project would improve the operating conditions on the mainline segments upstream of the project limits while worsening the operating conditions in most parts of the project limits.

Regarding Table 2.19, see the Traffic Operations Analysis Report for all data for the corridor-wide mainline segments.

Table 2.19 Level of Service on State Route 1 by Mainline Segment and Time Period, Horizon Year (2045) No-Build versus Horizon Year (2045) Build

Mainline Segment	Direction	Horizon Year (2045) No-Build Morning Peak Period Level of Service	Horizon Year (2045) No-Build Evening Peak Period Level of Service	Horizon Year (2045) Build Morning Peak Period Level of Service	Horizon Year (2045) Build Evening Peak Period Level of Service
Rio Del Mar Boulevard to State Park Drive	Northbound	E	D	E	D
Rio Del Mar Boulevard to State Park Drive	Southbound	D	E	D	E
State Park Drive to Northbound/Southbound State Park Drive	Northbound	E	C	D	C
State Park Drive to Northbound/Southbound State Park Drive	Southbound	C	F	D	F

Mainline Segment	Direction	Horizon Year (2045) No-Build Morning Peak Period Level of Service	Horizon Year (2045) No-Build Evening Peak Period Level of Service	Horizon Year (2045) Build Morning Peak Period Level of Service	Horizon Year (2045) Build Evening Peak Period Level of Service
Northbound State Park Drive to Southbound State Park Drive	Northbound	E	C	D	C
Northbound State Park Drive to Southbound State Park Drive	Southbound	D	F	E	F
Southbound State Park Drive to Park Avenue	Northbound	E	D	C	C
Southbound State Park Drive to Park Avenue	Southbound	D	E	C	F
Park Avenue	Northbound	E	D	E	C
Park Avenue	Southbound	D	F	D	F
Park Avenue to Bay Avenue/ Porter Street (merge area)	Northbound	E	D	D	C
Park Avenue to Bay Avenue/ Porter Street (merge area)	Southbound	E	F	C	F
Park Avenue to Bay Avenue/Porter Street (diverge area)	Northbound	E	D	E	C
Park Avenue to Bay Avenue/Porter Street (diverge area)	Southbound	E	F	C	F
Bay Avenue/Porter Street	Northbound	E	D	F	D
Bay Avenue/Porter Street	Southbound	F	F	D	F
Bay Avenue/Porter Street to 41st Avenue	Northbound	D	C	D	C
Bay Avenue/Porter Street to 41st Avenue	Southbound	F	F	D	F
Within Project Limits	Northbound	E	D	D	C
Within Project Limits	Southbound	D	F	D	F
Corridor-Wide (upstream and downstream)	Northbound	E	D	D	D
Corridor-Wide (upstream and downstream)	Southbound	F	F	C	F

Source: Traffic Operations Analysis Report.

Conclusion

Based on the above analysis, the project would result in the following:

- **Shift traffic from auto to transit mode:** Within the project limits, the project is expected to have a reduction of 310 vehicles per day on average on State Route 1 in each direction as a result of auto drivers being attracted to the improved transit service provided by bus-on-shoulder operations. This reduction is about 0.5 percent of the mainline average traffic volume under 2045 No-Build conditions.
- **Improves freeway Level of Service and average speed**: Due to additional freeway capacity within the project limits, the freeway average density over the freeway mainline segments within the project limits and upstream of the project limits would decrease. Due to fewer bottlenecks under the Build condition, densities on the State Route 1 segments are expected to become more uniform, and the Level of Service and average speed are expected to improve. Level of Service D or an average speed of 45 miles per hour under the peak period were used as criteria to evaluate the project. These criteria were met under all scenarios except for the horizon year (2045) Build southbound evening.
- **Nominally increased demand**: Added capacity on the freeway segment included in the project corridor is expected to induce additional demand up to 435 vehicles per day on average in each direction by the project's horizon year (2045) Build conditions, which is about 0.7 percent of the mainline average traffic volume under No-Build conditions. This increase in demand would largely be offset by reductions in vehicle miles traveled, resulting from bus-on-shoulder operations. The added transit services resulting from project implementation would result in reducing vehicle traffic by 310 vehicles per day in the project corridor under the horizon year (2045) Build conditions.
- **Improves Level of Service associated with the Capitola Avenue overcrossing**: The newly built Capitola Avenue overcrossing structure with a standard vertical clearance and wider cross section is expected to improve the Level of Service for all modes of transportation and reduce the level of stress for bicyclists and pedestrians on Capitola Avenue.
- **Improves pedestrian and bicycle connectivity near Mar Vista Drive**: The new pedestrian and bicycle overcrossing at Mar Vista Drive would provide additional access for pedestrians and bicyclists near Mar Vista Drive and would provide better connectivity to each side of State Route 1.

No-Build (No-Action) Alternative

Access, Circulation, and Parking

Under the No-Build (No-Action) Alternative, average weekday mainline traffic in the State Route 1 northbound and southbound directions and within the project limits is expected to grow between the existing year (2019) and the opening year (2025) by 4.5 percent and 4.7 percent, respectively, and between the existing year (2019) and the horizon year (2045) by 17.6 percent and 19.1 percent, respectively. Average weekday on-ramp traffic in the State Route 1 northbound and southbound directions under No-Build conditions is expected to grow between the existing year (2019) and the opening year (2025) by 2.5 percent and 3.9 percent, respectively, and between the existing year (2019) and the horizon year (2045) by 9.5 percent and 14.6 percent, respectively. Average weekday off-ramp traffic in the State Route 1 northbound and southbound directions under No-Build conditions is expected to grow between the existing year (2019) and the opening year (2025) by 2.2 percent and 2.4 percent, respectively, and between the existing year (2019) and horizon year (2045) by 8.2 percent and 9.8 percent, respectively.

As shown in the above tables, conditions under the No-Build (No-Action) Alternative would continue to worsen under the design year (2025) and horizon year (2045) scenarios. In the peak directions of travel, average delay and Level of Service would be worse under the No-Build (No-Action) Alternative, and average speeds would be slower. Additionally, existing circulation and access deficiencies would persist or worsen under the No-Build (No-Action) Alternative. Under No-Build conditions, by the year 2045, access to various facilities within the study intersections would be adversely affected during both the morning and evening peak periods.

Transit

The No-Build (No-Action) Alternative would not result in direct impacts on existing transit services. Improvements to transit services within the project corridor would not occur. Under the No-Build (No-Action) Alternative, the existing frequency and speed of transit services would not be increased or improved.

Pedestrian and Bicycle Facilities

The No-Build (No-Action) Alternative would not result in any direct impacts on existing pedestrian or bicycle facilities; however, it also would not enhance existing pedestrian or bicycle facilities within the project corridor. No pedestrian or bicycle facilities would be added to the Capitola Avenue overcrossing, and the Mar Vista Drive pedestrian and bicycle overcrossing would not be built.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures would be required.

2.1.4 Visual/Aesthetics

Regulatory Setting

The National Environmental Policy Act of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings. (42 U.S. Code 4331[b][2]) To further emphasize this point, the Federal Highway Administration, in its implementation of NEPA (23 U.S. Code 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." (Public Resources Code 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.

Affected Environment

Information in this section is from the Visual Impact Assessment prepared for the project. (ICF 2020)

Landscape Units

The project corridor was divided into a series of "outdoor rooms" or landscape units. Each landscape unit has its own visual character and visual quality. Landscape units are typically defined by the limits of a particular viewshed. The viewshed for the project includes two landscape units—the Aptos Landscape Unit and the Capitola Landscape Unit.

The Aptos Landscape Unit, as shown in Figure 2-5, is along the corridor between the State Park Drive interchange and the Capitola Avenue overcrossing. Existing vegetation forms the dominant visual character of this unit. The vegetation is especially dense in some areas where creeks cross the corridor, at Old Dairy Gulch, Borregas Creek, Potbelly Creek and Nobel Creek. Mature stands of evergreen trees are present, with pines and eucalyptus being the most distinctive. At a few locations, nearby development is seen within this unit, mostly along the southbound lanes south of State Route 1, especially along McGregor Drive. Land uses include parks, homes, commercial and industrial properties, and a church.

Key viewpoints Aptos 1, Aptos 2, and Aptos 3 are used to illustrate the view of State Route 1 (Aptos 1 and Aptos 3 from McGregor Drive) and from State Route 1 (Aptos 2 from southbound State Route 1 near the Mar Vista Drive undercrossing), as shown in Figure 2-5.

The Capitola Landscape Unit, as shown in Figure 2-6, is along the corridor between the Capitola Avenue overcrossing and the Bay Avenue/Porter Street interchange. Although this unit is somewhat more developed than the Aptos Landscape Unit, it is still dominated by the vegetation along State Route 1, which defines its visual character. As northbound traffic approaches the Bay Avenue/Porter Street interchange, the noticeable downhill grade gives a wider, slightly panoramic, and longer view of buildings (mostly roofs), with the visual character becoming more developed. This visible development is mostly commercial. Key viewpoint Capitola 1 is used to illustrate the view of State Route 1 from the Capitola Avenue overcrossing, as shown in Figure 2-6, but this view is also indicative of the view from State Route 1 because of its panoramic nature.

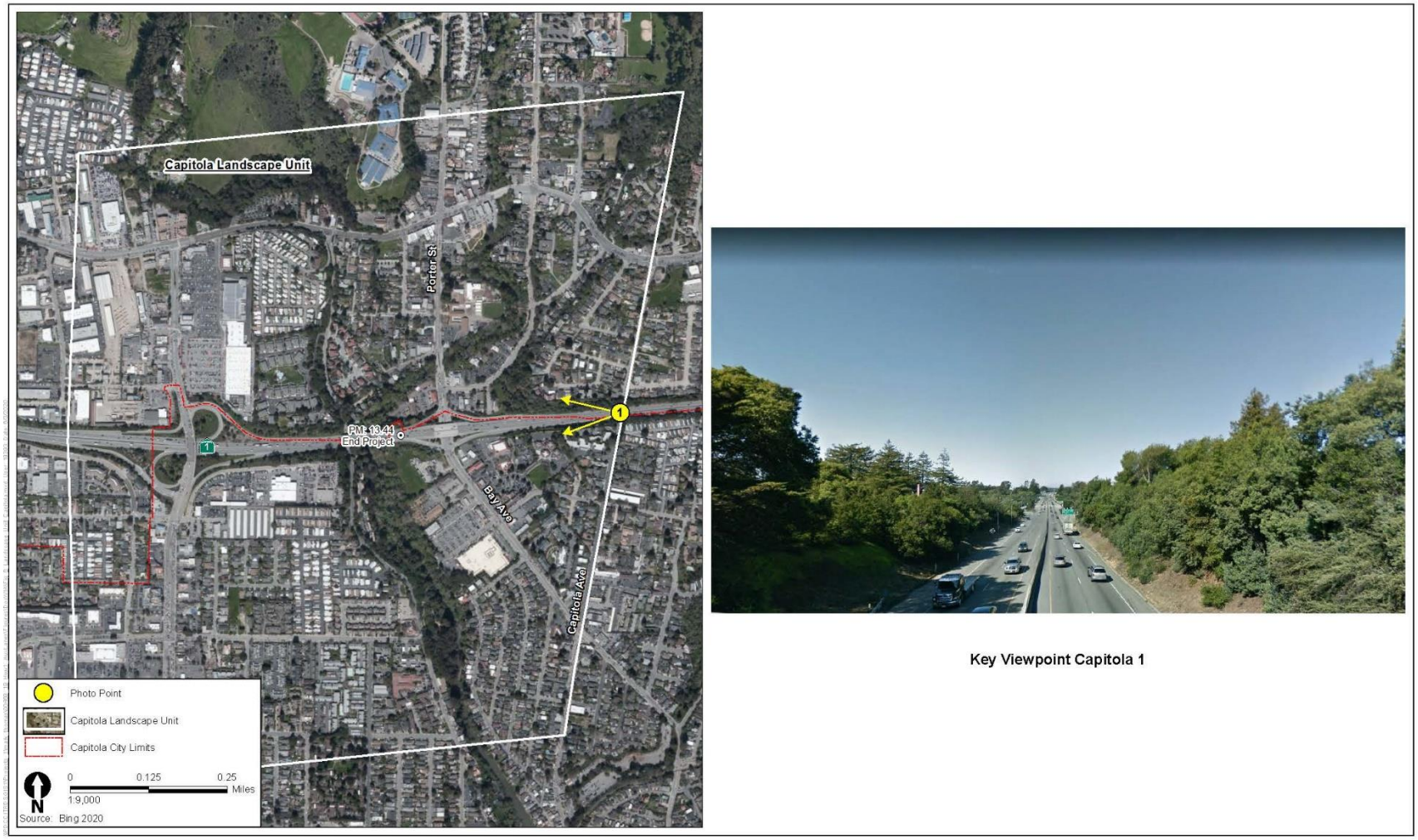
Figure 2-5 Aptos Landscape Unit

Key Viewpoint Aptos 1

Key Viewpoint Aptos 2

Key Viewpoint Aptos 3

Figure 2-6 Capitola Landscape Unit



Existing Visual Resources

Visual resources of the project setting are defined and identified by assessing the visual character and visual quality in the project corridor.

Aptos Landscape Unit

In the Aptos Landscape Unit, the overall form is linear, with the existing vegetation forming a continuous enclosing edge on both sides and forming the dominant visual character of the landscape unit. The density and height of the trees and other vegetation usually screen the nearby development, especially on the north side of State Route 1. On the south side, the vegetation allows some views between State Route 1 and the nearby development, but vegetation close to the roadway still dominates. Because most of the vegetation is evergreen, the dominant color of the corridor is dark green, with a gray linear contrasting element representing State Route 1.

No nearby hillsides or ridgelines are visible due to the heavy vegetation on the north side of State Route 1, and there are no hillsides or ridgelines to the south, only land gently sloping southward toward the Pacific Ocean. Therefore, hillsides and ridgelines do not play a major role in the visual character of the Landscape Unit. On the south side of State Route 1, portions of the Aptos Landscape Unit have visible development, especially along the McGregor Drive and Kennedy Drive frontage roads, although they are partially obscured by the shrubs and small trees on both sides of the right-of-way fence. The development is primarily residential along McGregor Drive and commercial/industrial along Kennedy Drive.

Visible freeway elements in the Aptos Landscape Unit include the freeway itself, on-ramps and off-ramps at State Park Drive and Park Avenue, overcrossings at State Park Drive and Capitola Avenue (visible from northbound lanes only), and freeway signage. The State Park Drive overcrossing is visible within the Aptos Landscape Unit when driving south on State Route 1, and it appears relatively wide and streamlined because of the wide right-of-way that accommodates the southbound on-ramp, and because the freeway sign on the overcrossing is compatible in size with the structure. In contrast, the Capitola Avenue overcrossing appears narrow and low due to the enclosing topography and dense vegetation, the low clearance under the bridge, and the large freeway signs on the bridge. These signs are taller than the overcrossing and represent about a third of the horizontal view of the bridge for northbound traffic. These overcrossings create focal points at either end of the Aptos Landscape Unit.

The dense trees and other vegetation dominating the corridor in the Aptos Landscape Unit create a vivid visual experience for travelers. This is especially noticeable on the north side of the corridor, but even where the vegetation is sparser on the south side along the McGregor Drive and Kennedy Drive frontage roads, it is still the dominant element in the corridor.

Freeway elements, such as overcrossings and signs, create opposing lines and forms in the Aptos Landscape Unit, encroaching on the visual quality in some areas. This reduces the unity and intactness to a small degree. However, because of the dominance of the vegetation throughout, visual quality remains high.

Capitola Landscape Unit

The Capitola Landscape Unit is characterized by the dominating dense vegetation on enclosing side slopes, similar to the Aptos Landscape Unit, transitioning to a more suburban development on flat terrain near the west end of the landscape unit. As the western portion of the Capitola Landscape Unit transitions to a more open vista, green vegetation becomes interspersed with multiple colors of suburban development. Because of the different colors and textures along the edges of the roadway and the wideness of State Route 1 at this location, the dominant element is the wide, gray, smooth-textured State Route 1 itself.

The development pattern in this area is generally small-scale suburban buildings of one-story and two-story structures that are mostly commercial. Because of the elevation of State Route 1 over the Bay Avenue/Porter Street interchange, the views of development are mostly at the rooftop level or higher. Views of distant ridgelines to the north (about 1 mile or more from the corridor) are only visible from the area near the Bay Avenue/Porter Street interchange and do not play a major role in the visual character.

Visible freeway elements in the Capitola Landscape Unit include the freeway itself, on-ramps and off-ramps at the Bay Avenue/Porter Street interchange, the Capitola Avenue overcrossing (from southbound lanes), and freeway signage.

The vegetation and mature trees continue to result in a vivid visual experience in the Capitola Landscape Unit, decreasing toward the western end where State Route 1 widens and starts to dominate the view. The development in the western end of the Capitola Landscape Unit lowers unity and intactness. This results in moderate visual quality for this landscape unit.

Viewers and Viewer Response

The population affected by the project is composed of viewers. Viewers are people whose views of the landscape may be altered by the proposed project—either because the landscape itself has changed or their perception of the landscape has changed. There are two major types of viewer groups for freeway projects—freeway neighbors and freeway users. Each viewer group has its own particular level of viewer exposure and viewer sensitivity, resulting in distinct and predictable visual concerns for each group, which helps to predict their responses to visual changes. A summary of each viewer group and their viewer response is presented below.

- **Freeway Neighbors (Views to State Route 1)**
  - **Residential Viewers**—High Viewer Response. Few residential viewers can see State Route 1 from their properties, where it is in the middle ground of their views. The duration of their views varies from briefly to several hours. They may be preoccupied with other activities or observant of their surroundings. They typically have a strong awareness of the visual environment and high local aesthetic values.
  - **Recreational Viewers**—High Viewer Response. State Route 1 is in the foreground to the middle ground of the recreational viewers' view. The number of viewers ranges from just a few to about 50 on any given day. The duration of their views varies with their activity, from brief to multiple hours. They can be preoccupied or observant, depending on their activity. They typically have strong visual awareness and high local aesthetic values.
  - **Religious Viewers**—Moderate Viewer Response. There is one church with views of State Route 1, which is in the middle ground to the background of the view. There can be over 100 viewers or more at any one time (the church's parking lot holds about 100 cars). The duration of their views can be brief or a few minutes. They are generally preoccupied with their activity and have moderate awareness of their surroundings. They typically have high local aesthetic values.
  - **Commercial Viewers**—Moderate Viewer Response. State Route 1 is in the middle ground of the views from commercial/industrial viewers, who generally number in the 10s or 20s at any one property at any one time. Their views of State Route 1 are usually brief to a few minutes. They are typically preoccupied with their activities, with their focus on business rather than the freeway. They typically have high local aesthetic values.
  - **Local Street Viewers**—Moderate Viewer Response. State Route 1 is in the foreground or middle ground of the hundreds of local street viewers in any one day. Their view of State Route 1 is usually brief, but up to a few minutes from frontage roads. These viewers are typically preoccupied with their activity and focused on the local street, though passengers, bicyclists, and pedestrians may be more observant of their surroundings with a wider focus. They typically have high local aesthetic values.
- **Freeway Users (Views from State Route 1)**
  - **Daily Commuter Viewers**—High Viewer Response. For daily commuters, the view from State Route 1 is generally in the foreground to the middle ground, with heavy vegetation usually screening out background views. There are thousands of daily commuters a day. The duration of their views is brief at any one location but could be several minutes over the entirety of the corridor. Drivers are usually

preoccupied with driving and specific in their focus on the road, while passengers are generally observant of the surroundings with a more general focus. Most of these viewers are local, so they typically have high local aesthetic values.

- **Tourist Viewers**—High Viewer Response. For tourist viewers, the view of State Route 1 is the same as for daily commuters. State Route 1 carries a high amount of tourist traffic, probably in the hundreds per day. The duration of their views is brief at any one location but could be several minutes over the entirety of the corridor. Like the commuter viewers, tourist viewer drivers are usually preoccupied with driving and specific in their focus on the road; passengers are generally observant of the surroundings with a more general focus. Most of these viewers are not local, but they have high expectations for the view.
- **Transit Viewers**—High Viewer Response. For transit viewers, the view of State Route 1 is the same as for daily commuters. State Route 1 currently only has a few regional buses that use State Route 1 (though more are expected in the future because of the project), so viewers are likely less than 100 per day. The duration of their views is brief at any one location but could be several minutes over the entirety of the corridor. Like passengers in the daily commuter and tourist viewer groups, they are generally observant of the surroundings with a more general focus. They may be local or nonlocal, so they would average out to have moderate local aesthetic values.

Environmental Consequences

Build Alternative

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. These impacts can be beneficial or detrimental. A generalized Federal Highway Administration Visual Impact Assessment process is illustrated in the following diagram:

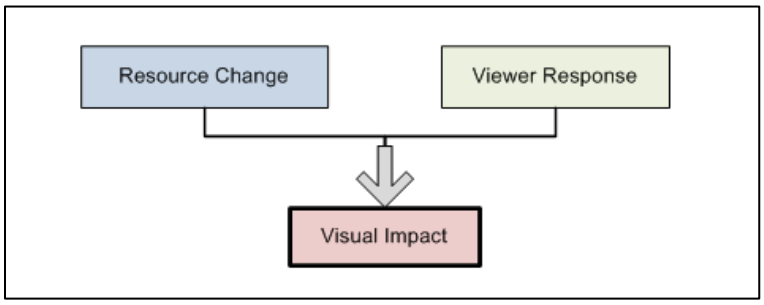


Table 2.20 provides a reference for determining levels of visual impact by combining resource change and viewer response.

Table 2.20 Visual Impact Ratings Using Viewer Response and Resource Change (Visual Quality Change)

Visual Change Category	Low Viewer Response	Moderate-Low Viewer Response	Moderate Viewer Response	Moderate-High Viewer Response	High Viewer Response
Low Resource Change (Visual Quality Change)	Low	Moderate-Low	Moderate-Low	Moderate	Moderate
Moderate-Low Resource Change (Visual Quality Change)	Moderate-Low	Moderate-Low	Moderate	Moderate	Moderate-High
Moderate Resource Change (Visual Quality Change)	Moderate-Low	Moderate	Moderate	Moderate-High	Moderate-High
Moderate-High Resource Change (Visual Quality Change)	Moderate	Moderate	Moderate-High	Moderate-High	High
High Resource Change (Visual Quality Change)	Moderate	Moderate-High	Moderate-High	High	High

Aptos Landscape Unit

Aptos Key Viewpoint 1

Figure 2-7 shows the existing and proposed project conditions at Aptos Key Viewpoint 1. At the Aptos Key Viewpoint 1, there would be a soundwall along the entire north side of McGregor Drive, blocking the view of State Route 1 and removing all trees and other vegetation. Large trees and shrubs could not be accommodated in the narrow strip between the soundwall and the edge of the roadway for safety purposes, but it is assumed that clinging vines would be planted to add texture and color to the soundwall.

Figure 2-7 Aptos Key Viewpoint 1, Existing View, and Proposed Project Conditions—From McGregor Drive at Margaret Avenue Looking Northwest

The glimpses of State Route 1 in the middle ground would be replaced with the hard edge of the soundwall, resulting in a much more enclosed character. Only the highest trees or hillsides on the north side of State Route 1 would remain visible. The foreground would consist mostly of roadway paving for the two streets, but there would be less contrast with the edge of the viewpoint because of the loss of vegetation. The soundwall would dominate the overall visual character. The dominant colors would be shades of gray with accents of green (which may become more contrasting as the clinging vines age). There would be less texture, though, with growth, this could start to be coarser, contrasting with the roadways.

The existing visual quality of this viewpoint is moderate, with moderate-low vividness, moderate intactness, and moderate unity. Removing vegetation and adding the soundwall would reduce the visual quality of the project area to moderate-low. The project would result in a similar lack of vividness as the existing condition. Removing vegetation would reduce intactness to moderate-low. Unity would remain moderate with McGregor Road and the soundwall providing unifying elements, interrupted by the diagonally intersecting Margaret Avenue. The overall visual quality change would be moderate-low (see Table 2.20).

Overall, viewer exposure to this viewpoint would be moderate-high, with the State Route 1 facilities being in the foreground and middle ground, the number of viewers being about 100 or more per day, and the duration of their views varying from a few minutes to a few hours. Viewer sensitivity is also moderate-high, with observant viewers often focused on the view, and high local values, indicated by the number of policies and regulations related to aesthetics and visual resources and the degree to which the viewers are locals.

With the moderate-low visual quality reduction and moderate-high viewer response, the visual impact at the Aptos Key Viewpoint 1 would be moderate.

Aptos Key Viewpoint 2

Figure 2-8 shows the existing and proposed project conditions at Aptos Key Viewpoint 2. At the Aptos Key Viewpoint 2, the center median would be widened, with a concrete barrier separating the southbound and northbound lanes and a soundwall along each side. The soundwalls would create a solid barrier blocking the views of nearby land uses. Many of the existing trees and vegetation would be removed to allow the construction of the soundwalls and their foundations. Smaller vegetation would replace this vegetation, with only the trees in the neighborhood beyond McGregor Drive remaining visible. In the distance, the new Mar Vista Drive pedestrian and bicycle overcrossing would be visible.

Figure 2-8 Aptos Key Viewpoint 2, Existing View and Proposed Project Conditions—From State Route 1 Near Mar Vista Drive Looking Southeast

The view with the project would include the State Route 1 southbound and northbound lanes in the foreground, middle ground, and background, with soundwalls on the south side and a mostly intact border of mature vegetation on the north side. The concrete barrier would create a solid linear line between the southbound and northbound lanes. The overall visual character would be dominated by the relatively straight lines represented by the increased freeway lanes, the center divider, and the soundwalls, with much less contrast from vegetation. The dominant color would be gray, and there would be less textural relief, although the new highway plantings and the soundwall texture would create some visual interest along the edges of the viewpoint.

The existing visual quality of this viewpoint is moderate-high, with moderate vividness, moderate-high intactness, and high unity. With the removal of the vegetation and the addition of the soundwalls and pedestrian and bicycle overcrossing, the visual quality of the landscape unit with the proposed project would be reduced to moderate. The condition with the proposed project would maintain vividness at moderate. Intactness would be reduced to moderate due to the removal of vegetation. Unity would be reduced from high to moderate-high with the strong horizontal unifying elements of the freeway and soundwalls. The overall visual quality change would be moderate. Overall, viewer exposure to this viewpoint would be moderate-high, with the State Route 1 facilities and vegetative border in the foreground, middle ground, and background. The number of viewers, drivers, and passengers would be high. The duration of their view would be moderate-low even in heavy congestion because the view at this location would only last a few minutes. Viewer sensitivity would also be moderate-high, with the act of driving being somewhat preoccupying, but passengers would have plenty of time to see the visual environment. Moderate-high local values are indicated by the number of policies and regulations related to aesthetics and the viewers being a mix of locals and nonlocals.

With moderate visual quality reduction and moderate-high viewer response, the visual impact of the proposed project at the Aptos Key Viewpoint 2 would be moderate-high.

Aptos Key Viewpoint 3

Figure 2-9 shows the existing and proposed project conditions at Aptos Key Viewpoint 3. At the Aptos Key Viewpoint 3, there would be a rising ramp to the Mar Vista Drive pedestrian and bicycle overcrossing, including a retaining wall and railings. A soundwall along the entire north side of the pedestrian ramp would block the view of State Route 1. Trees would be removed in the foreground and replaced by clinging vines on the soundwall. The only trees that would be visible above the soundwall would be from the north side of State Route 1.

Figure 2-9 Aptos Key Viewpoint 3, Existing View and Proposed Project Conditions—from McGregor Drive at Mar Vista Drive looking northeast.

The hard edge of the pedestrian and bicycle ramp and soundwall would replace the glimpses of State Route 1 in the middle ground, which would produce a much more open view of the sky. Only the highest trees or hillsides on the north side of State Route 1 would be visible. The foreground would consist mostly of hard surfaces, roadway paving, a retaining wall, and a soundwall. The contrast between the soft surface represented by the pocket park side of McGregor Drive and the hard surfaces on the State Route 1 side would be dramatic. The pedestrian and bicycle ramp structure would dominate the overall visual character. The scale of the pedestrian and bicycle ramp and soundwall would now dominate the view.

The existing visual quality of the viewpoint is moderate, with moderate-low vividness, moderate intactness, and moderate unity. Removing vegetation and adding the pedestrian and bicycle ramp and soundwall would reduce the visual quality of the viewpoint with the proposed project to moderate-low. The vividness with the project would be moderate-high because the textured retaining wall would provide a focal point for the view. Intactness would be reduced to low, with the combined retaining wall and soundwall encroaching on the view. Unity would remain moderate, with McGregor Drive and the retaining wall of the pedestrian and bicycle ramp and soundwall providing unifying elements, but contrasting with the south side of McGregor Drive. The overall visual quality change would be low.

Overall, viewer exposure to the viewpoint would be moderate-high, with the State Route 1 facilities being in the foreground and middle ground, the number of viewers being about 100 or more per day, and the duration of their views varying from a few minutes to a few hours. Viewer sensitivity would also be moderate-high, due to the presence of observant viewers, including many locals, who are focused on the view and high local values indicated by the number of policies and regulations related to aesthetics and visual resources.

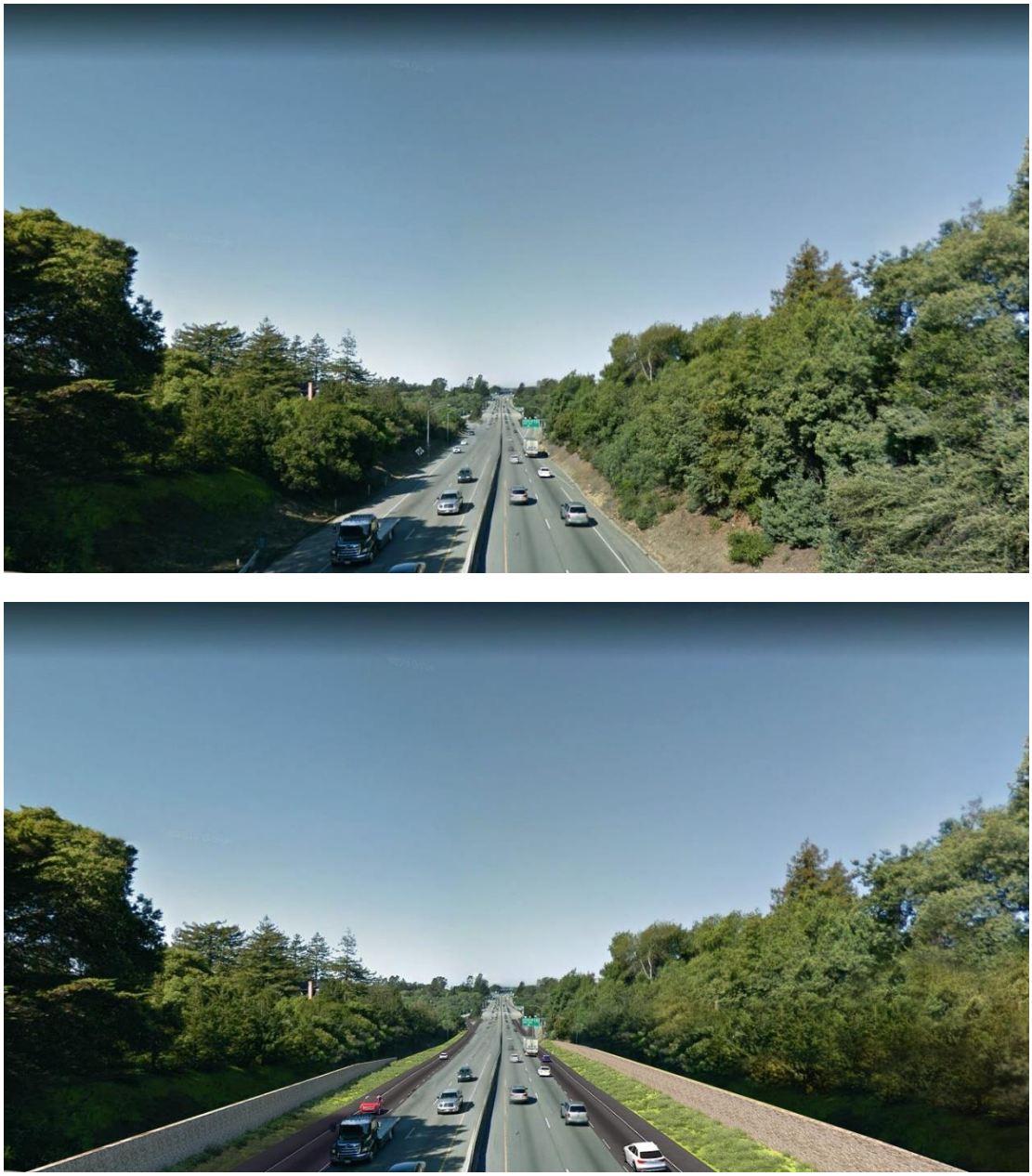
With a low visual quality reduction and moderate-high viewer response, the visual impact at the Aptos Key Viewpoint 3 would be moderate.

Capitola Landscape Unit

Capitola Key Viewpoint 1

Figure 2-10 shows the existing and proposed project conditions at Capitola Key Viewpoint 1. At the Capitola Key Viewpoint 1, State Route 1 would appear somewhat wider and more dominant, with the textured retaining wall on the north side extending to the gore point of the Bay Avenue/Porter Street northbound off-ramp and about halfway to the merge point for the southbound on-ramp. There would also be a substantial loss of vegetation near State Route 1, replaced by low-growing plants.

Figure 2-10 Capitola Key Viewpoint 1: Existing View and Proposed Project Conditions From Capitola Avenue Overcrossing of State Route 1 Looking West



The existing view is a panoramic overlook of the State Route 1 corridor, but State Route 1 has equal dominance with the reduced vegetated hillsides on both sides in the existing view. With the project, State Route 1 would have more prominence in the view due to the new retaining wall and the loss of roadside vegetation. The Bay Avenue/Porter Street northbound off-ramp and southbound on-ramp would also be more visible with the reduction of roadside vegetation. The foreground and middle ground would be more dominant in the view and would not blend as smoothly with the background (which is outside the project limits). The overall visual character would be one of the shared dominance of the gray State Route 1 and the green hillsides. The dominant colors would be green (vegetation) and contrasting gray (pavement). The smooth texture of State Route 1 would contrast with the coarse texture of the retaining wall, new roadside plantings, and to a lesser extent, the more distant vegetation.

The existing visual quality of the viewpoint is high, with high vividness, moderate-high intactness, and high unity. Removing vegetation and adding hard surfaces would reduce the visual quality of the viewpoint with the proposed project to moderate-high. The project would reduce vividness to moderate-high. The increased visibility of pavement and the retaining wall on State Route 1 would reduce intactness to moderate. The project would also reduce unity to moderate-high with some overall coherence. The overall visual quality change would be moderate.

Overall, viewer exposure to the viewpoint would be moderate-high, with State Route 1 in the foreground, middle ground, and background. There would be a high number of viewers, including in vehicles, on bicycles, and walking. There would be a varying duration of views, from a few moments for drivers, passengers, and bicyclists, to several minutes for pedestrians. Viewer sensitivity would also be moderate-high, with drivers being somewhat preoccupied but passengers, bicyclists, and pedestrians having more time to see the view. High viewer sensitivity is further indicated by the number of policies and regulations related to aesthetics in Capitola and the presence of mostly local viewers.

With a moderate visual quality reduction and moderate-high viewer response, the visual impact at the Capitola Key Viewpoint 1 would be moderate-high.

Summary of Visual Impacts

Table 2.21 provides the findings from each viewpoint's analysis, summarizing the expected change to the visual resource, the expected viewer response to that change, and the overall expected visual impact.

Table 2.21 Summary of Expected Visual Impacts

Key Viewpoint	Expected Change to Visual Quality	Expected Viewer Response	Expected Visual Impact
Aptos 1	Moderate-low	Moderate-high	Moderate
Aptos 2	Moderate	Moderate-high	Moderate-high
Aptos 3	Low	Moderate-high	Moderate
Capitola 1	Moderate	Moderate-high	Moderate-high

The project would have two substantial visual effects through much of the project corridor. The first substantial visual effect would be the loss of vegetation required for widening and building a soundwall and retaining wall. The second substantial visual effect would be the soundwall and retaining wall blocking views. The key viewpoint illustrations show these effects. At Aptos Key Viewpoint 1, a soundwall would replace the vegetative border along the frontage road, which would affect residential, recreational, and local street viewers. The soundwall would also block views of State Route 1 and vegetation on the north side of State Route 1. At Aptos Key Viewpoint 2—the freeway users' view—there would be a noticeable loss of vegetation required for the soundwall, and the glimpses into the neighboring land use would be blocked by the soundwall on the south side of State Route 1. At Aptos Key Viewpoint 3, the combined retaining wall (for the pedestrian and bicycle overcrossing ramp) and the soundwall would both reduce the vegetation and block views of State Route 1. At the Capitola Key Viewpoint 1, the project would include shoulder widening, which would require a retaining wall, and would result in the loss of vegetation for local street viewers. With moderate-high viewer response to these changes at all of these locations, visual impacts range from moderate to moderate-high.

No-Build (No-Action) Alternative

Under the No-Build (No-Action) Alternative, the existing lane configuration and width of State Route 1 would remain. No widening of State Route 1 would occur, and auxiliary lanes, bus-on-shoulder improvements, and the Mar Vista Drive pedestrian and bicycle overcrossing would not be built. Additionally, the Capitola Avenue overcrossing would not be replaced. Therefore, there would be no changes to visual resources.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would be incorporated into the project to avoid, minimize, and mitigate visual impacts:

- **AMM-VA-1 Aesthetic Guidelines.** Work with the community during preliminary design to develop aesthetic guidelines for the project improvements through a formalized structure that allows community input. Aesthetic guidelines should take into account and build upon the corridor aesthetic guidelines developed for the Santa Cruz Route 1 Tier 1/Tier 2 High-Occupancy Vehicle Lane project (Appendix N of the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact

Report/Environmental Assessment with a Finding of No Significant Impact), which includes measures to develop a cohesive design approach for aesthetic treatments with community input. It also includes measures related to vegetation, noise barriers, retaining walls, bridge aesthetics, fencing and barriers, landscape plantings, and stormwater treatment facilities.

- **AMM-VA-2 Existing Vegetation Preservation**. During design and construction, save and protect as much existing vegetation in the corridor as feasible, especially eucalyptus and other skyline trees.
- **AMM-VA-3 Tree Survey**. Survey exact locations for the species and sizes of trees (by arborist) and include in the plan set.
- **AMM-VA-4 Drip Zone Protection**. Protect the drip zone of isolated trees and provide temporary fencing.
- **AMM-VA-5 Existing Plantings Protection.** Protect large areas of existing plantings and preserve them with temporary fencing.
- **Mitigation Measure-VA-6 Soundwall and Retaining Wall Treatments**. During design and construction, develop construction plans that apply aesthetic treatments to the soundwalls and retaining walls.
- **Mitigation Measure-VA-7 Soundwall Vine Plantings**. Include vine plantings on one or both sides of soundwalls where feasible (given Caltrans' setback and maintenance requirements). If vines are only planted on one side of the soundwall, include vine portals in the design of the soundwall to accommodate vine access to both sides of the soundwall.
- **Mitigation Measure-VA-8 Bridge Aesthetics**. During design and construction, develop construction plans that apply aesthetic treatments to the proposed Capitola Avenue overcrossing.
- **Mitigation Measure-VA-9 Median Barrier Aesthetics**. Include aesthetic treatments on concrete median barriers consistent with the visual character of the corridor and the nearby community.
- **Mitigation Measure-VA-10 Fence Replacement**. Replace existing chain-link fencing between State Route 1 and nearby frontage roads with ornamental fencing (applies where there is no soundwall).
- **AMM-VA-11 Landscaping and Revegetation**. During design and construction, landscape and revegetate disturbed areas to the greatest extent feasible (given Caltrans' setback and maintenance requirements).
- **AMM-VA-12 Skyline Trees**. Include skyline trees in the planting pallet to reduce the scale of the new freeway elements.
- **AMM-VA-13 Frontage Road Planting**. Include infill shrub planting between State Route 1 and nearby frontage roads to the maximum extent possible.

- **Mitigation Measure-VA-14 Fence Vine Planting**. Include vines on a minimum of 20 percent of the fencing between State Route 1 and nearby frontage roads.
- **Mitigation Measure-VA-15 Irrigation**. Where horticulturally appropriate, provide a permanent irrigation system for all plantings.
- **Mitigation Measure-VA-16 Maintenance Period**. Include an extended 3-year maintenance period as part of the construction period to provide a single source of maintenance during construction and through the establishment of vegetation.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration's requirements for compliance are outlined in 23 Code of Federal Regulations 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 for incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

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

Affected Environment

The information in this section is from the Floodplain Evaluation Report and the Water Quality Assessment Report prepared for the project in October 2020.

The Caltrans Water Quality Planning Tool identifies the project as within the Aptos-Soquel hydrologic subarea, the Santa Cruz hydrologic area, and the Big Basin hydrologic unit. The project is within the Soquel Creek sub-watershed and the Aptos Creek sub-watershed.

The Soquel Creek watershed lies between the cities of Santa Cruz and Watsonville, with the lower reaches extending through the unincorporated community of Soquel and the City of Capitola. Major tributaries to this watershed include Burns Creek, Laurel Creek, Hester Creek, Amaya Creek, Fern Gulch, Ashbury Gulch, Hinckley Creek, Moore's Gulch, Grover Gulch, Love Creek, Bates Creek, and many other unnamed waterways. The smaller tributaries consist of Nobel Creek, Porter Gulch, Tannery Gulch, and Borregas Creek. The main concerns for this watershed include sedimentation and impairment of important fish habitat.

The Aptos Creek watershed lies within the southern portion of the County of Santa Cruz. Major tributaries to this watershed include Aptos Creek and Valencia Creek, which converge about 1 mile inland of Soquel Cove. Principal concerns of this watershed are excessive sedimentation, low streamflow, fish barriers, channelization, and poor water quality in the coastal lagoon.

The project is within the Federal Emergency Management Agency Flood Insurance Rate Map Zone 06087C0352F. The Soquel Creek floodplain near the western limits of the project includes a Federal Emergency Management Agency-designated Zone AE region with a regulatory floodway (see Figures 2-11 and 2-12). Zone AE regions are areas subject to inundation during the base flood event where base flood elevations are provided. Additionally, there is a Federal Emergency Management Agency shaded Zone X region next to the eastern limits of the base floodplain in the vicinity of State Route 1. Shaded Zone X regions represent areas subject to inundation by storm events between the base flood and the 500-year flood.

State Route 1 is between Federal Emergency Management Agency cross section H, which is upstream of the Soquel Creek crossing, and cross section G, which is downstream of the creek crossing. The base flood elevations are about 33 feet upstream (north) and 32 feet (downstream (south) of State Route 1 (measurements in the North American Vertical Datum of 1988). In the North American Vertical Datum of 1988, the base flood level is 2 feet above ground level. Upstream of State Route 1, the Soquel Creek Zone AE floodplain extends south at the Bay Avenue/Porter Street undercrossing of Soquel Creek. Additionally, the eastern limits of the Bay Avenue/Porter Street northbound on-ramp and Southbound off-ramp are within the Soquel Creek Zone AE floodplain.

The other creek crossing associated with a base floodplain is Nobel Creek (shown in Figure 2-12). A detailed Federal Emergency Management Agency study for Nobel Creek starts just south of Kennedy Drive. At this location, there is a Federal Emergency Management Agency-designated floodway with a base flood elevation of 78 feet (North American Vertical Datum 88). This floodway extends farther south and has Zone AE and shaded Zone X regions next to it at various locations.

Figure 2-11 Federal Emergency Management Agency Floodplain Map—Soquel Creek

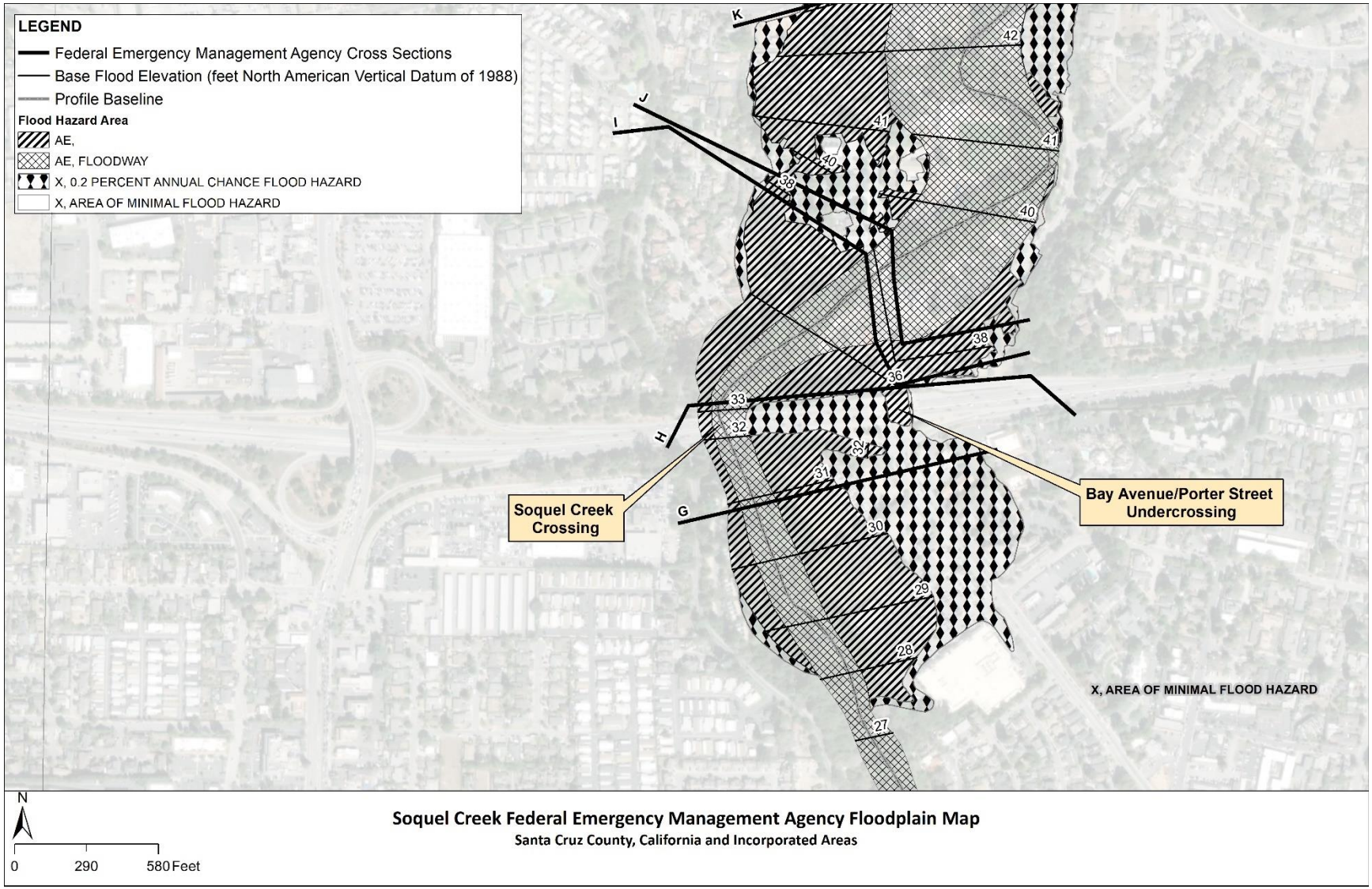
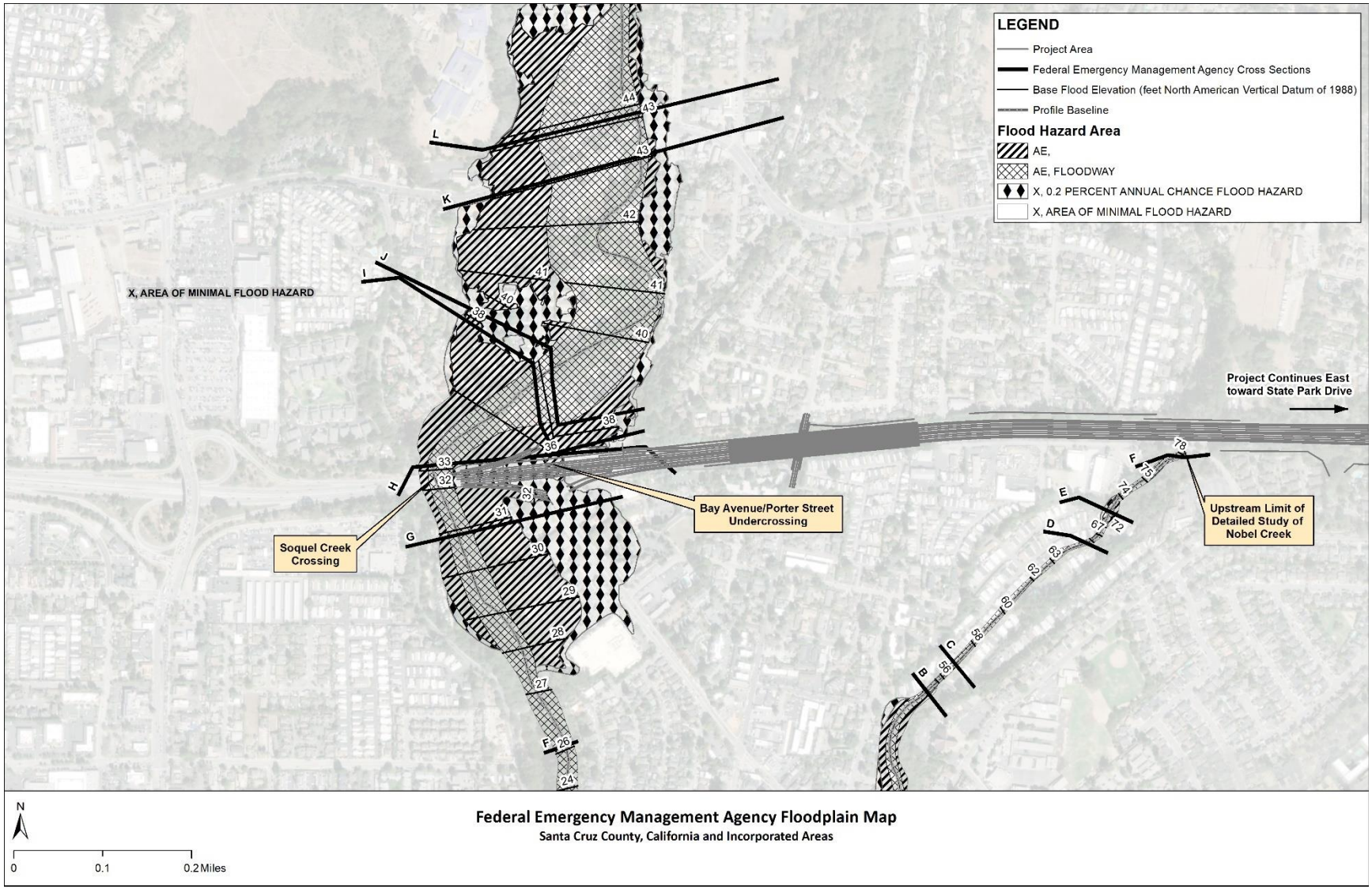


Figure 2-12 Federal Emergency Management Agency Floodplain Map



The rest of the project area is within an unshaded Zone X region. Unshaded Zone X regions are outside of the Federal Emergency Management Agency's Special Flood Hazard Areas and represent areas of minimal flood hazard.

Environmental Consequences

Build Alternative

The potential risk associated with the implementation of the project would include but would not be limited to: change in land use, change in impervious surface area, fill inside the floodplain, or change in the 100-year water surface elevation.

Change in Land Use

The project proposes improvements along the existing State Route 1 roadway with minimal changes to the roadway profile, outer widening at the Capitola Avenue overcrossing, and the addition of a pedestrian and bicycle overcrossing at Mar Vista Drive. The overall existing general land use of the project area would be maintained. Therefore, there are no risks associated with changes in land use because of the project.

Change in Impervious Surface Area

The project would result in a net increase of the impervious surface area of 9.3 acres (0.015 square mile). Based on the overall size of the Soquel Creek and Nobel Creek watersheds, 41 square miles, and 1.2 square miles, respectively, and the overall increase of 0.015 square mile of net impervious surface area that would result from the project, substantial impacts on the base floodplains are not expected. Additionally, the goal of the project is to maintain the existing drainage pattern.

Fill Inside the Floodplain

Near the eastern limits of the proposed Bay Avenue/Porter Street northbound on-ramp, the approximate base flood elevation of the Soquel Creek floodplain is 36 feet (North American Vertical Datum 88). The on-ramp entrance from Porter Street onto northbound State Route 1 is about 35 feet (North American Vertical Datum 88). At this on-ramp entrance, the on-ramp roadway, as well as a portion of the pervious area between Porter Street and the on-ramp just north of State Route 1, would be inundated by the base floodplain (see Figure 2-12). Therefore, there would be fill within the floodplain due to these improvements as well as potential flow blockage at the on-ramp retaining walls. However, other areas of the on-ramp are above elevation 36 feet (North American Vertical Datum 88) and outside the floodplain.

At the eastern limit of the proposed Bay Avenue/Porter Street southbound off-ramp, the base flood elevation is about 32 feet North American Vertical Datum 88. The existing ground elevations at the outer edge of the proposed off-ramp retaining wall are at about 32 feet North American Vertical Datum 88 and above (see Figure 2-13). Therefore, there could be minimal fill within the base floodplain due to the proposed retaining wall and ramp widening at the start of the ramp.

Based on the proposed widening at the ramps, there could be 2 feet to 5 feet of fill added to the Soquel Creek base floodplain at each ramp. However, given the distance of the ramps and retaining walls from the main conveyance channel of Soquel Creek, the impacts on the floodplain are expected to be minimal or negligible on the floodway.

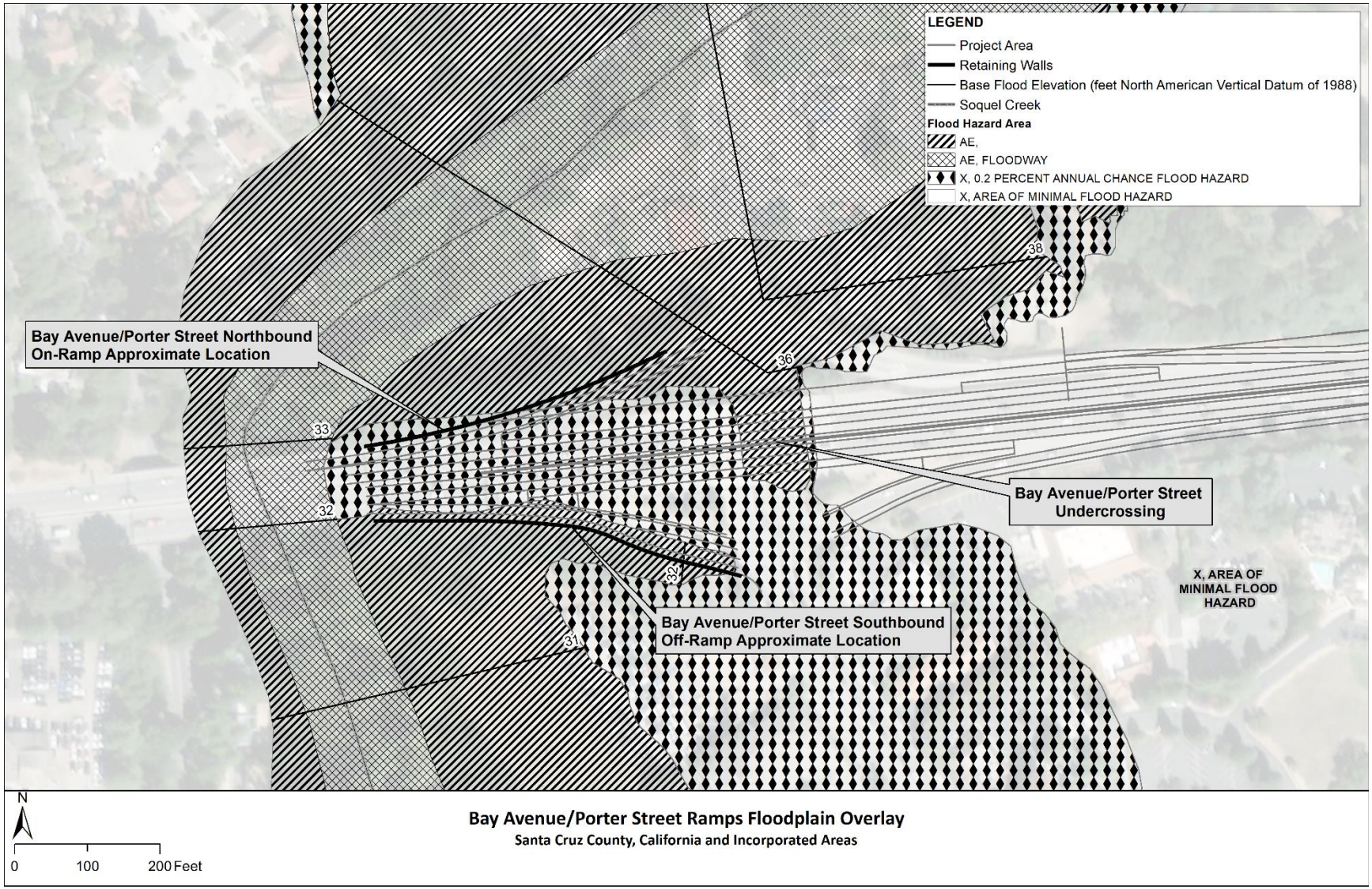
At Nobel Creek, the soundwalls at the upstream face of the Nobel Creek cross-drainage culverts at State Route 1 and all associated embankment fill would be above an elevation of 85 feet North American Vertical Datum 88 per the current roadway design. Therefore, the soundwalls would be outside of the base floodplain and are not expected to cause any impacts on the Nobel Creek floodway.

Change in the 100-Year Water Surface Elevation

As described above, the project could potentially cause changes to the base flood elevations of the Soquel Creek floodplain due to the proposed ramp widening and reconstruction of retaining walls at the Bay Avenue/Porter Street northbound on-ramp and southbound off-ramp. However, the impacts on the floodplain are expected to be minimal or negligible to the floodway. The base flood elevation changes would be further determined during the project's design phase upon the completion of detailed hydraulic analysis when more design information becomes available. As described in Standard Measure HY-1, coordination with local, state, and federal water resources and floodplain management agencies would be conducted as necessary during all aspects of the proposed project to discuss these potential impacts on the floodplain. The need and extent of coordination with the Federal Emergency Management Agency and the Federal Emergency Management Agency floodplain manager would be verified during the project's design phase.

The project is not expected to cause any changes to the base flood elevations of the Nobel Creek floodway.

Figure 2-13 Retaining Walls at Bay Avenue/Porter Street Ramps Floodplain Overlay



Potential Encroachments

The Federal Highway Administration defines a significant encroachment as a freeway encroachment, and any direct support of likely base floodplain development, that would involve one or more of the following construction or flood-related impacts: (1) significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route, (2) a significant risk, or (3) a significant adverse impact on the natural and beneficial floodplain values.

The only portions of the project that may be inundated by the base flood event are the western limits of the Bay Avenue/Porter Street on-ramp and off-ramp, as described above. However, alternate interchanges can be used to get on or off State Route 1, and, therefore, traffic interruptions are not expected at this location in the event of the base flood event. For Nobel Creek, project improvements are outside of the floodplain/floodway, and, therefore, traffic interruptions are not expected.

Potential short-term adverse effects on the natural and beneficial floodplain values during project construction include loss of vegetation during construction activities and temporary disturbance of wildlife and aquatic habitat. Construction activities would avoid adverse effects on the natural and beneficial floodplain areas to the maximum extent practicable. Standard Measures BIO-1 and BIO-2 would minimize these temporary impacts through implementation of Best Management Practices, seasonal work restrictions, revegetation, establishing a boundary for work around sensitive habitats, implementing erosion control measures, and other activities that are part of the project's permit conditions.

As defined by the Federal Highway Administration, the support of incompatible base floodplain development would encourage, allow, serve, or otherwise facilitate incompatible base floodplain development, such as commercial development or urban growth. The project would not trigger incompatible floodplain development because it would generally maintain local and regional access and would not create new access routes to developed or undeveloped lands.

As defined by the Federal Highway Administration, a longitudinal encroachment is an action within the limits of the base floodplain that is longitudinal to the normal direction of the floodplain. A longitudinal encroachment is "[a]n encroachment that is parallel to the direction of flow. Example: A freeway that runs along the edge of a river is usually considered a longitudinal encroachment." All potential impacts on the base floodplain/floodway along Soquel Creek are transverse to the direction of flow, not longitudinal. Therefore, the project is not expected to cause longitudinal encroachments and would not cause a significant encroachment into the base floodplain.

No-Build (No-Action) Alternative

The No-Build (No-Action) Alternative would not change hydrology in the project area because the project would not be built.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measure would be implemented for the project:

- **AMM-HY-1:** Cut and fill within the Soquel Creek floodplain would be balanced to the extent possible. Openings (or scuppers, which could be used in retaining walls, bridge rails, deck drainage, or concrete barriers) could be provided to maintain flood flows where applicable.

2.2.2 Water Quality and Stormwater Runoff

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the U.S. from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System permit. A point source is any discrete conveyance such as a pipe or a human-made ditch. This act and its amendments are known today as the Clean Water Act. 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 National Pollutant Discharge Elimination System permit scheme. The following are important Clean Water Act 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 will 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 National Pollutant Discharge Elimination System, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards administer this permitting program in California. Section 402(p) requires permits for discharges of stormwater from industrial/construction and municipal separate storm sewer systems.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers.

The goal of the Clean Water Act is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The U.S. Army Corps of Engineers issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effects. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide permit may be permitted under one of the U.S. Army Corps of Engineers' Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the U.S. Army Corps of Engineers' decision to approve is based on compliance with U.S. Environmental Protection Agency's Section 404 (b)(1) Guidelines (40 Code of Federal Regulations 230), and whether the permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the U.S. Environmental Protection Agency in conjunction with the U.S. Army Corps of Engineers, 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 that would have less adverse effects. The guidelines state that the U.S. Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative 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. [The U.S. Environmental Protection Agency defines effluent as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall]." In addition, every permit from the U.S. Army Corps of Engineers, even if not subject to the Section 404 (b)(1) Guidelines, must meet general requirements. See 33 Code of Federal Regulations 320.4. A discussion of the least environmentally damaging practicable alternative determination, if any, for the document is included in Section 2.3.2, Wetlands and Other Waters.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Water Quality Control Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the Clean Water Act and regulates discharges to waters of the state. Waters of the state include

more than just waters of the U.S., such as 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 Clean Water Act definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements and may be required even when the discharge is already permitted or exempt under the Clean Water Act.

The State Water Resources Control Board and Regional Water Quality Control Boards are responsible for establishing the water quality standards (objectives and beneficial uses) required by the Clean Water Act 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 Regional Water Quality Control Board Basin Plan. In California, Regional Water Quality Control Boards 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 State Water Resources Control Board identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with Clean Water Act 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 (National Pollutant Discharge Elimination System permits or Waste Discharge Requirements), the Clean Water Act requires the establishment of Total Maximum Daily Loads. Total Maximum Daily Loads specify allowable pollutant loads from all sources (point, nonpoint, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The State Water Resources Control Board 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, Total Maximum Daily Loads, and National Pollutant Discharge Elimination System permits. Regional Water Quality Control Boards are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the Clean Water Act requires the issuance of National Pollutant Discharge Elimination System permits for five categories of stormwater discharges, including Municipal Separate Storm Sewer Systems. A Municipal Separate Storm Sewer System 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 State Water Resources Control Board has identified Caltrans as an owner/operator of a Municipal Separate Storm Sewer System under federal regulations. Caltrans' Municipal Separate Storm Sewer System permit covers all Caltrans' rights-of-way, properties, facilities, and activities in the state. The State Water Resources Control Board or the Regional Water Quality Control Board issues National Pollutant Discharge Elimination System permits for 5 years, and permit requirements remain active until a new permit has been adopted.

Caltrans' Municipal Separate Storm Sewer System permit, Order Number 99-06-DWQ, has three basic requirements:

1. Caltrans must comply with the requirements of the Construction General Permit (see below);
2. Caltrans must implement a year-round program in all parts of the state to effectively control stormwater and non-stormwater discharges; and
3. Caltrans' stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices, to the maximum extent practicable, and other measures as the State Water Resources Control Board determines to be necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the Statewide Stormwater Management Plan to address stormwater pollution controls related to freeway planning, design, construction, and maintenance activities throughout California. The Stormwater Management Plan assigns responsibilities within 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 Stormwater Management Plan describes the minimum procedures and practices Caltrans uses to reduce pollutants in stormwater and non-stormwater discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of Best Management Practices. The proposed project would be programmed to follow the guidelines and procedures outlined in the latest Stormwater Management Plan to address stormwater runoff.

The project would include work within the unincorporated potion of the County of Santa Cruz and within the City of Capitola. Both the County of Santa Cruz and the City of Capitola are permittees under the statewide Phase 2 Small Municipal Separate Storm Sewer System permit (National Pollutant Discharge Elimination System Number CAS000004, State Water Resources Control Board Order Number 2013-0001-DWQ, as amended by Order WQ

2015-0133-Exec, Order WQ 2016-0069-Exec, Order WQ 2017-XXXX-DWQ, Order WQ 2018-0001-Exec, and Order WQ 2018-0007-Exec). The Central Coast Regional Water Quality Control Board has issued Post-Construction Stormwater Requirements, which give additional project size-based requirements for site design, water quality treatment, runoff retention, and peak management. Additionally, the County of Santa Cruz has developed design criteria containing standards for the construction of streets, storm drains, sanitary sewers, water systems, and driveways within the unincorporated portion of the County of Santa Cruz (2019). The City of Capitola, by the discretion of city staff, also requires projects to comply with the County of Santa Cruz' design criteria.

The County of Santa Cruz' design criteria summarize the requirements of the Phase 2 Small Municipal Separate Storm Sewer System permit and the Central Coast Regional Water Quality Control Board's Post-Construction Stormwater Requirements. It also provides guidance for low-impact development design strategies and specific Best Management Practices selection criteria. The design criteria document provides technical requirements for project designs throughout the County of Santa Cruz that include the implementation of permanent stormwater Best Management Practices. Placement of stormwater treatment Best Management Practices within the unincorporated portion of the County of Santa Cruz and within the City of Capitola's right-of-way would comply with the County of Santa Cruz's design criteria.

Construction General Permit

Construction General Permit, Order Number 2009-0009-DWQ (adopted on September 2, 2009, and effective on July 1, 2010), as amended by Order Number 2010-0014-DWQ (effective February 14, 2011), and Order Number 2012-0006-DWQ (effective on July 17, 2012), regulates stormwater discharges from construction sites that result in a Disturbed Soil Area 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 activities that result in soil disturbances of less than 1 acre are subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the Regional Water Quality Control Board. Operators of regulated construction sites are required to develop Stormwater Pollution Prevention Plans; 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 a risk level 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, potential of hydrogen 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 Stormwater Pollution Prevention Plan. In accordance with Caltrans' Stormwater Management Plan and Standard Specifications, a Water Pollution Control Program is necessary for projects with a Disturbed Soil Area less than 1 acre.

Section 401 Permitting

Under Section 401 of the Clean Water Act, 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 will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are Clean Water Act Section 404 permits issued by the U.S. Army Corps of Engineers. The 401 permit certifications are obtained from the appropriate Regional Water Quality Control Board, dependent on the project location, and are required before the U.S. Army Corps of Engineers issues a 404 permit.

In some cases, the Regional Water Quality Control Board may have specific concerns with discharges associated with a project. As a result, the Regional Water Quality Control Board may issue a set of requirements known as Waste Discharge Requirements 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. Waste Discharge Requirements can be issued to address both permanent and temporary discharges of a project.

Affected Environment

The information in this section is from the Water Quality Assessment Report prepared for the project in October 2020.

Surface Waters

The project's receiving waters are Nobel Creek (also known as Nobel Gulch, Noble Creek, and Nobel Gulch and referred to in this document as Nobel Creek), Ord Gulch, Potbelly Creek, Tannery Gulch, an unnamed tributary to Tannery Gulch, Borregas Creek, Soquel Creek, and Aptos Creek. Soquel Creek and Aptos Creek lie outside of the project limits. Nobel Creek is a tributary to Soquel Creek, which ultimately drains to the Pacific Ocean. Ord Gulch is a tributary to Borregas Creek, which also drains to the Pacific Ocean. Additionally, Tannery Gulch, Potbelly Creek, and Aptos Creek drain to the Pacific Ocean.

The portion of Soquel Creek within the project area consists of a broad, moderately incised channel in an urban setting. The Soquel Creek channel is described as a natural channel with a moderate slope and gravelly bed. The natural channels exhibit a clay and sand bottom averaging 60 feet to 75 feet wide at the ordinary high water mark. Soquel Creek receives runoff from a large urban area.

The portion of Nobel Creek within the project area consists of a narrow, moderately incised channel in an urban setting. The natural channel areas have a clay bottom averaging 2 feet to 3 feet wide at the ordinary high water mark. The portion of Ord Gulch within the project area consists of a small, narrow incised channel with a clay and sand bottom, averaging 8 feet to 12 feet wide at the ordinary high water mark. Ord Gulch is a tributary to Borregas Creek via a small roadside drainage channel and is 2 feet to 3 feet wide.

The portion of Potbelly Creek within the project area consists of small drainage channels that eventually drain to Pot Belly Beach. Within the project limits, a 3-foot-wide to 6-foot-wide roadside drainage swale parallels the north side of State Route 1 and enters Potbelly Creek 30 feet north of the culvert inlet.

The portion of Tannery Gulch within the project area consists of a narrow, moderately incised channel in a rural residential setting. The natural channel areas have a sand or clay bottom averaging 3 feet wide at the ordinary high water mark. The portion of Borregas Creek within the project area consists of a narrow, deeply incised channel in a residential setting. The natural channel areas have a gravel bottom channel averaging 2 feet to 3 feet wide at the ordinary high water mark.

The portion of Aptos Creek within the project area consists of a broad, slightly incised channel, in a residential setting. The channel has a clay, sand, and cobble bottom averaging 40 feet to 50 feet wide at the ordinary high water mark. Several sections of the Aptos Creek bank consist of riprap or poured concrete intended to prevent erosion of nearby residential properties within the floodplain.

Surface Water Quality Objectives and Beneficial Uses

The Regional Water Quality Control Board establishes and enforces Waste Discharge Requirements for point and nonpoint sources of pollutants at levels necessary to meet numeric and narrative water quality objectives. Water quality objectives are numeric and narrative objectives are used to define the appropriate levels of environmental quality and to manage activities that can impact aquatic environments. The Water Quality Control Plan for the Central Coast Basin lists the following water quality objectives for surface waters: color, tastes, odors, floating material, suspended material, settleable material, oil and grease, biostimulatory substances, sediment, turbidity, potential of

hydrogen, dissolved oxygen, temperature, toxicity, pesticides, chemical constituents, other organics, and radioactivity.

The Water Quality Control Plan for the Central Coast Basin does not list any beneficial uses for Nobel Creek, Tannery Gulch, or Borregas Creek, but it does list beneficial uses for Soquel Creek and Aptos Creek. The Water Quality Control Plan for the Central Coast Basin states that any surface water bodies within the region that do not have beneficial uses designated for them are assigned the following designations: municipal and domestic water supply and protection of both recreation and aquatic life. The beneficial uses for Soquel Creek include the following: municipal and domestic supply, industrial process supply, groundwater recharge, water contact recreation, non-water contact recreation, wildlife habitat, cold freshwater habitat, fish migration, fish spawning, and commercial and sports fishing. The beneficial uses for Aptos Creek include all of the same beneficial uses as Soquel Creek, plus the following: agricultural supply, preservation of biological habitats of special significance, estuarine habitat, and freshwater replenishment.

Each of the project's receiving water bodies discharge to the Pacific Ocean, which is about 0.4 mile south of the project site. The Pacific Ocean, as stated in the State Water Resources Control Board's California Ocean Plan, has the following beneficial uses: industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance; rare and endangered species; marine habitat; fish migration; fish spawning; and shellfish harvesting.

Areas of Special Biological Significance are defined in the California Ocean Plan as areas requiring protection of species or biological communities to the extent that maintenance of natural water quality is assured. There are six designated Areas of Special Biological Significance within the Central Coast Regional Water Quality Control Board's jurisdiction. However, none of these fall within the proposed project limits.

Water body segments that fail to meet standards for specific pollutants are included in a statewide list in accordance with Clean Water Act Section 303(d). If a Regional Water Quality Control Board determines that waters are impaired for one or more constituents, the Clean Water Act requires the establishment of Total Maximum Daily Loads to specify allowable pollutant loads from all sources for a given watershed. Tables 2.22 through 2.26 list the water quality impairments and Total Maximum Daily Loads for Soquel Creek, Nobel Creek, Aptos Creek, and the Pacific Ocean at Capitola Beach.

Table 2.22 Clean Water Act Section 303(d) Listed Pollutants-Aptos Creek

Pollutant	Potential Source	Total Maximum Daily Load Completion Date (Estimated)
Indicator Bacteria	Collection System Failure, Natural Sources, Urban Runoff/Storm Sewers, Other Urban Runoff	U.S. Environmental Protection Agency Approval Date: January 20, 2011
Sedimentation/ Siltation	Source Unknown	2027

Source: Caltrans 2020.

Table 2.23 Clean Water Act Section 303(d) Listed Pollutants-Nobel Creek

Pollutant	Potential Source	Total Maximum Daily Load Completion Date (Estimated)
Escherichia coli (E.coli)	Collection System Failure, Domestic Pet Waste, Transient Encampments, Urban Runoff/Storm Sewers	U.S. Environmental Protection Agency Approval Date: November 17, 2010

Source: Caltrans 2020.

Table 2.24 Clean Water Act Section 303(d) Listed Pollutants-Pacific Ocean at Capitola Beach (Santa Cruz County)

Water Body/ Pollutant	Potential Source	Total Maximum Daily Load Completion Date (Estimated)
Enterococcus	Natural Sources, Other Urban Runoff, Recreational and Tourism Activities (non-boating), Source Unknown	2027
Fecal Coliform	Source Unknown	2027
Total Coliform	Source Unknown	2027

Source: Caltrans 2020.

Table 2.25 Clean Water Act Section 303(d) Listed Pollutants-Pacific Ocean at Rio Del Mar (Santa Cruz County), Aptos Creek Mouth

Water Body/ Pollutant	Potential Source	Total Maximum Daily Load Completion Date (Estimated)
Total Coliform	Source Unknown	2027

Source: Caltrans 2020.

Table 2.26 Clean Water Act Section 303(d) Listed Pollutants-Soquel Creek

Pollutant	Potential Source	Total Maximum Daily Load Completion Date (Estimated)
Enterococcus	Source Unknown	2027
Escherichia coli (E.coli)	Collection System Failure, Domestic Animals/Livestock, Domestic Pet Waste, Transient Encampments, Urban Runoff/Storm Sewers	U.S. Environmental Protection Agency Approval Date: November 17, 2010
Fecal Coliform	Collection System Failure, Domestic Pet Waste, Transient Encampments, Urban Runoff/Storm Sewers	U.S. Environmental Protection Agency Approval Date: November 17, 2010

Source: Caltrans 2020.

Municipal Supply

There are no drinking water reservoirs or recharge facilities near the project area, although there are some recharge facilities in the general area. However, the Water Quality Control Plan for the Central Coast Basin does identify Soquel Creek and Aptos Creek as having the beneficial use of municipal and domestic supply. Part of the project traverses through the Soquel Creek Water District, which is 100 percent groundwater sourced. The Santa Cruz Mid-County Groundwater Basin is currently overdrafted, and there is a groundwater sustainability plan developed for the Santa Cruz Mid-County Groundwater Basin.

Groundwater

The project area is in the Central Coast Hydrologic Region, Soquel Valley Groundwater Basin, and Santa Cruz Mid-County Groundwater Basin, as defined by the California Department of Water Resources. The Soquel Valley Groundwater Basin is bounded to the south by Monterey Bay, and the north by a series of hills. The western boundary coincides with the Soquel Creek Water District's western boundary, and the eastern boundary is the coastward projection of the drainage divide between the Soquel Creek and Aptos Creek watersheds. Soquel Creek is the major drainage in this basin.

Groundwater varies along the corridor and is dependent on the local geology, influence from local streams and creeks, and the general topography. Groundwater data were obtained from Caltrans' as-built Log of Test Boring data and determined the depth to groundwater to be from 8.5 feet to 16 feet below the ground surface. The direction of groundwater flow is to the south-southwest. There are 109 federal, public water supply, or state wells within a 1-mile radius of the project area.

The Water Quality Control Plan for the Central Coast Basin has water quality objectives listed for all groundwaters of the Central Coast Basin. At a minimum, all groundwaters must not contain concentrations of taste or odor-producing substances or radionuclides. Groundwaters designated with the

beneficial use of municipal and domestic supply must not contain concentrations of organic chemicals, inorganic chemicals, or radionuclides. Groundwaters designated with the beneficial use of agriculture supply must not contain concentrations of chemical constituents.

The Water Quality Control Plan for the Central Coast Basin does not list beneficial uses for specific groundwater basins. However, it does state that groundwater throughout the Central Coastal Basin, except for that found in the Carrizo Plain Groundwater Basin, is suitable for agricultural water supply, municipal and domestic water supply, and industrial use.

Environmental Consequences

Build Alternative

Construction

During construction, potentially sediment-laden flow can result from runoff over disturbed soil areas that 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. Additional sources of sediment that could result in increases in turbidity include uncovered or improperly covered active and nonactive stockpiles, unstabilized slopes and construction staging areas, and improperly maintained or cleaned construction equipment.

Earthmoving and other construction activities could cause minor erosion and runoff of topsoils into the drainage systems along the project corridor during construction, which could temporarily affect water quality in local waterways.

Also, during construction, the project would have the potential for water quality impacts due to grading and excavation activities, which can cause increased erosion. Stormwater runoff from the project site may transport pollutants to nearby receiving waters and storm drains if Best Management Practices are not properly implemented. Generally, as the disturbed soil areas increase, the potential for temporary water quality impacts also increases. As shown in Table 2.27, the project would have an estimated 26.3 acres of disturbed soil area in the Caltrans right-of-way. The project would also have an estimated 0.8 acre of disturbed soil area in the combined rights-of-way of the County of Santa Cruz and the City of Capitola, resulting in short-term water quality impacts during construction. In total, the project area would have 81.48 acres of disturbed soil area and impervious surface area.

Table 2.27 Disturbed Soil Area and Impervious Surface Area

Area	Caltrans Right-of-Way (Acres)	Local Jurisdiction Right-of-Way (Acres)
Disturbed Soil Area	26.30	0.70
Pre-project Impervious Area	29.78	0.00
Post-project Impervious Area	40.77	0.00
Increase in Impervious Area (Net New Impervious)	10.99	0.53
Amount of Replaced Impervious Surface	0.0	0.16

If fueling or maintaining construction vehicles occurs within the project site during construction, there is a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release of these materials may pose a threat to water quality if contaminants enter storm drains, open channels, or surface receiving water bodies. The magnitude of the impact from an accidental release depends on the amount and type of material spilled.

The standards of the Construction General Permit, Caltrans, the County of Santa Cruz, and the City of Capitola require the project's contractor to implement a Stormwater Pollution Prevention Plan to comply with the conditions of the Construction General Permit (Standard Measure WQ-1). The Stormwater Pollution Prevention Plan would be submitted by the contractor and approved by Caltrans before the start of construction. The Stormwater Pollution Prevention Plan is intended to address construction-phase impacts and would include the following elements:

- Minimum Construction Control Measures—These measures may include limiting construction access routes, stabilizing areas denuded by construction, and using sediment controls and filtration.
- Erosion and Sediment Control—A description of soil stabilization practices, control measures to prevent a native increase in sediment load in stormwater, controls to reduce tracking sediment onto roads, and controls to reduce wind erosion.
- Non-Stormwater Management—Provisions to reduce and control discharges other than stormwater.
- Post-Construction Stormwater Management—A waste management section including equipment maintenance waste, used oil, batteries, etc. All waste must be disposed of as required by state and federal law.
- Maintenance, Inspection, and Repair—An ongoing program to ensure that all controls are in place and operating as designed.
- Monitoring—This provision requires documented inspections of the control measures.
- Reports—The contractor would prepare an annual report on the construction project and submit the report on July 15 of each year, with

the final annual report being submitted upon project completion. This report would be submitted to the State Water Resources Control Board on the Stormwater Multiple Application and Report Tracking System website.

- Training—Documentation of the training and qualifications of the designated qualified Stormwater Pollution Prevention Plan developer and qualified Stormwater Pollution Prevention Plan practitioner. Trained personnel must inspect, maintain, and repair the Construction Site Best Management Practices.
- Construction Site Monitoring Program—A program that details the procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, the potential of hydrogen, and bioassessment.

Additionally, temporary impacts on water quality during construction can be avoided or minimized by implementing temporary Construction Site Best Management Practices (Standard Measure WQ-2). Typical Construction Site Best Management Practices that should be considered for this project could include but are not limited to, stabilized construction access, stabilized construction roadway, tire wash, street cleaning, dust control, rolled erosion control products, hydraulic mulch, hydroseeding, soil binders, inlet and catch basin protection, fiber rolls, temporary large sediment barrier, gravel berm, stockpile management, and spill prevention and control. Non-stormwater and waste/material management measures include implementing procedures for water conservation, concrete management, paving and grinding operations, material delivery and storage, stockpile management, sanitary/hazardous/solid/liquid waste, contaminated soils, and discharge.

The selected Construction Site Best Management Practices would be consistent with the practices required under the Construction General Permit and the Phase 2 Small Municipal Separate Storm Sewer System General Permit. Furthermore, the contractor would be required to detail actual in-field implementation of the Construction Site Best Management Practices in the Stormwater Pollution Prevention Plan during construction; the contractor would also be required to amend the Stormwater Pollution Prevention Plan as necessary to match both field conditions and project phasing.

Per the design of the proposed project, it is unlikely that work within creeks would be required, but this would be verified at a later phase of the project. If work within creeks is required, the project would need to implement temporary creek diversion(s).

Dewatering activities may also be necessary due to shallow groundwater. Dewatering activities would comply with Caltrans' Standard Specifications, and, if required, a separate dewatering permit would be obtained before the start of construction. (Standard Measure WQ-3)

A spill on the roadway would trigger immediate response actions to report, contain, and mitigate the incident. The California Governor's Office of Emergency Services has developed a Hazardous Material Incident Contingency Plan, which provides a program for response to spills involving hazardous materials. (Standard Measure WQ-4) The plan designates a chain of command for notification, evacuation, response, and cleanup of spills.

Drainage, Circulation, and Turbidity

The project would maintain the existing drainage pattern. However, as shown in Table 2.27, the project would increase the impervious surface area by 11.52 net new impervious acres that would not be infiltrated or dispersed over unpaved surfaces. The added impervious surface area created by the project may result in impacts on the existing hydrograph, including increases in low flow and peak flow velocity and volume to the receiving water bodies.

However, because this project's Project Initiation Document was approved in October 2002, the project is "grandfathered" under the 1999 Caltrans Municipal Separate Storm Sewer System Permit and does not have to comply with hydromodification management requirements via the Caltrans Municipal Separate Storm Sewer System Permit. Should the project require a Section 401 water quality certification from the Central Coast Regional Water Quality Control Board, hydromodification management requirements would apply to portions of the project that fall within the local Municipal Separate Storm Sewer System jurisdiction. Specifically, the portions of the project within the local rights-of-way would be subject to the hydromodification management requirements included in the Central Coast Regional Water Quality Control Board Post-Construction Stormwater Management Requirements and the County of Santa Cruz design criteria.

While the added impervious area could increase sediment-laden flow directly discharging to receiving water bodies, stormwater impacts would be minimized through the proper implementation of permanent stormwater treatment measures and Design Pollution Prevention Best Management Practices. (Standard Measure WQ-5)

Once grading or soil disturbance work is completed, permanent erosion control measures would be used to all exposed areas as a permanent measure to achieve final slope stabilization. (Standard Measure WQ-5) These measures may include hydraulically using 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. 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 following Design Pollution Prevention Best Management Practices would be considered for incorporation into the project design. (Standard Measure WQ-5):

- Conserve natural areas, including existing trees, stream buffer areas, vegetation, and soils.
- Minimize the impervious footprint of the project.
- Minimize disturbances of natural drainages.
- Design pervious areas to effectively receive runoff from impervious areas, taking into consideration the pervious area's soil conditions, slope, and other design factors.
- Implement landscape and soil-based Best Management Practices such as amended soils and vegetated strips and swales where feasible and use climate-appropriate landscaping that minimize irrigation and runoff. This promotes surface infiltration and minimizes the use of pesticides and fertilizers.
- Design landscapes to comply with state, local, and Caltrans requirements.

This project's Project Initiation Document was approved in October 2002, and therefore, this project is grandfathered under the 1999 Caltrans Municipal Separate Storm Sewer System Permit. (Section E.2.d) This project is subject to the treatment threshold requirements contained in the 1999 Caltrans Permit, which require implementation to the Maximum Extent Practicable. The portions of the project within the rights-of-way of local jurisdictions are subject to the local Municipal Separate Storm Sewer System post-construction stormwater treatment requirements.

Pollutants, Erosion, and Groundwater

Heavy metals associated with vehicle tire and brake wear, oil and grease, and exhaust emissions are the main 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 the exhaust and heavy metals from braking.

As shown in Table 2.27, the project would result in a net increase in impervious surface of 9.2 acres within a Caltrans right-of-way, which would cause an increase in the volume and velocity of the stormwater discharge, which is likely to impact the downstream waterways. As mentioned above, the project is "grandfathered" from having to comply with hydromodification management requirements in the Caltrans Municipal Separate Storm Sewer System Permit. However, should there be a 401 water quality certification, Central Coast Regional Water Quality Control Board and County of Santa Cruz hydromodification management requirements would apply to the portions of the project within the local right-of-way. The source control

measure—preservation of existing vegetation—would be implemented to slow the flow of stormwater to the receiving water bodies. (Standard Measure WQ-5)

Additionally, because the project would result in the addition of impervious areas, it would reduce the available unpaved area that previously allowed runoff to infiltrate into the native soils. Soquel Creek and Aptos Creek are both listed in the Basin Plan as having the beneficial use of groundwater recharge. The reduction of runoff infiltrating through native soils has the potential to result in a loss in volume or amount of water that may have previously recharged localized aquifers and thereby reduce regional groundwater volumes. The reduction in the local aquifer and groundwater recharge also has the potential to impact the beneficial uses of groundwater basins. However, because the project is expected to have to comply with Caltrans' Municipal Separate Storm Sewer System post-construction permit requirements, Best Management Practices from Caltrans' list of approved treatment Best Management Practices that allow for stormwater infiltration would be considered for the project, which would reduce this effect. (Standard Measure WQ-6)

Human Use Characteristics

The project is not expected to have long-term impacts on beneficial uses for surface waters or groundwater. However, the project may temporarily impact these beneficial uses during construction, as discussed above. Additionally, temporary impacts may result from road closures during construction that would limit or prohibit access to stretches of Soquel Creek and Aptos Creek, which could affect recreational and commercial fisheries and water quality recreation. The project limits do not extend to the Pacific Ocean, so access to the Pacific Ocean fisheries and recreation would not be affected. Potential impacts on fisheries and water-related recreation in Soquel Creek, Aptos Creek, and the Pacific Ocean would be avoided with standard construction site Best Management Practices, water quality monitoring, and housekeeping practices. (Standard Measure WQ-2)

No-Build (No-Action) Alternative

The No-Build (No-Action) Alternative would not affect water quality in the project area because the project would not be built.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures would be required.

2.2.3 Paleontology

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.

A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized projects.

- 16 U.S. Code 461-467 established the National Natural Landmarks program. Under this program, property owners agree to protect biological and geological resources such as paleontological features. Federal agencies and their agents must consider the existence and location of designated National Natural Landmarks, and of areas found to meet the criteria for national significance, in assessing the effects of their activities on the environment under NEPA.
- 23 U.S. Code 1.9(a) requires that the use of federal-aid funds must be in conformity with all federal and state laws.
- 23 U.S. Code 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 U.S. Code 431-433 above and state law.

At the state level, paleontological resources are protected by CEQA and the State of California's Public Resources Code.

- The procedures, types of activities, persons, and public agencies required to comply with CEQA are defined in the Guidelines for Implementation of CEQA (State CEQA Guidelines), as amended on March 18, 2010, (Title 14, Section 15000 et seq. of the California Code of Regulations [i.e., 14 California Code of Regulations Section 15000 et seq.]) and further amended January 4, 2013, and December 28, 2018. One of the questions listed in the CEQA Environmental Checklist is: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (State CEQA Guidelines Appendix G, Section VII, Part F)
- Sections 5097 and 30244 of Chapter 1.7 of California's Public Resources Code include state level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on state lands, and define the excavation, destruction, or removal of paleontological "sites" or "features" from public lands without the express permission of the jurisdictional agency as a misdemeanor. As used in Section 5097, "state lands" refers to lands owned by, or under the jurisdiction of, the state or any state agency. "Public lands" is defined as lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

At the local level, the 1994 County of Santa Cruz General Plan and 2014 City of Capitola General Plan have goals and policies related to paleontological resources.

- The countywide Conservation and Open Space elements of the County of Santa Cruz General Plan (1994) include one goal (Objective) and three policies regarding paleontological resources. Objective 5.9 is to protect paleontological, geological, and hydrological resources that stand out as rare or unique and representative in the County of Santa Cruz because of their scarcity, scientific or educational value, aesthetic quality, or cultural significance. Policy 5.9.1 protects paleontological, geological, and hydrological resources through the environmental review process and by designating such sites in the County of Santa Cruz general plan. Policy 5.9.2 protects paleontological, geological, and hydrological resources through easements and land dedications where possible. Policy 5.10.1 protects paleontological resources through designation as a visual resource defined as having regional public importance for their natural beauty or rural agricultural character.
- The City of Capitola General Plan (2014) does not include any goals or policies regarding paleontological resources specifically, but they have been lumped together under cultural resources. There are one goal and one policy regarding cultural resources. Goal LU-2 is to preserve the cultural and historical resources in Capitola. Policy LU-2.4 is to encourage public education and awareness of Capitola's cultural and historical resources.

Affected Environment

A Paleontological Evaluation Report was prepared for this project in June 2020. This section is based on the findings of that report.

The project lies on the coastal plain between the Santa Cruz Mountains and the north shore of Monterey Bay contained within the California Coast Ranges Geomorphic Province. State Route 1, through the project limits, crosses a relatively flat-lying portion of the coastal plain where uplifted coastal terrace deposits and underlying sedimentary bedrock have been incised by several streams. The streams are heavily vegetated, and the surface of the terraces is mostly built over due to the project being in an urban environment.

The geologic units that may be affected by the project include alluvial sediments and older floodplain deposits of Holocene age (less than about 11,700 years old), coastal terrace deposits of Pleistocene age (about 90,000 to 120,000 years old), and the Purisima Formation, which is Miocene to Pliocene in age (about 2.6 to 6.7 million years old).

Alluvial and floodplain deposits generally consist of loose gravel, sand, silt, and clay that was deposited by streams, and can be found in drainages across the project alignment. These deposits are considered to have low paleontological potential because they are too young to contain fossils. However, the thickness of these deposits varies across the project alignment,

and older, paleontologically sensitive deposits may underlie them as shallow as 1 foot below the ground surface.

Coastal terrace deposits are present, underlying the majority of State Route 1, and consist of semiconsolidated sand and well-rounded gravel that was primarily deposited in a shallow marine environment. These deposits are considered to have high paleontological potential because, in the greater Santa Cruz-Aptos area, they have produced fossils of marine invertebrates such as abalones, clams, snails, barnacles, and sea urchins, and occasional mammals including mammoths, mastodons, horses, and whales.

The Purisima Formation is widespread in the Santa Cruz-Aptos area and underlies coastal terrace deposits within the project limits. The Purisima Formation is well exposed in sea cliffs to the south of the project, and, within the project limits, can be found in areas that have been previously excavated, such as below the Park Avenue undercrossing bridge. The Purisima Formation generally consists of weakly cemented, conglomerate, sandstone, siltstone, and claystone deposited in a marine environment. In the sea cliffs south of the project, some layers of the Purisima Formation are composed almost entirely of fossil shells. In the Santa Cruz-Aptos area, the Purisima Formation has produced a rich fossil record, most notably of marine mammals such as seals, sea lions, walruses, dolphins, porpoises, beluga whales, and a diversity of baleen whales. Other marine animals known from the Purisima Formation include sharks, rays, fishes, sea turtles, sea birds, and numerous types of marine invertebrates like snails, clams, sand dollars, and crabs. Terrestrial plants (wood, cones) and rare terrestrial mammals such as horses have also been discovered. Though no fossil localities are known within the project limits, a records search from the University of California Museum of Paleontology indicated there are 64 fossil localities near the project alignment. The Purisima Formation is considered to have a high paleontological potential.

Environmental Consequences

Build Alternative

Direct impacts to paleontological resources generally occur during ground-disturbing construction operations. Excavations into geologic rock units with high paleontological potential can result in the physical destruction of fossils. There are no documented paleontological localities within the project area, and the Holocene-age alluvial deposits at the surface have a low potential to contain fossils due to their young age. However, these deposits likely overlie high paleontological sensitivity coastal terrace deposits and the Purisima Formation at shallow depth.

Based on available excavation information, the greatest potential for direct impacts would be during excavation for the replacement of the Capitola Avenue overcrossing and the installation of the Mar Vista Drive pedestrian

and bicycle overcrossing, a soundwall, retaining wall, and utility relocations. Mitigation measure PALEO-1 entails the preparation of a Paleontological Mitigation Plan during the project design phase when more detailed construction plans and information on expected excavation and depths are determined.

No indirect or cumulative impacts on paleontological resources are expected.

No-Build (No-Action) Alternative

Under the No-Build (No-Action) Alternative, there would be no impacts on paleontological resources because no construction would occur.

Avoidance, Minimization, and/or Mitigation Measures

Due to the project's potential for impacts on paleontological resources, the following measure would be required:

- **Mitigation Measure-PALEO-1: Preparation and Implementation of a Paleontological Mitigation Plan.** A Paleontological Mitigation Plan would be prepared during the design phase of the project and implemented during project construction. The Paleontological Mitigation Plan would include provisions for full-time monitoring during excavations into coastal terrace deposits and the Purisima Formation and periodic spot checks during excavations into alluvial and floodplain deposits to check for the presence of underlying high paleontological sensitivity deposits.

2.2.4 Hazardous Waste and Materials

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 of 1980, and the Resource Conservation and Recovery Act of 1976. The purpose of the Comprehensive Environmental Response, Compensation and Liability Act, often referred to as "Superfund," is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The Resource Conservation and Recovery Act provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other relevant federal laws include the following:

- Community Environmental Response Facilitation Act
- Clean Water Act

- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, Executive Order 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 Health and Safety Code and is also authorized by the federal government to implement Resource Conservation and Recovery Act in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact groundwater and surface water quality. Relevant California regulations that address waste management and prevention and cleanup of contamination include California Code of Regulations 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.

Affected Environment

The existing conditions presented in this section are based on a review of the Initial Site Assessment prepared in July 2020. This document identified whether hazardous waste sites occur within the project corridor and conducted a preliminary review of the routine freeway construction issues that could affect the project. Additional site investigations would be conducted during the design phase of the project to further analyze potential routine hazardous waste construction issues.

The Initial Site Assessment identified the following potential recognized environmental conditions within the project corridor:

- Historical agricultural practices (pesticides and metals) could have a potential impact on subsurface soil within the project corridor.

- Aerially deposited lead could occur in exposed soil along the roadways from historical vehicle emissions during the leaded gasoline era.
- Petroleum hydrocarbons could be present in soil and groundwater from Leaking Underground Storage Tank sites in proximity to (and upgradient) of the project corridor.
- Volatile organic compounds from dry cleaner sites could be present close to (and upgradient) of the project corridor.
- Utility poles along the frontage roads and bridges/roads crossing State Route 1 have pole-mounted transformers, which may contain polychlorinated biphenyls, and treated wood poles may contain arsenic, copper, chromium, creosote, and pentachlorophenol.
- Lead-based paint could be present in the traffic striping on the roadway.
- Asbestos-containing materials could occur within the concrete of the Capitola Avenue overcrossing.

Agricultural Use

The project site was largely agricultural (except for the western section around Capitola) up until the 1960s. Based on the historical agriculture use of the land, pesticides and heavy metals may be present along the project corridor.

Aerially Deposited Lead

Aerially Deposited Lead 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 Aerially Deposited Lead on the state freeway system right-of-way within the project limits. Soil determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, Aerially Deposited Lead Agreement between Caltrans and the California Department of Toxic Substances Control. This Aerially Deposited Lead Agreement allows such soils to be safely reused within the project limits if all requirements of the Aerially Deposited Lead Agreement are met.

Leaking Underground Storage Tank Cleanup Sites and Dry Cleaner Sites

Some properties directly adjoining the project corridor were listed in some of the federal and state agency databases. The adjoining properties to the project corridor were identified in the Environmental Data Registry database, GeoTracker, and EnviroStor to the north-northeast (upgradient). There are 13 sites identified at adjoining properties to the proposed Project corridor. Within these 13 sites, there are 11 closed sites**,** most of which were gas stations. One closed site was a photography lab and two were tool yards. The two open sites are former agricultural sites.

Utility Pole-Mounted Electrical Transformers and Treated Wood Waste

There are potential polychlorinated biphenyls in pole-mounted electrical transformers near the project corridor. The existence and/or levels of polychlorinated biphenyls associated with the pole-mounted electrical transformers within the planned construction area have not been determined. Utility poles and guardrail posts (treated wood) are known to be treated with various chemicals, including arsenic, chromium, copper, creosote, and pentachlorophenol, which are known to be toxic or carcinogenic.

Capitola Overcrossing Concrete Structure—Asbestos-Containing Materials

The Capitola Avenue Overcrossing, which is built out of concrete, has the potential to contain asbestos-containing materials in the concrete aggregate.

Traffic Roadway Striping

State Route 1 has yellow pavement striping, which has the potential to contain lead and heavy metals. Yellow paints made before 1995 may exceed hazardous waste criteria under the California Code of Regulations Title 22 and require disposal in a Class 1 disposal site. However, Caltrans records indicate that older yellow pavement striping was removed through the project limits during several construction projects between 2001 and 2006.

Environmental Consequences

Build Alternative

Humans and the environment could be exposed to various constituents from the accidental release of hazardous materials that are typically encountered during construction activities. Construction would involve the use of heavy equipment, involving small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous releases in the project area. Caltrans routinely handles the types of hazardous releases that may occur during project construction through its Standard Specifications and Standard Special Provisions for removal, storage, and disposal of hazardous materials and wastes.

Disturbing either yellow or white pavement markings by grinding or sandblasting or removing treated wood posts or guardrails could expose construction workers or the general public to lead chromate and other harmful chemicals unless standard removal protocols are followed. Caltrans' Standard Special Provisions Sections 84-9.03C and 66-4 address the removal of traffic strips; Caltrans' Standard Special Provisions Section 14-11.14 addresses the removal of wood posts and guardrails. Exposing construction workers or the general public to these hazardous materials or wastes could pose a possible threat to human health. Soils on agricultural parcels could contain hazardous chemicals from past pesticide/herbicide use. Exposing construction workers or the general public to these hazardous materials or wastes could pose a possible threat to human health.

Testing for aerially deposited lead would be conducted during the project's design phase to determine whether elevated lead concentrations would be encountered during project activities and develop appropriate procedures for handling, reusing, and/or disposing of soils.

No-Build (No-Action) Alternative

No construction would take place under the No-Build (No-Action) Alternative; therefore, there would be no potential to expose workers or nearby land uses to soil contamination or hazardous materials from construction activities. The No-Build (No-Action) Alternative would not result in construction disturbance. Accordingly, the No-Build (No-Action) Alternative would not result in any direct effects regarding hazardous wastes or materials.

Avoidance, Minimization, and/or Mitigation Measures

Due to the project's potential for impacts from hazardous wastes and materials, the following measures would be required:

- **AMM-HAZ-1: Prepare a Preliminary Site Investigation for the Project Corridor.**
  - Conduct soil sampling near former agricultural fields next to State Route 1 and analyze samples for organophosphorus, organochlorine pesticides, and metals.
  - Conduct soil sampling along exposed soil next to the roadway for aerially deposited lead.
  - Conduct soil sampling along the project corridor in areas designated for soil disturbance and analyze soil for gasoline, diesel, waste oil, and volatile organic compounds.
  - Conduct soil sampling near utility poles that would be removed/relocated and analyze samples for polychlorinated biphenyls, metals, creosote, and pentachlorophenol.
  - If utility poles are moved or replaced, abate transformers before construction in coordination with Pacific Gas and Electric Company.
  - Sample the concrete within the Capitola Avenue Overpass for asbestos-containing materials during the Preliminary Site Investigation.
  - Reclaim and recycle concrete waste as appropriate.

2.2.5 Air Quality

Regulatory Setting

The federal Clean Air Act, as amended, is the primary law governing air quality across the nation, while the California Clean Air Act is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency and the California Air Resources Board, set standards for

the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards. National Ambient Air Quality Standards and state ambient air quality standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide, nitrogen dioxide, ozone, particulate matter—which is broken down for regulatory purposes into particles of 10 micrometers or smaller and particles of 2.5 micrometers and smaller—Lead, and sulfur dioxide. In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The National Ambient Air Quality Standards 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 Clean Air Act also applies.

Conformity

The conformity requirement is based on Clean Air Act Section 176(c), which prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan for attaining the National Ambient Air Quality Standards. “Transportation Conformity” applies to freeway 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 National Ambient Air Quality Standards, and only for the specific National Ambient Air Quality Standards that are or were violated. U.S. Environmental Protection Agency regulations at 40 Code of Federal Regulations 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for National Ambient Air Quality Standards 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 National Ambient Air Quality Standards for carbon monoxide, nitrogen dioxide, ozone, particulate matter (10 micrometers or smaller), particulate matter (2.5 micrometers or smaller), and in some areas (although not in California), sulfur dioxide. California has nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except sulfur dioxide, and also has a nonattainment area for lead; however, lead is not currently required by the Clean Air Act to be

covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans and Federal Transportation Improvement Programs that include all transportation projects planned for a region over a period of at least 20 years (for the Regional Transportation Plan) and 4 years (for the Federal Transportation Improvement Programs). Regional Transportation Plan and Federal Transportation Improvement Program conformity uses travel demand and emission models to determine whether the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the Clean Air Act and the State Improvement Plan are met. If the conformity analysis is successful, the Metropolitan Planning Organization, Federal Highway Administration, and Federal Transit Administration make the determinations that the Regional Transportation Plan and Federal Transportation Improvement Plan are in conformity with the State Improvement Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the Regional Transportation Plan and/or Federal Transportation Improvement Plan 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 Regional Transportation Plan and Federal Transportation Improvement Plan, 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 Regional Transportation Plan and Transportation Improvement Plan; the project has a design concept and scope that has not changed significantly from those in the Regional Transportation Plan and Transportation Improvement Plan ; project analyses have used the latest planning assumptions and Environmental Protection Agency-approved emissions models; and, in particulate matter areas, the project complies with any control measures in the State Improvement Plan. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in carbon monoxide and particulate matter nonattainment or maintenance areas to examine localized air quality impacts.

Affected Environment

The information presented in this section is based on the Air Quality Report prepared for the project in September 2020.

Climate, Meteorology, and Topography

The topography of a region can substantially impact airflow and the resulting pollutant concentrations. California is divided into 15 air basins with similar topography and meteorology. These divisions allow for better management air quality throughout the state. Each air basin has a local air district that is responsible for identifying and implementing air quality strategies to comply with state and federal ambient air quality standards. The project site is near

the City of Capitola in the County of Santa Cruz, an area within the North Central Coast Air Basin, which includes Monterey and San Benito Counties. The Monterey Bay Air Resources District administers air quality regulation in the North Central Coast Air Basin. The current (2017) population for the County of Santa Cruz is 273,263 and is forecasted to grow to 298,095 by 2030. the County of Santa Cruz's economy is largely driven by educational, government, health care, recreational, and agricultural services.

The semi-permanent high-pressure cell in the eastern Pacific is the basic controlling factor in the climate of the North Central Coast Air Basin. In the summer, the high-pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific High, forming a stable temperature inversion of hot air over a cool coastal layer of air. The onshore air currents pass over cool ocean waters to bring fog and relatively cool air into the coastal valleys; the warmer air overhead acts as a lid to prevent vertical air movement.

The generally northwest-southeast orientation of mountainous ridges tends to restrict and channel the summer onshore air currents. Surface heating in the interior portion of the Salinas and San Benito Valleys creates weak low pressure, which intensifies the onshore airflow during the afternoon and evening.

In the fall, the surface winds become weak, and the marine layer grows shallow, disappearing altogether on some days. The airflow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High, which allows pollutants to build up over a few days. It is most often during this season that the north or east winds develop to transport pollutants from either the San Francisco Bay Area or the Central Valley into the North Central Coast Air Basin.

During the winter, the Pacific High migrates southward and has less influence on the air basin. Air frequently flows in a southeasterly direction out of the Salinas and San Benito Valleys, especially during night and morning hours. Northwest winds are nevertheless still dominant in winter, but the easterly flow is more frequent. The general absence of deep, persistent inversions and the occasional storm systems usually result in good air quality for the basin as a whole in winter and early spring. In the County of Santa Cruz, coastal mountains exert a strong influence on atmospheric circulation and result in generally good air quality. Small inland valleys, such as Scotts Valley with low mountains on two sides, have poorer circulation than the areas of Santa Cruz on the coastal plain. Scotts Valley is downwind of major pollutant generating centers, and these pollutants have time to form oxidants while in transit to Scotts Valley. Consequently, air pollutants tend to build up more in Scotts Valley than in Santa Cruz.

Monterey Bay is a 25-mile-wide inlet that allows marine air at low levels to penetrate the interior. The Salinas Valley is a steep-sloped coastal valley, which opens out on Monterey Bay and extends southeastward with mountain ranges of 2,000 feet to 3,000 feet in elevation on either side of the valley. The broad area of the valley floor near the mouth is some 25 miles wide, narrowing to about 6 miles in Soledad, which is 40 miles inland, and to about 3 miles wide in King City, which is about 60 miles from the coast. In Salinas, near the northern end of the Salinas Valley, west and northwest winds occur about 50 percent of the time during the entire year. Although the summer coastal stratus rarely extends beyond Soledad, the extended sea breeze consisting of warmer and drier air currents frequently reaches far down the Salinas Valley. In the southern end of Salinas Valley, which extends into the North Central Coast Air Basin to Paso Robles, winds are generally weaker most of the year except during storm periods.

The City of Hollister, in the northern end of the San Benito Valley, experiences west winds nearly one-third of the time. The prevailing airflow during the summer months probably originates in the Monterey Bay area and then enters the northern end of the San Benito Valley via the air gap through the Gabilan Range occupied by the Pajaro River. Additionally, a northwesterly airflow frequently transports pollutants into the San Benito Valley from the Santa Clara Valley.

Meteorology (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 and above the surface. Winds can transport ozone and ozone precursors from one region to another, contributing to air quality problems downwind of source regions. Furthermore, mountains can act as a barrier that prevents ozone from dispersing.

The Watsonville Water Works climatological station, maintained by the National Oceanic and Atmospheric Administration, is near the project site and is representative of meteorological conditions near the project. The climate of the project area is generally Mediterranean in character, with cool, wet winters (average 50.5 degrees Fahrenheit in January) and warm, dry summers (average 63.3 degrees Fahrenheit in July). Temperature inversions are common, affecting localized pollutant concentrations in the winter and enhancing ozone formation in the summer. Mountains averaging 2,000 feet to 3,000 feet in altitude tend to trap pollutants in the region by limiting airflow. The annual average rainfall is 21.52 inches (at Watsonville Water Works Climatological Station), mainly falling during the winter months.

Existing Air Quality

Table 2.28 lists the state and federal attainment status for all regulated pollutants. Table 2.29 lists air quality trends in data collected at Santa Cruz—Soquel Avenue Monitoring Station between 2014 and 2018. Table 2.29 does not show data for pollutants (including carbon monoxide, particulate matter

(10 micrometers or smaller), and nitrogen dioxide) that are no longer monitored by the U.S. Environmental Protection Agency or Air Resources Board in the County of Santa Cruz.

An analysis of this air quality data was conducted before the U.S. Environmental Protection Agency finalized air quality data for 2019. There are no U.S. Environmental Protection Agency -approved State Improvement Plans that are relevant to the project.

Table 2.28 State and Federal Attainment Status

Pollutant	State Attainment Status	Federal Attainment Status
Ozone	Nonattainment	Attainment—Unclassified
Respirable Particulate Matter	Nonattainment	Unclassified
Fine Particulate Matter	Attainment	Attainment—Unclassified
Carbon Monoxide	Unclassified	Attainment—Unclassified
Nitrogen Dioxide	Attainment	Attainment—Unclassified
Sulfur Dioxide	Attainment	Attainment—Unclassified
Lead	Attainment	Attainment—Unclassified
Visibility-Reducing Particles	Unclassified	Not Applicable
Sulfates	Attainment	Not Applicable
Hydrogen Sulfide	Unclassified	Not Applicable
Vinyl Chloride	Not Applicable	Not Applicable

Table 2.29 Air Quality Concentrations for the Past 5 Years Measured at the Santa Cruz—Soquel Avenue Monitoring Station

Pollutant/ Standard	Standard	2014	2015	2016	2017	2018
Ozone : Maximum 1-hour concentration	Not applicable	0.076	0.076	0.064	0.082	0.075
Number of days exceeded—State	0.09 parts per million	0	0	0	0	0
Ozone : Maximum 8-hour concentration	Not applicable	0.068	0.061	0.058	0.075	0.061
Number of days exceeded—State	0.070 parts per million	0	0	0	1	0
Number of days exceeded—Federal	0.070 parts per million	0	0	0	1	0
Carbon Monoxide: Maximum 1-hour concentration	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—State	20 parts per million	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—Federal	35 parts per million	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Carbon Monoxide: Maximum 8-hour concentration	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Pollutant/ Standard	Standard	2014	2015	2016	2017	2018
Number of days exceeded—State	9.0 parts per million	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—Federal	9 parts per million	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Particulate Matter (10 micrometers or smaller): Maximum 24-hour concentration	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—State	50 micrograms per cubic meter	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—Federal	150 micrograms per cubic meter	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Particulate Matter (10 micrometers or smaller): Maximum annual concentration	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—State	20 micrograms per cubic meter	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Particulate Matter (2.5 micrometers or smaller): Maximum 24-hour concentration	Not applicable	15.7	20.5	12.7	47.3	92.0
Number of days exceeded—Federal	35 micrograms per cubic meter	0	0	0	2	10
Particulate Matter (2.5 micrometers or smaller): Maximum annual concentration	Not applicable	5.3	4.8	5.2	7.0	8.1
Number of days exceeded—State	12 micrograms per cubic meter	0	0	0	0	0
Number of days exceeded—Federal	12.0 micrograms per cubic meter	0	0	0	0	0
Nitrogen Dioxide: Maximum 1-hour concentration	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—State	0.18 parts per million	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—Federal	100 parts per billion	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Nitrogen Dioxide: Maximum annual concentration	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—State	0.030 parts per million	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of days exceeded—Federal	53 parts per billion	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

Sources of Mobile Source Air Toxics emissions in the project area include State Route 1, Soquel Drive, Park Avenue, and State Park Drive. No Mobile Source Air Toxics monitoring sites were identified in the vicinity of the project.

The nearest Mobile Source Air Toxics monitoring site is in the City of San Jose, about 25 miles north of the project site. Concentrations of Mobile Source Air Toxics in the City of San Jose would not be representative of the project area due to differences in traffic conditions, climate, meteorology, and topography.

Sensitive Receptors

Based on research showing that the zone of greatest concern near roadways is within 500 feet of sensitive receptors, receptors within that zone have been identified and are documented in Table 2.30 and shown in Figure 2-14a–c.

Table 2.30 Sensitive Receptors Within 500 Feet of the Project Site

Map Number	Receptor	Description	Distance Between Receptor and State Route 1 (Feet)
1	Homes	Homes	Nearby Throughout
2	Breakers U10 Soccer Field	Athletic Field	100
3	Cabrillo College Softball Field	Athletic Field	280
4	Twin Lakes Church and Christian School	Kindergarten to 8th Grade School	500
5	Children's Enrichment Center	Childcare Center	270
6	Cabrillo College Baseball Field	Athletic Field and Facility	100
7	Seacliff Village Park	Park	50
8	New Brighton State Beach	Park	100
9	Monte Family Skate Park	Park	100
10	McGregor Pump Track and Skateboard Park	Athletic Facility	100
11	Imperial Courts Tennis Club	Athletic Center	70
12	Heartland Hospice Service	Hospice Center	230
13	Soquel Children's Center	Childcare Facility	410

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The California Air Resources Board has identified the following typical groups that are most likely to be affected by air pollution: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. Sensitive receptors include homes, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Additional receptors are outside of 500 feet from State Route 1. Although not listed in Table 2.30, these include Soquel Elementary School, New Brighton Middle School, Santa Cruz Montessori School Winston Campus, Mar Vista Elementary School, and the Santa Cruz County Office of Education—Special Education Facility.

Figure 2-14a Sensitive Receptors

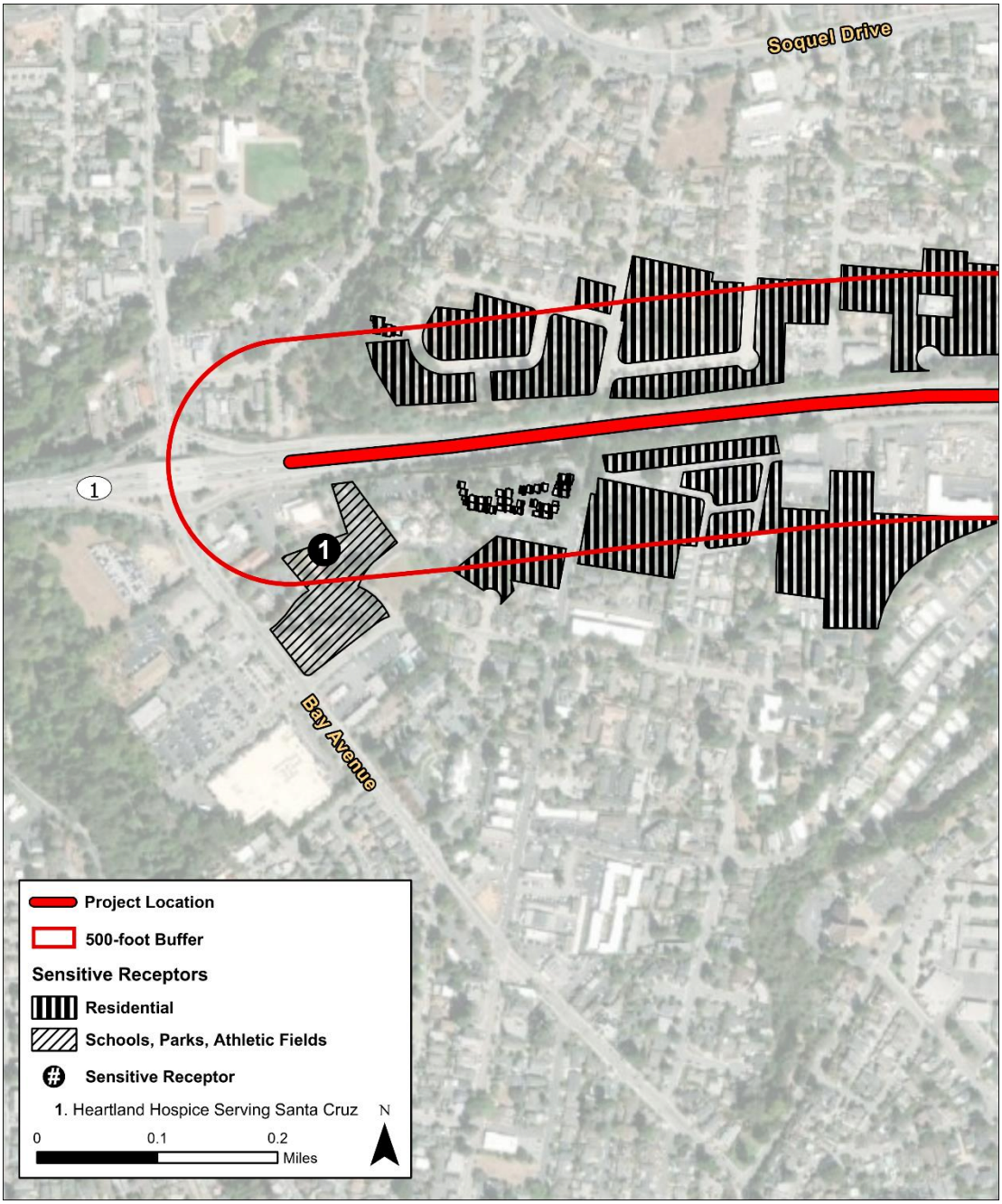


Figure 2-14b Sensitive Receptors

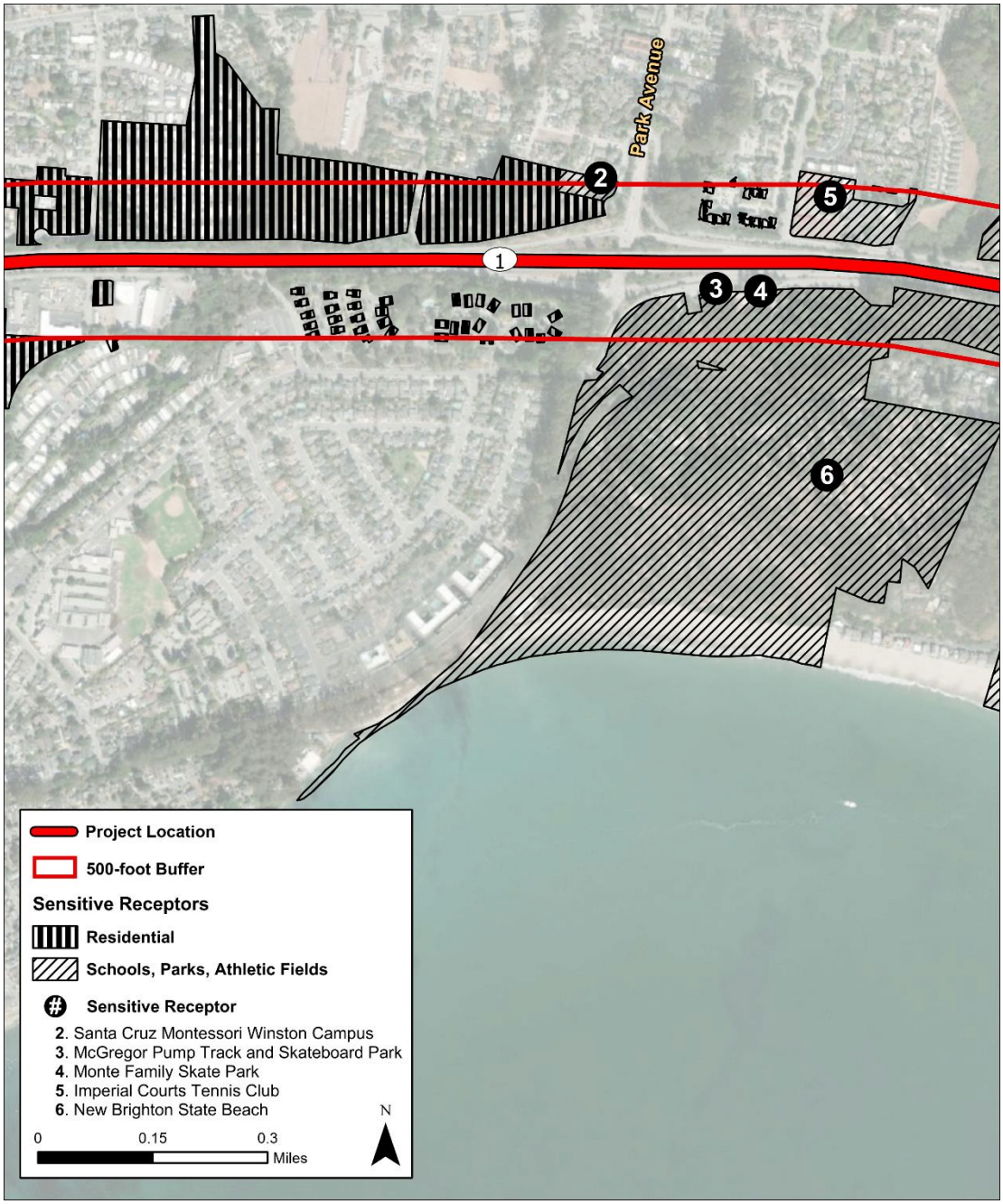


Figure 2-14c Sensitive Receptors

Environmental Consequences

Build Alternative

Construction Conformity

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 regional and project-level conformity analysis. (40 Code of Federal Regulations 93.123(c)(5))

Regional Conformity

The project is in an attainment/unclassified area for all current National Ambient Air Quality Standards. Therefore, conformity requirements do not apply.

Project Level Conformity

The project is in an attainment/unclassified area for all current National Ambient Air Quality Standards. Therefore, conformity requirements do not apply.

Additional Environmental Analysis

Construction (Short-Term) Impacts

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. During construction, short-term degradation of air quality is expected from the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment powered by gasoline and diesel engines are also expected; they would include carbon monoxide, nitrogen oxide, volatile organic compounds, directly emitted particulate matter (10 micrometers or smaller) and particulate matter (2.5 micrometers or smaller), and toxic air contaminants such as diesel exhaust particulate matter. Construction activities are expected to increase traffic congestion in the area, resulting in increases in emissions from traffic during the delays. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Under the transportation conformity regulations (40 Code of Federal Regulations 93.123(c)(5)), construction-related activities that cause temporary increases in emissions are not required in a hot-spot analysis. These temporary increases in emissions only occur during the construction phase; they last 5 years or less at any individual site. They typically fall into two main categories:

- Fugitive dust is a major emission from construction due to ground disturbance. All air districts and the California Health and Safety Code (Sections 41700-41701) prohibit “visible emissions” exceeding 3 minutes

in 1 hour—this applies not only to dust but also to the engine exhaust. In general, this is interpreted as visible emissions crossing the right-of-way line.

Sources of fugitive dust include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site may deposit mud on local streets, which could be an additional source of airborne dust after it dries. Particulate matter (10 micrometers or smaller) emissions may vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. Particulate matter (10 micrometers or smaller) emissions depend on soil moisture, silt content of the soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

- Construction equipment emissions: Diesel exhaust particulate matter is a California-identified toxic air contaminant, and localized issues may exist if diesel-powered construction equipment is operated near sensitive receptors.

Construction would occur over about 2 years (24 months). The Build Alternative is not in an area that has a federal nonattainment status for any criteria air pollutant. Construction emissions are not required to be estimated for transportation conformity. However, construction emissions have been estimated in accordance with CEQA requirements and for disclosure in this document. Construction emissions were estimated using the latest Roadway Construction Emissions Model. While the model was developed for Sacramento conditions in terms of fleet emission factors, silt loading, and other model assumptions, it is considered adequate for estimating road construction emissions by the Monterey Bay Air Resources District.

Construction emissions were estimated using detailed equipment inventories, project construction scheduling information, and other input parameters provided by the engineering team. Table 2.31 presents the daily construction-related emissions for the Build Alternative. These emissions are based on the best information available at the time of project calculations. The emissions represent the peak daily construction emissions that would be generated by the Build Alternative.

Table 2.31 Daily Construction Emissions for Roadways (Pounds Per Day)

Project Phases	Particulate Matter (10 micrometers or smaller)	Particulate Matter (2.5 micrometers or smaller)	Carbon Monoxide	Nitrogen Oxides	Carbon Dioxide
Land Clearing/Grubbing	32	7.8	27	56	14,444
Grading/Excavation	33	8.4	37	71	16,643
Drainage/Utilities	31	7.1	20	22	5,059
Paving	1.2	0.8	16	30	11,925
Maximum Daily	33	8.4	37	71	16,643
Project Total (Tons)	7.2	1.8	7.1	12	3,079

Implementation of Standard Measure AQ-1 would reduce air quality impacts resulting from construction activities. Please note that although this measure is expected to reduce construction-related emissions, these reductions cannot be quantified at this time.

Additional construction impacts related to air quality may include impacts from the handling of structural asbestos and/or soils with high concentrations of aerially deposited lead during construction and demolition. Adherence to applicable Monterey Bay Air Resources District rules and Caltrans' Standard Specifications would ensure that asbestos-containing materials would be disposed of appropriately and safely. Soils would be tested at the start of ground disturbance for the presence of hazardous materials such as lead. If lead is present, the project would be required to develop a lead compliance plan to minimize exposure per Monterey Bay Air Resources District rules and regulations. Refer to Section 2.2.4, Hazardous Waste and Materials for more information on the handling and disposal of these materials.

Operational Emissions

Operational emissions demonstrate long-term changes in emissions due to the project (excluding the construction phase). The operational emissions analysis compares forecasted emissions for existing/baseline, No-Build (No-Action) Alternative, and Build Alternatives that would be generated by vehicle travel within the project limits along State Route 1. Regional operational emissions attributed to roadway vehicle travel with and without project implementation were calculated using the emissions modeling tool Emission Factor 2017. Emission Factor 2017 is the most recent on-road emissions modeling tool in California that has been approved for use by the U.S. Environmental Protection Agency. It contains a comprehensive emissions inventory of motor vehicles that provides estimated emission rates for air pollutants. The emission rates provided by Emission Factor 2017 in grams per mile were used in conjunction with traffic data presented. [On September 27, 2019, the U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration published the "Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program." (84 Federal Register 51,310 [September 27, 2019]) This rule revokes California's

authority to set its greenhouse gas emissions standards; it sets zero-emission vehicle mandates in California. The California Air Resources Board has prepared off-model adjustment factors for Emission Factor 2017 models to account for the impact of the Safer Affordable Fuel-Efficient Vehicle Rule Part One. The California Air Resources Board prepared guidance for the application of these off-model adjustment factors, which were published on November 20, 2019, and approved by the U.S. Environmental Protection Agency on March 12, 2020. Per the California Air Resources Board's guidance, the off-model adjustment factors were only applied to emissions from gasoline-powered light-duty vehicles (passenger cars, light duty trucks (Class 1), light duty trucks (Class 2), and medium duty trucks) to calculate the adjusted emissions. The off-model adjustment factors are only applicable to the year 2021 and subsequent years; these factors were therefore not applied to 2019 emissions for either the No-Build (No-Action) Alternative or Build Alternative].

A summary of results of the long-term operational emissions analysis based on vehicle miles traveled and average speed data for the morning and evening peak hour is provided in Table 2.32, for the morning and evening peak period in Table 2.33, for the off-peak period in Table 2.34, and for total daily operational emissions in Table 2.35. The emissions analyses demonstrate no change in tons emitted per day in most comparisons. In some instances, there is a slight change of 0.02 ton per day or less of pollutant emissions.

Table 2.32 Summary of Comparative Emissions Analysis for Peak Hour Conditions

Scenario/Analysis Year	Particulate Matter (2.5 micrometers or less) (tons per day)	Particulate Matter (10 micrometers or less) (tons per day)	Nitrogen Oxides (tons per day)	Carbon Monoxide (tons per day)	Reactive Organic Gas (tons per day)
Baseline/Existing Conditions (2019)	Less than 0.0	Less than 0.0	0.02	0.09	Less than 0.0
Opening Year (2025) No-Build (No-Action) Alternative	Less than 0.0	Less than 0.0	0.01	0.06	Less than 0.0
Opening Year (2025) Build Alternative	Less than 0.0	Less than 0.0	0.01	0.06	Less than 0.0
Horizon/Design Year (2045) No-Build (No-Action) Alternative	Less than 0.0	Less than 0.0	Less than 0.0	0.03	Less than 0.0
Horizon/Design Year (2045) Build Alternative	Less than 0.0	Less than 0.0	Less than 0.0	0.04	Less than 0.0

Table 2.33 Summary of Comparative Emissions Analysis for Peak Period Conditions

Scenario/Analysis Year	Particulate Matter (2.5 micrometers or less) (tons per day)	Particulate Matter (10 micrometers or less) (tons per day)	Nitrogen Oxides (tons per day)	Carbon Monoxide (tons per day)	Reactive Organic Gas (tons per day)
Baseline/Existing Conditions (2019)	0.01	0.01	0.08	0.39	0.01
Opening Year (2025) No-Build (No-Action) Alternative	0.01	0.01	0.04	0.23	0.01
Opening Year (2025) Build Alternative	0.01	0.01	0.04	0.23	0.01
Horizon/Design Year (2045) No-Build (No-Action) Alternative	0.01	0.02	0.01	0.14	Less than 0.0
Horizon/Design Year (2045) Build Alternative	0.01	0.02	0.02	0.15	Less than 0.0

Table 2.34 Summary of Comparative Emissions Analysis for Off-Peak Conditions

Scenario/Analysis Year	Particulate Matter (2.5 micrometers or less) (tons per day)	Particulate Matter (10 micrometers or less) (tons per day)	Nitrogen Oxides (tons per day)	Carbon Monoxide (tons per day)	Reactive Organic Gas (tons per day)
Baseline/Existing Conditions (2019)	0.01	0.02	0.11	0.53	0.02
Opening Year (2025) No-Build (No-Action) Alternative	0.01	0.02	0.06	0.30	0.01
Opening Year (2025) Build Alternative	0.01	0.02	0.06	0.31	0.01
Horizon/Design Year (2045) No-Build (No-Action) Alternative	0.01	0.02	0.02	0.18	Less than 0.0
Horizon/Design Year (2045) Build Alternative	0.01	0.02	0.02	0.18	0.01

Table 2.35 Summary of Total Daily Comparative Emissions Analysis

Scenario/Analysis Year	Particulate Matter (2.5 micrometers or less) (tons per day)	Particulate Matter (10 micrometers or less) (tons per day)	Nitrogen Oxides (tons per day)	Carbon Monoxide (tons per day)	Reactive Organic Gas (tons per day)
Baseline/Existing Conditions (2019)	0.02	0.04	0.21	1.01	0.04
Opening Year (2025) No-Build (No-Action) Alternative	0.02	0.04	0.10	0.59	0.02
Opening Year (2025) Build Alternative	0.02	0.04	0.10	0.60	0.02
Horizon/Design Year (2045) No-Build (No-Action) Alternative	0.02	0.04	0.04	0.35	0.01
Horizon/Design Year (2045) Build Alternative	0.02	0.04	0.04	0.37	0.01

Mobile Source Air Toxics

The Build Alternative has a low potential for Mobile Source Air Toxics effects because it is a minor freeway widening project. Caltrans' traffic data analyzing the annual average daily traffic from 2017 indicate that the existing annual average daily traffic ranges between 87,600 and 101,000, which is well below

the 150,000 threshold for a project to qualify as having high potential Mobile Source Air Toxics effects. A qualitative analysis was performed and derived in part from a study conducted by the Federal Highway Administration entitled, A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives (FWHW 2016), which provided a basis for identifying and comparing the potential differences among Mobile Source Air Toxics emissions, if any, from the No-Build (No-Action) Alternative and Build Alternative.

For the Build Alternative, the amount of Mobile Source Air Toxics emitted would be proportional to vehicle miles traveled. As discussed in Section 2.1.3, Traffic and Transportation/Pedestrian and Bicycle Facilities, the Build Alternative would not substantially change the daily vehicle miles traveled from the No-Build (No-Action) Alternative. Additionally, the Build Alternative would reduce vehicle delay, increase average speed, and improve level of service, as shown in Section 2.1.3, Traffic and Transportation/Pedestrian and Bicycle Facilities, thereby reducing Mobile Source Air Toxics emissions associated with vehicle idling. Furthermore, emissions would likely be lower than present levels in the design year as a result of U.S. Environmental Protection Agency's national control programs that are projected to reduce annual Mobile Source Air Toxics emissions by over 90 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, vehicle miles traveled growth rates, and local control measures. However, the magnitude of the U.S. Environmental Protection Agency-projected reductions is so great (even after accounting for vehicle miles traveled growth) that Mobile Source Air Toxics emissions in the project area are likely to be lower in the future in nearly all cases.

The bus-on-shoulder component of the project would move buses slightly closer to land uses near the freeway. The shift from the center of the outside lane to the center of the shoulder would be about 12 feet. Santa Cruz Metro Transit District provides a fixed-route bus transit service in the County of Santa Cruz, which is continuously upgrading its transit fleet to include new hybrid buses and zero-emission electric buses. Replacing and upgrading the existing fleet is a stated top priority for Santa Cruz Metro Transit District. Low emissions buses like the diesel-electric hybrid and compressed natural gas buses are a near-term alternative that allows transit operators to significantly reduce fuel emissions as the bus manufacturing industry develops electric buses with maximized operating range. The California Air Resources Board has set a deadline of 2040 for all transit operators to transition to zero-emission electric fleets. The bus-on-shoulder component of the Build Alternative is not expected to significantly increase mobile source air toxics emissions near the freeway.

The Build Alternative has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants, which have not been linked with any special mobile source air toxics concerns. As such, the Build Alternative

would not result in substantial changes in daily traffic volumes, vehicle mix, project location, or any other factor that would cause an increase in mobile source air toxics impacts within the project area based on vehicle miles traveled, vehicle mix, or speed. Marginal changes in ramp and arterial volumes under the Build Alternative are attributed to redistributive effects of the widening of the auxiliary lane and do not reflect induced increases in roadway volumes or vehicle miles traveled within the project area as a result of project implementation.

No-Build (No-Action) Alternative

Under the No-Build (No-Action) Alternative, the project would not be built, and the existing roadway would be maintained. The No-Build (No-Action) Alternative would not directly generate any short-term construction emissions. It is expected that future emissions of criteria pollutants and mobile source air toxics would decrease relative to existing conditions because of improvements in engine technology and the phasing out of older, more polluting engines. Likewise, carbon monoxide concentrations would be reduced. Comparisons of criteria pollutant emissions of the No-Build (No-Action) Alternative to the Build Alternative are provided in Tables 2.32 through 2.35.

Avoidance, Minimization, and/or Mitigation Measures

As stated in the project description in Chapter 1, Standard Measures AQ-1 through AQ-13 would be implemented to reduce environmental impacts. No avoidance, minimization, and/or mitigation measures have been identified as necessary to reduce emissions, though the Build Alternative would comply with Monterey Bay Air Resources District rules and various regulations (Rules 207, 400, 402, 403, 416) to control emissions of air pollutants during construction.

Climate Change

The U.S. Environmental Protection Agency and Federal Highway Administration have not issued explicit guidance or methods to conduct project-level greenhouse gas analysis. The Federal Highway Administration emphasizes concepts of resilience and sustainability in freeway planning, project development, design, operations, and maintenance. Because there have been requirements outlined in California legislation and executive orders on climate change, the issue is addressed in Chapter 3, California Environmental Quality Act Evaluation. The CEQA analysis may be used to inform the NEPA determination for the project.

References

Federal Highway Administration. 2016. *Updated Interim Guidance on Mobile Source Air Toxics in NEPA Documents*. October.

2.2.6 Noise and Vibration

Regulatory Setting

CEQA and NEPA provide the broad basis for analyzing and abating freeway 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 CEQA and NEPA.

California Environmental Quality Act

CEQA requires a strict baseline versus build analysis to assess whether a proposed project will 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 will focus on the NEPA/23 Code of Federal Regulations 772 noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 Code of Federal Regulations 772

For freeway transportation projects with Federal Highway Administration involvement (and Caltrans, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 Code of Federal Regulations 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 freeway project. The regulations include noise abatement criteria that are used to determine when a noise impact would occur. The noise abatement criteria differ depending on the type of land use under analysis. For example, the noise abatement criteria for homes (67 A-weighted decibels) is lower than the noise abatement criteria for commercial areas (72 A-weighted decibels). The following table lists the noise abatement criteria for use in the NEPA/23 Code of Federal Regulations 772 analysis.

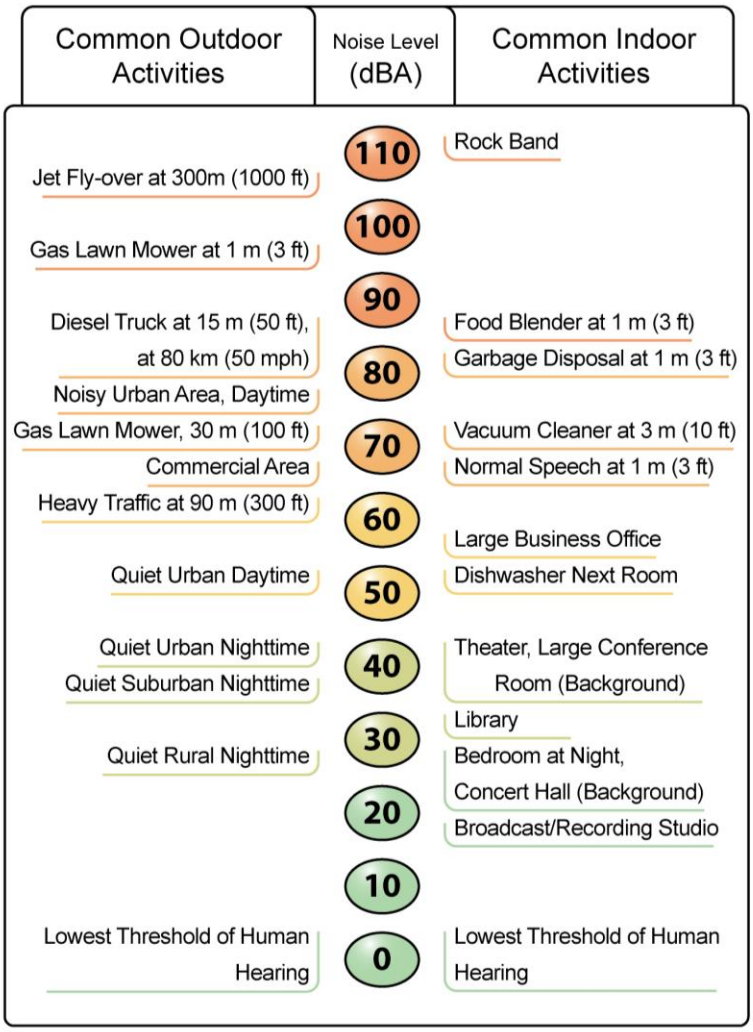
In Table 2.36 below, undeveloped lands are permitted for the activity categories for B and C. Also, Leq(h) equals a one-hour A-weighted equivalent continuous sound level.

Table 2.36 Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, Hourly A- Weighted Noise Level, Leq(h)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Residential.
C	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 Noise Abatement Criteria—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 warehouses.
G	No Noise Abatement Criteria—Reporting Only	Undeveloped lands that are not permitted.

Figure 2-15 shows the noise levels of common activities to enable readers to compare the actual and predicted freeway noise levels discussed in this section with common activities.

Figure 2-15 Noise Levels of Common Activities



According to Caltrans' Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (2011), a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 A-weighted decibel or more) or when the future noise level with the project approaches or exceeds the noise abatement criteria. A noise level is considered to approach the noise abatement criteria if it is within 1 A-weighted decibel of the noise abatement criteria.

If it is determined that the project will 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.

Caltrans' 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 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, noise 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 decibels at one or more impacted receptors, (2) the cost of noise abatement, and (3) the viewpoints of benefitted receptors (including property owners and residents of the benefitted receptors).

Affected Environment

The following analysis was prepared using information from the Noise Study Report prepared for the project in May 2020.

This Noise Study Report assessed the project's consistency with a previous Noise Study Report completed in May 2013 for the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact, which included the same segment of State Route 1 that is proposed to be altered by this project. Based on Caltrans guidance, this Noise Study Report assesses the current project's consistency with the previous project and aligns the previous findings with updated protocols for noise assessment. The Noise Study Report included a field investigation conducted in February 2020 to confirm that land uses identified in the previous Noise Study Report remain consistent.

The project area consists of single-family homes, multi-family homes, schools, religious institutions, and, in some cases, hotel/motels (Activity Category B) and numerous commercial uses (Activity Categories C and E).

Land uses along the State Route 1 project corridor are predominantly residential with pockets of commercial and recreational parcels. Traffic on State Route 1 is the dominant source of noise in the area. Existing land uses in the project corridor can be divided into six segments based upon major local interchanges, similar or like topographies, and separate or unique neighborhoods. The following describes neighborhoods in the two segments relevant to this project:

- **State Park Drive to Park Avenue:** Along State Route 1 between the State Park Drive and Park Avenue interchanges, the predominant Activity Category B land use is single-family residential and multi-family residential. Other Category B and Category E land use areas include

mobile home parks, religious institutions, Cabrillo College, New Brighton State Beach, and Best Western. In general, homes are on higher ground than State Route 1, and the outdoor use areas are at similar elevations relative to State Route 1. McGregor Drive is parallel to State Route 1, and the traffic was seen to be heavy during the morning and afternoon morning rush hours.

- **Park Avenue to Bay Avenue/Porter Street:** Land Activity Categories B, C, and E land use areas in this segment along State Route 1 consist of multi-family homes, single-family homes, mobile homes, and religious institutions. Most of the identified homes are elevated relative to State Route 1, and dense vegetation blocks their view of State Route 1. There are existing 10-foot-high soundwalls on the right-of-way lines on both sides of State Route 1 near Capitola Avenue. These barriers provide traffic noise reduction for some mobile homes, single-family homes, multi-family homes, and Capitola Inn.

Methodology

A field investigation was conducted in February 2020 to identify the land uses near the project area and assess potential impacts from construction and traffic noise resulting from the project. Land uses in the project area were categorized by land-use type, activity category, and frequency of human use. Abatement is considered for areas of frequent human use that would benefit from the lowered noise level, so the noise impact analysis focused on locations where frequent human use would likely occur.

Noise measurements were mainly conducted in frequent outdoor human-use areas along the project corridor, primarily in backyard locations. Both short-term and long-term measurements were taken and included in the analysis conducted for the Noise Study Report.

Future noise levels were modeled using the Federal Highway Administration Traffic Noise Model Version 2.5, which considers traffic volumes, speed, and vehicle type to determine traffic noise levels.

This modeling was used to determine areas that meet the criteria for traffic noise impacts and associated abatement. Traffic noise impacts are considered to occur at receptor locations where predicted design-year noise levels are at least 12 A-weighted decibels greater than existing noise levels, or where predicted design-year noise levels approach or exceed the noise abatement criteria for the applicable activity category. Where traffic noise impacts are identified, noise abatement must be considered for reasonableness and feasibility as required by 23 Code of Federal Regulations 772 and the Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects.

Environmental Consequences

This project is considered a Type 1 Project due to the addition of a new travel lane in each direction of State Route 1. As a Type 1 project, a noise analysis must be prepared for the project.

Build Alternative

Construction Noise

Two types of short-term noise impacts would occur during construction. The first would be from construction crew commutes and the transport of construction equipment and materials to the project site that would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved onsite, would remain for the duration of each construction phase, and would not add to the daily traffic volumes in the project vicinity. At 50 feet from the project site, a high single-event noise exposure potential at a maximum instantaneous noise level of 84 A-weighted decibels from trucks passing would exist. However, the projected construction traffic volume would be minimal when compared to existing traffic volumes on State Route 1 and other nearby roadways, and the associated long-term noise level change would not be noticeable. Therefore, short-term construction-related worker commutes and equipment transport noise impacts would be less than substantial.

The second type of short-term noise impact is related to noise generated during roadway construction. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated, and the noise levels in the project area as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by the work phase. Table 2.37 lists typical construction equipment noise levels (maximum instantaneous noise level) recommended for noise impact assessments based on 50 feet between the equipment and a noise receptor. Noise levels in this table are rounded to the nearest decibel. Maximum noise levels are based on Specification 721.560 of the Roadway Construction Noise Model, which was developed from the Central Artery/Tunnel program to be consistent with the City of Boston's Noise Code for the "Big Dig" project. The actual maximum noise level was developed based on the average noise level measured for each piece of equipment during the Central Artery/Tunnel program in Boston, Massachusetts.

Typical noise levels at 50 feet from an active construction area range up to a maximum instantaneous noise level of 88 A-weighted decibels during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the

noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery (e.g., backfillers, bulldozers, and front loaders). Earthmoving equipment and compacting equipment include compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

Table 2.37 Roadway Construction Noise Model Default Noise Emission Reference Levels and Usage Factors

Equipment Description	Specification 721.560 Maximum Instantaneous Noise Level in A-weighted Decibels at 50 feet	Actual Measured Maximum Instantaneous Noise Level in A-weighted Decibels at 50 feet
Backhoe	80	78
Compactor (ground)	80	83
Crane	85	81
Bulldozer	85	82
Dump Truck	84	76
Excavator	85	81
Flatbed Truck	84	74
Front-End Loader	80	79
Grader	85	Not Applicable
Jackhammer	85	89
Pickup Truck	55	75
Pneumatic Tools	85	85
Pumps	77	81
Rock Drill	85	81
Roller	85	80
Scraper	85	84
Tractor	84	Not Applicable

Source: Table 1, Roadway Construction Noise Model (Federal Highway Administration 2006).

Construction of the project is expected to require the use of graders, bulldozers, and water trucks/pickup trucks. Noise associated with the use of construction equipment is estimated to have a maximum instantaneous noise level between 55 and 85 A-weighted decibels at 50 feet from the active construction area for the grading phase. As seen in Table 2.37, the maximum instantaneous noise level generated by each grader is assumed to be about 85 A-weighted decibels at 50 feet from the grader in operation. Each bulldozer would generate a maximum instantaneous noise level of about 85 A-weighted decibels at 50 feet from the active equipment. The maximum noise level generated by water trucks/pickup trucks is estimated to be a maximum instantaneous noise level of about 55 A-weighted decibels at 50 feet from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 A-weighted decibels. Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest home during this phase of construction would be a maximum instantaneous noise level of A-weighted

decibels at 50 feet from the active construction area. Based on a usage factor of 40 percent, the worst-case combined noise level during this phase of construction would be an equivalent continuous sound level of 84 A-weighted decibels at 50 feet from the active construction area.

The noise level requirement specified herein shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixers, or transient equipment that may or may not be owned by the contractor.

Sound control shall conform to the provisions in Section 14-8.02, "Noise Control," of Caltrans' Standard Specifications and Section 14-8.02 "Noise Control" of Caltrans' Standard Special Provisions. According to these requirements, construction noise cannot exceed 86 A-weighted decibels at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m.

Many measures can be taken to minimize noise intrusion without placing unreasonable constraints on the construction process or substantially increasing costs. Minimization and avoidance measures designed to address construction-related noise impacts are included in the avoidance, minimization, and/or mitigation measures section below.

Certain construction activities could cause concern about vibration in the project area. During certain construction phases, processes—such as earthmoving with bulldozers, the use of vibratory compaction rollers, impact pile driving, demolition, or pavement breaking—may cause construction-related vibration impacts such as human annoyance or, in some cases, building damage. There are cases where it may be necessary to use vibration-producing equipment close to residential buildings. Avoidance and minimization measures have been designed to address these potential impacts and are discussed in the avoidance, minimization, and/or mitigation measures section below.

Operational Noise

The Noise Study Report studied future traffic noise impacts at receptors along the project corridor. Potential long-term noise impacts from the project are solely from traffic noise. A field investigation was conducted to identify land uses that could be subject to traffic noise impacts from the project. Single-family homes, multi-family homes, schools, religious institutions, and in some cases, hotel/motels were identified as Activity Category B land uses in the project area. The numerous commercial uses in the area are classified as Activity Category C and Activity Category E land uses. As required by the Traffic Noise Analysis Protocol, noise abatement is only considered for areas of frequent human uses that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards, decks, and balconies; common outdoor use areas for motels and school playgrounds; and common use areas at multi-family homes. The Noise Study Report evaluated traffic noise

for the worst-case traffic condition, with 80 receptor locations evaluated for existing and future traffic noise.

Existing Noise Levels at Peak Traffic Hour

Table 2.38 shows the measured noise levels at each of the 80 receptor locations. Receptor locations were evaluated for the worst-case traffic scenario.

Future Noise Levels in Design Year (2045)

The Noise Study Report modeled and evaluated future noise conditions to assess the project's impacts on noise. A project's design year, or the year a project reaches its expected life expectancy, is commonly used as a baseline for the evaluation of future impacts. The period typically used to establish a project's design year is 20 years from project completion. The project is expected to be completed in 2025, so the Noise Study Report used the year 2045 to assess noise conditions in the project's design year.

The modeled future noise levels with the project were compared to the modeled existing noise levels (after calibration) from Traffic Noise Model 2.5 to determine whether a substantial noise increase would occur as a result of the project. The modeled future noise levels were also compared to the noise abatement criteria to determine whether a traffic noise impact would occur. If there is a substantial increase (12 A- weighted decibels) in noise with the project and/or if the noise approaches (within 1 A-weighted decibel) or exceeds the noise abatement criteria, then there is a noise impact that requires consideration of noise abatement. Table 2.38 shows the projected future noise levels at each receptor site with and without the project.

The Noise Study Report found that 49 of the 80 total receptor sites are expected to experience an increase in traffic noise that would approach or exceed the noise abatement criteria. However, none of the 80 receptor sites would experience an increase in noise that exceeds 12 A-weighted decibels or more over its corresponding modeled existing noise level.

Based on the findings of the Noise Study Report, noise abatement was considered for affected receptor sites. Noise abatement would be in the form of sound barriers installed along the project corridor. Table 2.38 also includes projected future noise levels with sound barriers of five distinct heights ranging from 8 feet to 16 feet. Figure 2-16 shows the locations of proposed noise barriers. Proposed noise abatement is discussed further in the avoidance, minimization, and/or mitigation measures section below.

A total of 14 noise barriers were found in the Noise Study Report to be reasonable and feasible and are proposed to be built as part of the project. These noise barriers, which range in height from 8 feet to 16 feet depending on site-specific noise impacts from the project, would provide noise reduction meeting the noise reduction design goal of at least 7 A-weighted decibels at

46 of the 49 receptors expected to experience an increase in traffic noise as a result of the project's implementation that approaches or exceeds the noise abatement criteria.

The Noise Study Report determined that three of the 80 receptor sites would experience an increase in noise that exceeds the noise abatement criteria but cannot be abated reasonably and feasibly by the installation of sound barriers. These receptors—R113, R114, and R116—represent 13 mobile homes and four multi-family residential units. These homes are protected by an existing 10-foot-high soundwall, and a screening process determined that new sound barriers would not provide the required 5-decibel noise reduction for these locations.

As shown in Table 2.38, noise abatement would result in a reduction of at least 5 decibels at most receptors.

At two of the 80 receptor sites—receptors R91 and R108—noise abatement measures were considered but found to be ineffective at reducing the noise levels below the noise abatement criteria.

For receptor R91, which represents four mobile homes, the proposed sound barrier would reduce noise levels by a maximum of 1 decibel resulting in a noise level of 67 equivalent continuous sound level measured in A-weighted decibels, which is the same as the No-Build (No-Action) Alternative.

The modeled noise reductions from installing a sound barrier at R108 would not achieve the noise reduction design goal of 7 A-weighted decibels. The noise level with a sound barrier would be 2 A-weighted decibels below the No-Build (No-Action) Alternative and 3 A-weighted decibels below existing conditions.

No-Build (No-Action) Alternative

No construction would take place under the No-Build (No-Action) Alternative; therefore, there would be no noise effects related to the project resulting from traffic or construction.

Table 2.38 Noise Survey Report Results Summary

Receptor Number	Receptor Location	Existing Noise Level, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level Without Project, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level With Project, equivalent continuous sound level per hour in A-weighted decibels	Noise Impact Requiring Abatement Considera-tion?	Predicted Noise Level with Abate-ment (A-weighted decibels) 8-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 10-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 12-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 14-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 16-Foot Barrier	Reasonable and Feasible
R66	401 Sailfish Drive, Aptos	63.0	65.0	66.0	Yes	63	62	60	59	58	Yes
R66A	402 Sailfish Drive, Aptos	68.0	70.0	71.0	Yes	64	62	61	60	59	Yes
R67A	408 Sailfish Drive, Aptos	65.0	67.0	68.0	Yes	63	61	60	59	58	Yes
R67	298 Marlin Court, Aptos	69.0	72.0	72.0	Yes	69	68	66	63	62	Yes
R68	297 Bonefish Court, Aptos	70.0	72.0	73.0	Yes	69	67	65	63	62	Yes
R68A	298 Perch Way, Aptos	67.0	70.0	71.0	Yes	66	64	62	61	60	Yes
R69	298 Silverfish Court, Aptos	69.0	71.0	73.0	Yes	66	63	62	61	60	Yes
R69A	Barkentine Court, Aptos	69.0	71.0	73.0	Yes	66	63	62	61	60	Yes
R70	299 Barkentine Court, Aptos	68.0	71.0	72.0	Yes	66	64	62	62	61	Yes
R71	501 Margaret Avenue, Aptos	68.0	73.0	75.0	Yes	68	65	64	63	62	Yes
R72	514 Margaret Avenue, Aptos	69.0	74.0	76.0	Yes	71	70	68	66	65	Yes
R73	518 Margaret Avenue, Aptos	62.0	66.0	68.0	Yes	63	62	62	61	61	Yes
R74	600 Mar Vista Number 1, Aptos	54.0	59.0	61.0	No	60	60	60	60	60	Not Applicable
R75	787 Estates Drive, Aptos	65.0	63.0	65.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R76	New Brighton State Park–Trail	58.0	58.0	60.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R77	New Brighton State Park–Campground	62.0	62.0	63.0	No	62	61	61	61	60	Yes
R78	Skate Park	72.0	72.0	73.0	Yes	69	68	66	64	63	Yes

Receptor Number	Receptor Location	Existing Noise Level, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level Without Project, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level With Project, equivalent continuous sound level per hour in A-weighted decibels	Noise Impact Requiring Abatement Considera-tion?	Predicted Noise Level with Abate-ment (A-weighted decibels) 8-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 10-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 12-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 14-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 16-Foot Barrier	Reasonable and Feasible
R79	810 Pinetree Lane, Aptos	48.0	48.0	50.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R80	940 Pinetree Lane, Aptos	59.0	59.0	61.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R81	7500 Old Dominion Court, Aptos	65.0	65.0	66.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R82	7500 Old Dominion Court, Aptos	56.0	53.0	54.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R83	7600 Soquel Drive, Aptos	60.0	58.0	59.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R84	Primrose Street, Aptos	57.0	58.0	60.0	No	60	59	59	59	59	Not Applicable
R84A	24 Primrose Street Number 24, Aptos	58.0	59.0	61.0	No	60	60	59	59	59	Not Applicable
R85	2 Primrose Street Number 2, Aptos	59.0	60.0	62.0	No	61	60	59	58	58	Not Applicable
R86	7 Primrose Street Number 7, Aptos	60.0	61.0	63.0	No	61	61	59	59	58	Not Applicable
R87	2566 Mar Vista Drive, Aptos	62.0	64.0	66.0	Yes	66	65	63	62	61	Yes
R88	7235 Millie Court Apartment C, Aptos	65.0	67.0	69.0	Yes	64	63	61	60	59	Yes
R89	2545 Mar Vista Drive, Aptos	70.0	72.0	74.0	Yes	66	64	62	61	59	Yes
R89A	Aptos Grange Meeting Hall	66.0	68.0	69.0	Yes	67	66	64	63	62	Yes
R90	2711 Mar Vista Drive Number 1, Aptos	69.0	71.0	73.0	Yes	66	63	62	60	59	Yes
R91	2711 Mar Vista Drive Number 2, Aptos	65.0	67.0	68.0	Yes	67	67	67	67	67	No
R92	2630 Borregas Drive, Aptos	63.0	65.0	67.0	Yes	66	65	64	63	61	Yes

Receptor Number	Receptor Location	Existing Noise Level, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level Without Project, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level With Project, equivalent continuous sound level per hour in A-weighted decibels	Noise Impact Requiring Abatement Considera-tion?	Predicted Noise Level with Abate-ment (A-weighted decibels) 8-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 10-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 12-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 14-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 16-Foot Barrier	Reasonable and Feasible
R93	2600 Borregas Drive, Aptos	71.0	73.0	74.0	Yes	64	63	61	60	59	Yes
R94	2613 Estates Drive, Aptos	63.0	65.0	68.0	Yes	62	61	60	59	58	Yes
R95	6500 Soquel Drive, Aptos	66.0	65.0	67.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R96	6500 Soquel Drive, Aptos	56.0	55.0	57.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R97	6500 Soquel Drive, Aptos	57.0	55.0	57.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R98	2701 Cabrillo College Drive, Aptos	71.0	71.0	72.0	Yes	70	69	68	67	65	Yes
R98a	2701 Cabrillo College Drive, Aptos	63.0	62.0	64.0	No	63	63	63	62	62	Not Applicable
R98b	2701 Cabrillo College Drive, Aptos	63.0	62.0	64.0	No	63	62	62	62	62	Not Applicable
R99	2505 Cabrillo College Drive, Aptos	76.0	75.0	76.0	Yes	72	69	67	66	65	Yes
R100	2601 Willowbrook Lane Unit 3, Aptos	73.0	71.0	72.0	Yes	66	65	64	63	62	Yes
R101	2601 Willowbrook Lane Unit 15, Aptos	74.0	72.0	73.0	Yes	69	68	66	64	63	Yes
R102	2603 Willowbrook Lane Unit 27, Aptos	73.0	71.0	72.0	Yes	67	67	66	65	65	Yes
R103	1131 Sills Court Apartment 1, Capitola	71.0	71.0	71.0	Yes	66	64	63	62	61	Yes
R104	1118 Sutherland Lane Apartment 1, Capitola	71.0	71.0	72.0	No	63	62	61	61	60	Not Applicable
R105	Callas Lane, Capitola	71.0	71.0	71.0	No	63	61	60	59	59	Not Applicable
R106	1144 Callas Lane Apartment 2, Capitola	72.0	72.0	72.0	Yes	66	64	63	62	61	Yes

Receptor Number	Receptor Location	Existing Noise Level, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level Without Project, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level With Project, equivalent continuous sound level per hour in A-weighted decibels	Noise Impact Requiring Abatement Considera-tion?	Predicted Noise Level with Abate-ment (A-weighted decibels) 8-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 10-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 12-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 14-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 16-Foot Barrier	Reasonable and Feasible
R107	1147 Calla Lane Apartment 1, Capitola	71.0	71.0	73.0	Yes	65	64	63	62	62	Not Applicable
R108	933 Ponselle Lane Apartment 1, Capitola	73.0	73.0	75.0	Yes	70	70	70	70	69	No
R109	300 Plum Street Space 69, Capitola	60.0	60.0	63.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R110	1028 Chittenden Lane, Capitola	69.0	69.0	72.0	Yes	68	67	66	65	65	Yes
R111	930 Rosedale Avenue, Capitola	62.0	63.0	65.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R112	920 Capitola Avenue, Capitola	62.0	62.0	65.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R113	920 Capitola Avenue, Capitola	63.0	63.0	66.0	Yes	No Value	No Value	No Value	No Value	No Value	No
R114	920 Capitola Avenue, Capitola	66.0	66.0	69.0	Yes	No Value	No Value	No Value	No Value	No Value	No
R115	815 Balboa Avenue Number 5, Capitola	61.0	62.0	64.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R116	815 Balboa Avenue Number 66, Capitola	67.0	67.0	69.0	Yes	No Value	No Value	No Value	No Value	No Value	No
R117	822 Bay Avenue, Capitola	64.0	64.0	66.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R118	822 Bay Avenue, Capitola	66.0	66.0	68.0	No	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
R119	6230 Soquel Drive, Aptos	66.0	68.0	68.0	Yes	62	61	60	59	58	Yes
R120	2402 Cabrillo College Drive, Soquel	57.0	60.0	61.0	No	59	58	58	57	57	N/A
R121	250 Alturas Way, Soquel	57.0	59.0	60.0	No	58	58	58	58	58	Not Applicable
R122	2600 Monterey Avenue, Soquel	62.0	64.0	65.0	No	61	59	58	57	56	Not Applicable

Receptor Number	Receptor Location	Existing Noise Level, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level Without Project, equivalent continuous sound level per hour in A-weighted decibels	Future Noise Level With Project, equivalent continuous sound level per hour in A-weighted decibels	Noise Impact Requiring Abatement Considera-tion?	Predicted Noise Level with Abate-ment (A-weighted decibels) 8-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 10-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 12-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 14-Foot Barrier	Predicted Noise Level with Abate-ment (A-weighted decibels) 16-Foot Barrier	Reasonable and Feasible
R123	2611 Monterey Avenue, Soquel	64.0	66.0	68.0	Yes	62	60	59	58	57	Yes
R124	2603 Monterey Avenue, Soquel	64.0	66.0	68.0	Yes	66	65	64	62	61	Yes
R125	5470 Soquel Drive, Soquel	65.0	67.0	70.0	Yes	62	61	61	60	59	Yes
R126	2630 Orchard Street, Soquel	70.0	71.0	72.0	Yes	69	67	65	63	62	Yes
R127	2504 Orchard Street, Soquel	69.0	71.0	73.0	Yes	64	62	61	60	58	Yes
R128	2505 Orchard Street, Soquel	66.0	66.0	67.0	Yes	65	62	61	60	59	Yes
R129	2481 Orchard Court, Soquel	67.0	67.0	69.0	Yes	65	63	62	61	60	Yes
R130	2580 Gary Drive, Soquel	65.0	70.0	72.0	Yes	62	61	61	60	60	Yes
R131	2564 Gary Drive, Soquel	67.0	71.0	73.0	Yes	64	63	61	60	59	Yes
R131A	2556 Gary Drive, Soquel	67.0	70.0	73.0	Yes	64	62	61	60	58	Yes
R132	2542 Gary Drive, Soquel	66.0	69.0	72.0	Yes	63	62	60	59	58	Yes
R133	5082 Wilder Drive Apartment D, Soquel	58.0	61.0	64.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R134	5062 Wilder Drive Apartment A, Soquel	57.0	60.0	62.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R135	5070 Wilder Drive Apartment 1, Soquel	56.0	59.0	61.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable
R136	5044 Wilder Drive A, Soquel	61.0	63.0	63.0	No	No Value	No Value	No Value	No Value	No Value	Not Applicable

Source: Compiled by LSA Associates, Inc. 2020.

Figure 2-16a Proposed Barriers (Sheet 1)

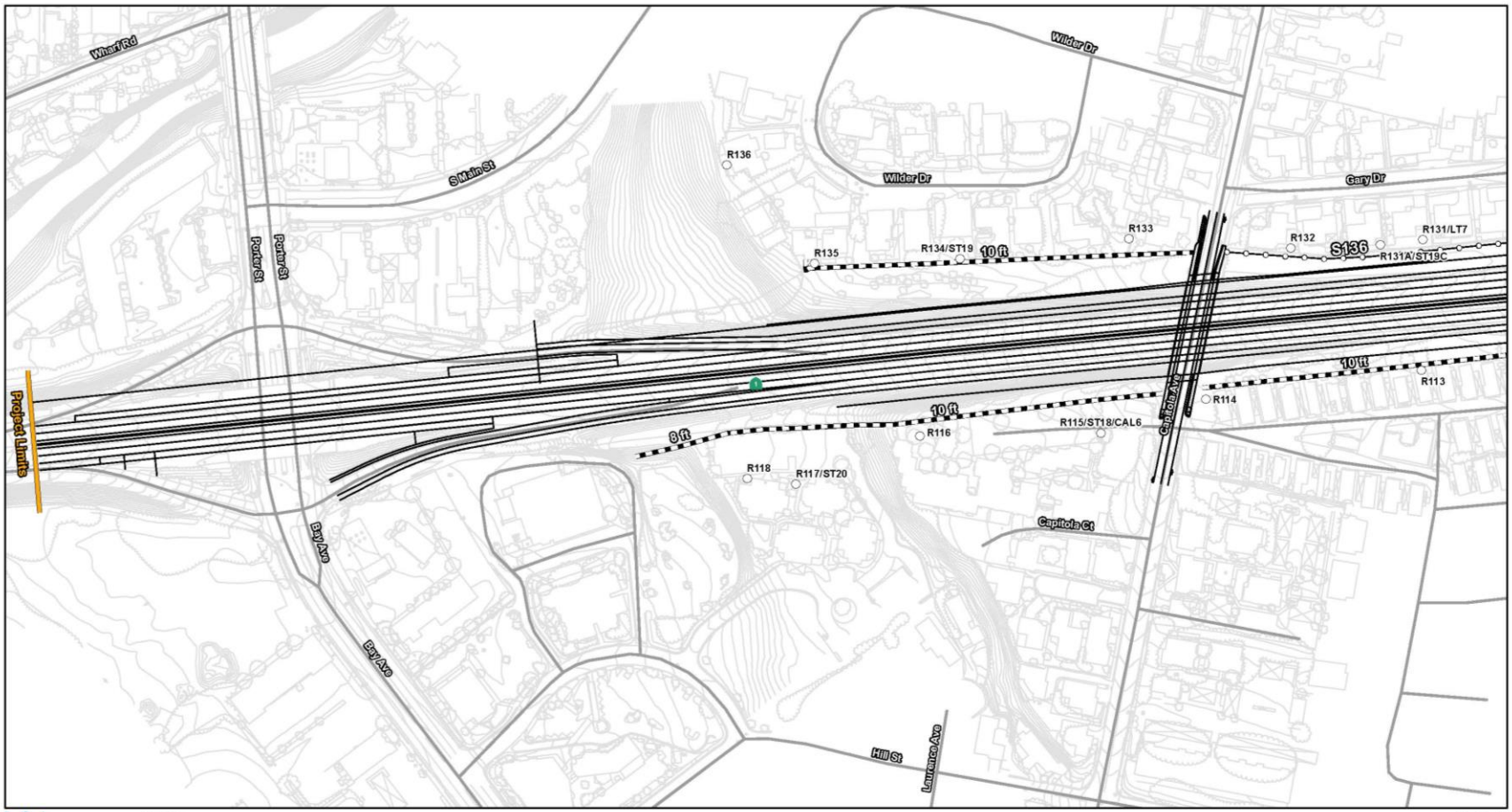


Figure 2-16b Proposed Barriers (Sheet 2)

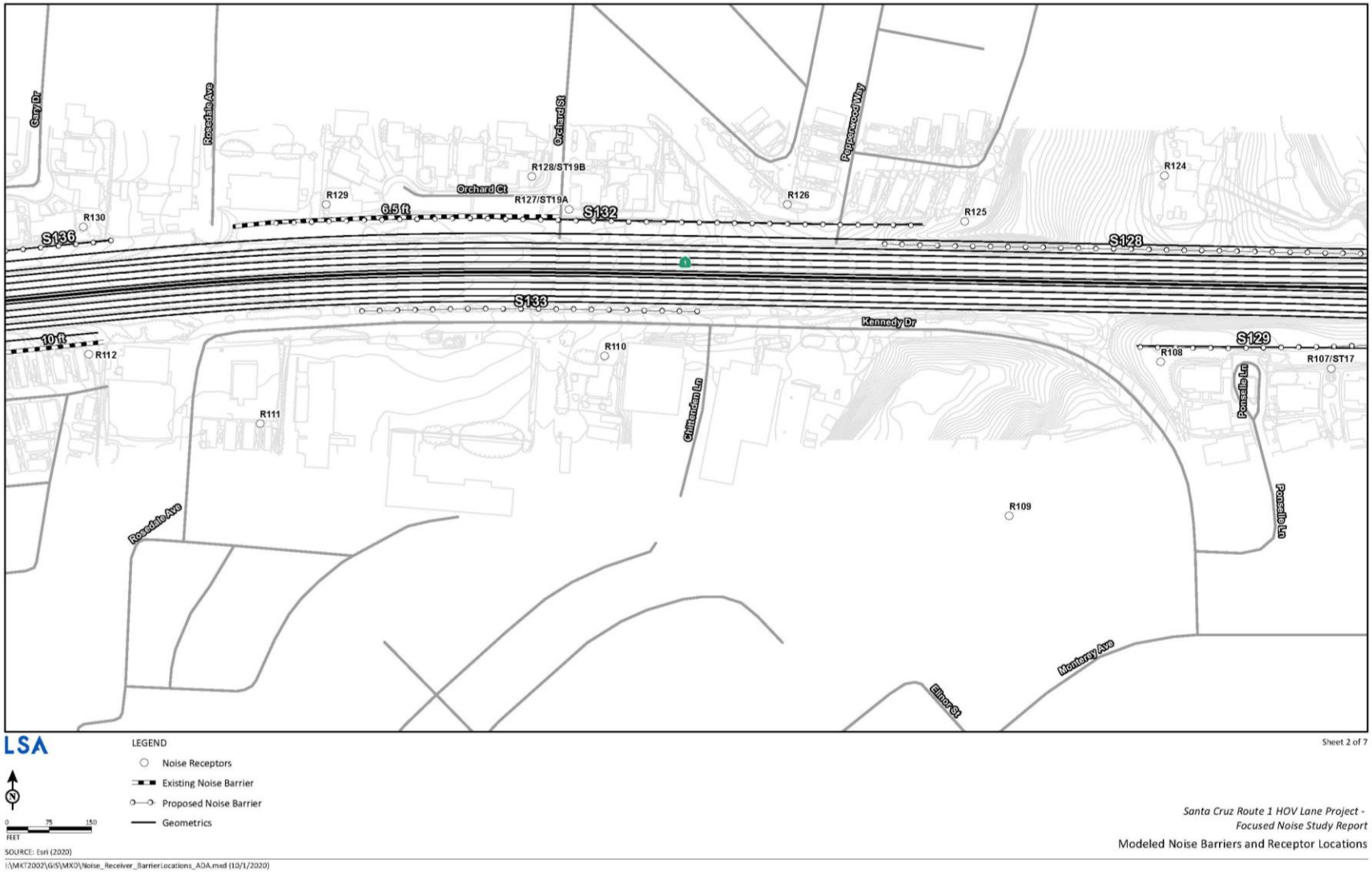


Figure 2-16c Proposed Barriers (Sheet 3)

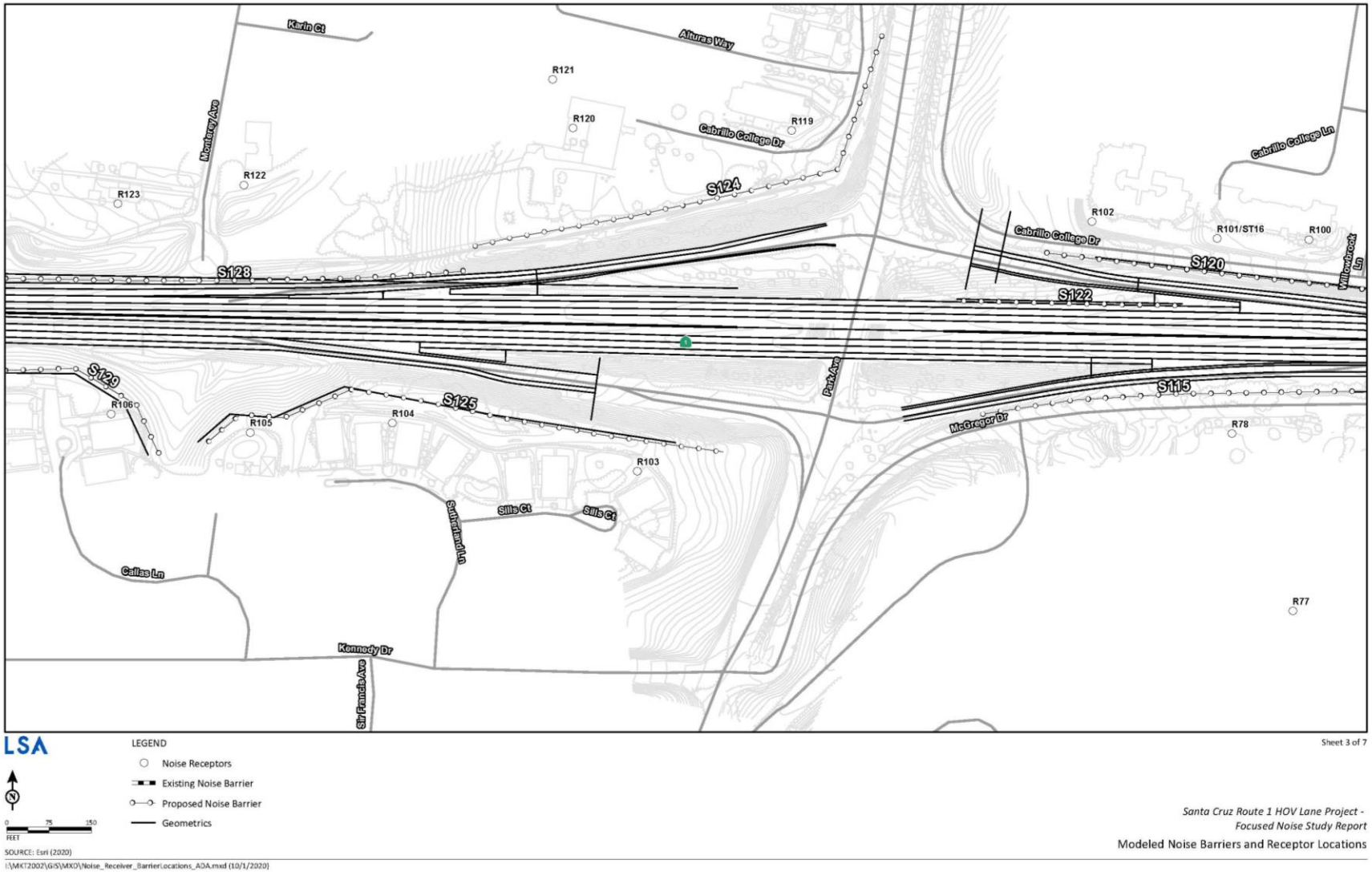


Figure 2-16d Proposed Barriers (Sheet 4)

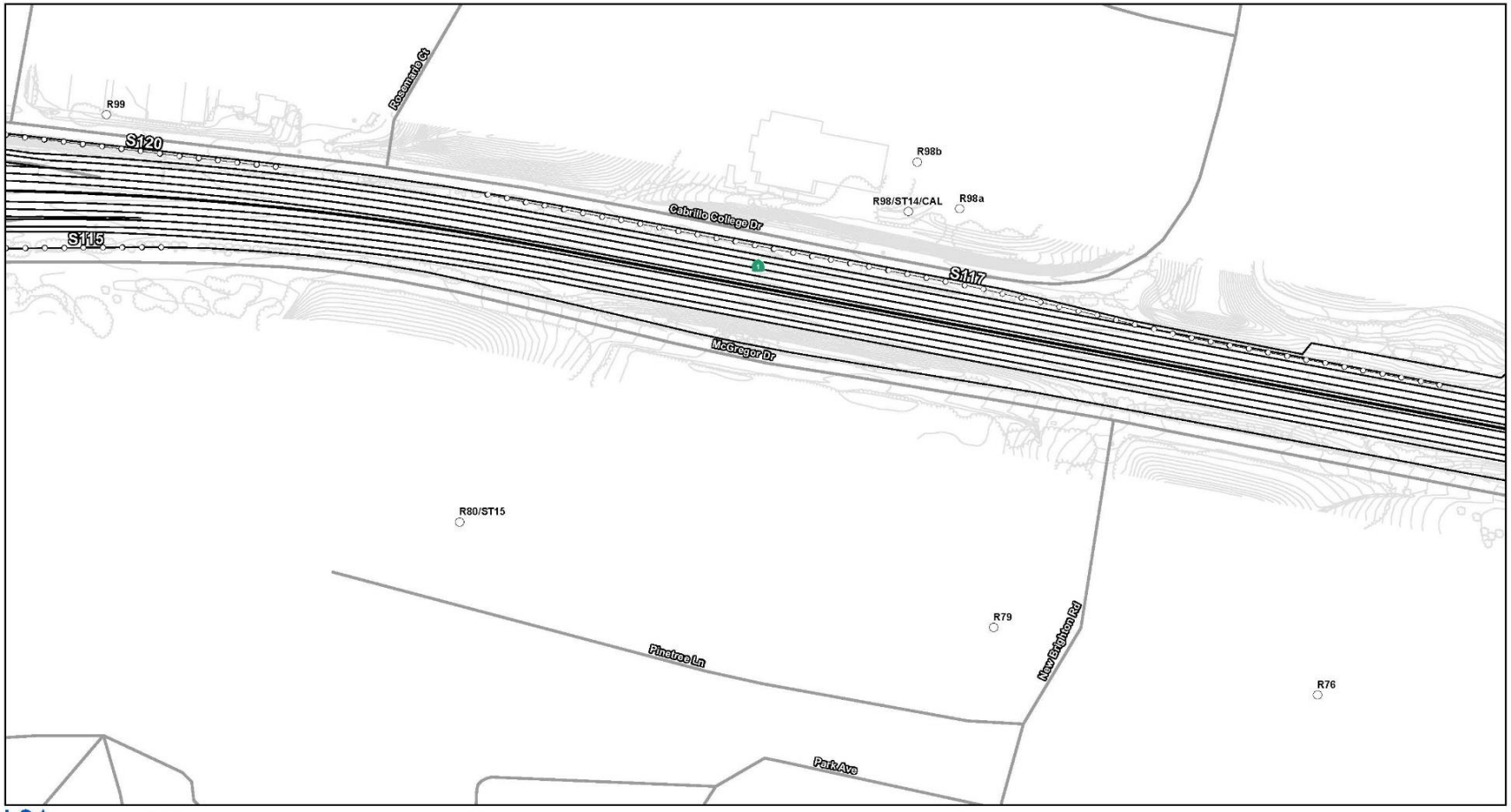


Figure 2-16e Proposed Barriers (Sheet 5)

Figure 2-16f Proposed Barriers (Sheet 6)

Figure 2-16g Proposed Barriers (Sheet 7)

Avoidance, Minimization, and/or Mitigation Measures

Based on the studies completed to date, Caltrans would consider the incorporation of noise abatement in the form of 14 barriers at various locations along the project corridor. The barriers would range from 8 feet to 16 feet in height and from 600 feet to 2,789 feet in length. Calculations based on preliminary design data show that barriers would reduce noise levels by at least 5 A-weighted decibels for 45 receptors that were projected to exceed noise abatement criterias with the implementation of the project. These measures may change based on input received from the public. If conditions have substantially changed during the final design, noise abatement barriers may not be built. The final decision on noise abatement would be made upon completion of the project design.

Operational

Based on the results of the Noise Study Report, noise abatement measures have been analyzed and proposed as part of the project. Noise barriers are the only form of noise abatement considered for this project. The identified noise barriers—with a maximum height of 16 feet—have been evaluated for feasibility based on achievable noise reduction. If the identified noise barrier is found to be acoustically feasible, a reasonable cost allowance would be calculated by multiplying the number of benefitted receptors by $107,000. For any noise barrier to be considered reasonable from a cost perspective, the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the noise barrier. The cost calculations of the noise barrier must include all items appropriate and necessary for its construction (e.g., traffic control, drainage modification, retaining walls, landscaping for graffiti abatement, and right-of-way costs).

A total of 14 noise barriers are proposed as abatement measures for traffic noise impacts resulting from the project. The following discusses the noise abatement measures considered for the Future Build condition where traffic noise impacts are predicted. The Future Build condition represents modeled noise impacts from the proposed project, once completed. The locations of all noise barriers considered are shown in the draft Noise Abatement Decision Report prepared for the proposed project (LSA Associates July 2020).

Regarding the Build Alternative with a noise barrier, a Noise Abatement Decision Report would be prepared to identify the noise barrier construction cost information and the noise barriers that are reasonable from a cost perspective. For the Reasonable Allowance per Benefitted Receptor/Unit, the cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Noise Barrier Number S103

A 2,789-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the southbound side was analyzed to shield receptors R66

through R74, representing 52 multi-family residential units, 12 single-family homes, and one recreational use totaling 65 potentially benefitted receptors. Noise barrier number S103 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.39 lists the highest noise barrier reduction, the number of benefitted receptors, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at 44 of the 65 potentially benefitted receptors impacted by this noise barrier and would achieve a reduction of at least 7 A-weighted decibels at 19 of the 65 potentially benefitted receptors.

The 14-foot noise barrier in Table 2.39 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

Table 2.39 Summary of Reasonableness Allowances for Noise Barrier Number S103

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	7	10	11	12	13
Number of Benefitted Receptors/Units	44	49	61	61	61
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$4,708,000	$5,243,000	$6,527,000	$6,527,000	$6,527,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S106

A 1,148 foot long noise barrier along the shoulder and right-of-way of State Route 1 on the northbound side was analyzed to shield receptors R84 through R91 representing 23 mobile homes,15 multi-family residential units, one single-family home, and one recreational use totaling 40 potentially benefitted receptors. Noise Barrier Number S106 was evaluated from 8 feet to 16 feet high in 2 foot increments. Table 2.40 lists the highest noise barrier reduction, the number of benefited residences, the reasonable allowance per benefited residence, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at 24 of the 40 potentially benefitted receptors impacted by this noise barrier and would achieve a reduction of at least 7 A-weighted decibels at 13 of the 40 potentially benefitted receptors.

The 16-foot noise barrier in Table 2.40 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

Table 2.40 Summary of Reasonableness Allowances for Noise Barrier Number S106

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	8	10	12	13	15
Number of Benefitted Receptors/Units	12	12	13	13	24
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$1,284,000	$1,284,000	$1,391,000	$1,391,000	$2,568,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S109

A 1,142-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the northbound side was analyzed to shield receptors R92 through R94, representing five single-family homes. Receptor R95 was appropriately categorized as Category F because it represents a maintenance facility. Noise barrier number S109 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.41 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at four of the five potentially benefitted receptors impacted by this noise barrier and would achieve a reduction of at least 7 A-weighted decibels at two of the five potentially benefitted receptors.

The cost consideration for the 14-foot noise barrier in Table 2.41 is a recommended determination of noise abatement based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.41 Summary of Reasonableness Allowances for Noise Barrier Number 109

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	10	11	13	14	15
Number of Benefitted Receptors/Units	4	4	4	4	5
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$428,000	$428,000	$428,000	$428,000	$535,000

Source: Compiled by LSA Associates, Inc. (2020).

Noise Barrier Number S115

A 928-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the southbound side was analyzed to shield receptor R78, representing the existing Ozzi's Dog Park and Monte Family Skate Park. Noise barrier number S115 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.42 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

A 10-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at two potentially benefitted receptors impacted by this noise barrier, and a 12-foot noise barrier would achieve a reduction of at least 7 A-weighted decibels at two potentially benefitted receptors.

The cost consideration for the 14-foot noise barrier in Table 2.42 is a recommended determination of noise abatement based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.42 Summary of Reasonableness Allowances for Noise Barrier Number S115

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibel)	4	5	7	9	10
Number of Benefitted Receptors/Units	0	2	2	2	2
Reasonable Allowance per Benefitted Receptor/Unit	Not Applicable	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	Not Applicable	$214,000	$214,000	$214,000	$214,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S117

A 1,568-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the northbound side was analyzed to shield receptors R98, R98a, and R98b, representing one church, a day care, and a sports field at a school. Noise barrier number S117 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.43 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

A 14-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at one potentially benefitted receptor impacted by this noise barrier. A 16-foot noise barrier would achieve a reduction of at least 7 A-weighted decibels at one potentially benefitted receptor.

The cost consideration in the reasonableness determination of noise abatement in Table 2.43 is based on a 2019 allowance per benefitted receptor/unit of $107,000. The 16-foot noise barrier in Table 2.43does not break line-of-sight between the receptor and truck exhaust stack.

The 16-foot noise barrier in Table 2.43is a recommended determination of noise abatement based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.43 Summary of Reasonableness Allowances for Noise Barrier Number S117

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	2	3	4	5	7
Number of Benefitted Receptors/Units	None	None	None	1	1
Reasonable Allowance per Benefitted Receptor/Unit	Not Applicable	Not Applicable	Not Applicable	$107,000	$107,000
Total Reasonable Allowance	Not Applicable	Not Applicable	Not Applicable	$107,000	$107,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barriers Number S120 and S122

Noise barrier number S120, a 1,000-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the northbound side in conjunction with noise barrier number S122, a 400-foot-long noise barrier along the edge of the shoulder near the Park Avenue overpass of the right-of-way of State Route 1 were analyzed to shield receptors R99 through R102, representing 36 multi-family residential units and the Imperial Courts Tennis Club. Noise barrier numbers S120 and S122 were evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.44 lists the highest noise barrier reduction, the

number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at 24 of the 37 potentially benefitted receptors impacted by this noise barrier. A 10-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at all 37 potentially benefitted receptors and a reduction of at least 7 A-weighted decibels at 13 of the 37 potentially benefitted receptors.

The cost consideration in the reasonableness determination of noise abatement in Table 2.44 is based on a 2019 allowance per benefitted receptor/unit of $107,000.

The 14-foot noise barrier in Table 2.44 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

Table 2.44 Summary of Reasonableness Allowances for Noise Barrier Numbers S120 and S122

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	6	7	9	10	11
Number of Benefitted Receptors/Units	24	37	37	37	37
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$2,568,000	$3,959,000	$3,959,000	$3,959,000	$3,959,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S124

A 906-foot-long noise barrier along the right-of-way of State Route 1 on the northbound side was analyzed to shield receptors R119 through R121, representing one church, a playground at a day care, and three single-family homes. Noise barrier number S124 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.45 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at one potentially benefitted receptor impacted by this noise barrier, and a 10-foot noise barrier would achieve a reduction of at least 7 A-weighted decibels at the same potentially benefitted receptor.

The 10-foot noise barrier in Table 2.45 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

The cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.45 Summary of Reasonableness Allowances for Noise Barrier Number S124

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	6	7	8	9	10
Number of Benefitted Receptors/Units	1	1	1	1	1
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$107,000	$107,000	$107,000	$107,000	$107,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S125

A 951-foot-long noise barrier along the right-of-way of State Route 1 on the southbound side was analyzed to shield receptors R103 through R105, representing 28 multi-family residential units and one community pool, totaling 29 potentially benefitted receptors. Noise barrier number S125 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.46 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at 29 of 29 potentially benefitted receptors impacted by this noise barrier and would achieve a reduction of at least 7 A-weighted decibels at 17 of the 29 potentially benefitted receptors.

The 8-foot noise barrier in Table 2.46 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

The cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.46 Summary of Reasonableness Allowances for Noise Barrier Number S125

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	9	10	11	12	12
Number of Benefitted Receptors/Units	29	29	29	29	29
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$3,103,000	$3,103,000	$3,103,000	$3,103,000	$3,103,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S128

A 1,654-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the northbound side was analyzed to shield receptors R122 through R125, representing five single-family homes and eight mobile homes, totaling 13 potentially benefitted receptors. Noise barrier number S128 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.47 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at 10 of the 13 potentially benefitted receptors impacted by this noise barrier and would achieve a reduction of at least 7 A-weighted decibels at eight of the 13 potentially benefitted receptors.

The 14-foot noise barrier in Table 2.47 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

The cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.47 Summary of Reasonableness Allowances for Noise Barrier Number S128

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibel)	8	9	9	10	11
Number of Benefitted Receptors/Units	10	11	11	13	13
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$1,070,000	$1,177,000	$1,177,000	$1,391,000	$1,391,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S129

A 735-foot-long noise barrier along the right-of-way of State Route 1 on the southbound side was analyzed to shield receptors R106 through R108, representing 12 multi-family residential units. Noise barrier number S129 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.48 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at 12 of the 12 potentially benefitted receptors impacted by this noise barrier and would achieve a reduction of at least 7 A-weighted decibels at four of the 12 potentially benefitted receptors.

The 10-foot noise barrier in Table 2.48 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

The cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.48 Summary of Reasonableness Allowances for Noise Barrier Number S129

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	8	9	10	11	11
Number of Benefitted Receptors/Units	12	12	12	12	12
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$1,284,000	$1,284,000	$1,284,000	$1,284,000	$1,284,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S132

A 1,152-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the northbound side was analyzed to shield receptors R126 through R129, representing nine single-family homes and two mobile homes totaling 11 potentially benefitted receptors. Noise barrier number S132 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.49 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 7 A-weighted decibels at three of the 11 potentially benefitted receptors impacted by this noise barrier. A 10-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at eight of the 11 potentially benefitted receptors and a reduction of at least 7 A-weighted decibels at three of the potentially benefitted receptors.

The 12-foot noise barrier in Table 2.49 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

The cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.49 Summary of Reasonableness Allowances for Noise Barrier Number S132

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	9	11	12	13	15
Number of Benefitted Receptors/Units	3	11	11	11	11
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$321,000	$1,177,000	$1,177,000	$1,177,000	$1,177,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S133

A 600-foot-long noise barrier along the right-of-way of State Route 1 on the southbound side was analyzed to shield receptor R110, representing one single-family home. Noise barrier number S133 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.50 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

A 10-foot noise barrier would achieve a reduction of at least 5 A-weighted decibels at the potentially benefitted receptor impacted by this noise barrier. A 14-foot noise barrier would achieve a reduction of 7 A-weighted decibels at the potentially benefitted receptor impacted by this noise barrier.

The 12-foot noise barrier in Table 2.50 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

The cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.50 Summary of Reasonableness Allowances for Noise Barrier Number S133

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	4	5	6	7	7
Number of Benefitted Receptors/Units	None	1	1	1	1
Reasonable Allowance per Benefitted Receptor/Unit	Not Applicable	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	Not Applicable	$107,000	$107,000	$107,000	$107,000

Source: Compiled by LSA Associates, Inc. 2020.

Noise Barrier Number S136

A 630-foot-long noise barrier along the shoulder and right-of-way of State Route 1 on the northbound side was analyzed to shield receptors R130 through R132, representing seven single-family homes. Noise barrier number S136 was evaluated from 8 feet to 16 feet high in 2-foot increments. Table 2.51 lists the highest noise barrier reduction, the number of benefitted homes, the reasonable allowance per benefitted home, and the total reasonable allowance for each noise barrier height.

An 8-foot noise barrier would achieve a reduction of at least 7 A-weighted decibels at seven of the seven potentially benefitted receptors impacted by this noise barrier.

The 10-foot noise barrier in Table 2.51 is a preliminary recommended height based on noise reduction, benefitted receptors, and the minimum wall height required to break the line-of-sight between the receptor and truck exhaust stack.

The cost consideration in the reasonableness determination of noise abatement is based on a 2019 allowance per benefitted receptor/unit of $107,000.

Table 2.51 Summary of Reasonableness Allowances for Noise Barrier Number S136

Build Alternative with Noise Barrier	8-Foot Noise Barrier	10-Foot Noise Barrier	12-Foot Noise Barrier	14-Foot Noise Barrier	16-Foot Noise Barrier
Highest Noise Barrier Reduction (Decibels)	10	11	12	13	15
Number of Benefitted Receptors/Units	7	7	7	7	7
Reasonable Allowance per Benefitted Receptor/Unit	$107,000	$107,000	$107,000	$107,000	$107,000
Total Reasonable Allowance	$749,000	$749,000	$749,000	$749,000	$749,000

Source: Compiled by LSA Associates, Inc. 2020.

Construction

Avoidance and minimization measures designed to address construction-related noise impacts include noise monitoring to ensure that contractors take all reasonable steps to minimize impacts when near sensitive areas. The measures also include noise testing and inspection of equipment to ensure that all equipment on the site is in good condition and effectively muffled and an active community liaison program. A community liaison program would keep residents informed about construction plans so they can plan around periods of particularly high noise or vibration levels and would provide a conduit for residents and other sensitive uses to express any concerns or complaints.

The following are possible control measures that can be implemented to minimize noise disturbances at sensitive areas during construction:

- **AMM-NOI-1:** All equipment shall have sound-control devices no less effective than those provided on the original equipment. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the job site without an appropriate muffler.
- **AMM-NOI-2:** Construction methods or equipment that would provide the lowest level of noise impact should be used (e.g., avoid impact pile driving near homes and consider alternative methods that are also suitable for the soil condition).
- **AMM-NOI-3:** Idling equipment shall be turned off.
- **AMM-NOI-4:** Truck loading, unloading, and hauling operations shall be restricted so that noise and vibration are kept to a minimum through residential neighborhoods to the greatest extent possible.
- **AMM-NOI-5:** Construction activities shall be coordinated to build recommended permanent soundwalls during the first phase of

construction to protect sensitive receptors from subsequent construction noise, dust, light, glare, and other impacts, to the extent feasible.

- **AMM-NOI-6:** Noise barriers can be made of heavy plywood, moveable insulated sound blankets, or other best available control techniques.
- **AMM-NOI-7:** Newer equipment with improved noise muffling shall be used, and all equipment shall have the manufacturers' recommended noise-abatement measures (e.g., mufflers, engine covers, and engine vibration isolators) intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment shall be inspected at periodic intervals to ensure proper maintenance and presence of noise-control devices (e.g., mufflers and shrouding).
- **AMM-NOI-8:** Construction activities shall be minimized in residential areas during the evening, nighttime, weekend, and holiday periods. Noise impacts are typically minimized when construction activities are performed during daytime hours. However, nighttime construction may be desirable (e.g., in commercial areas where businesses may be disrupted during daytime hours) or necessary to avoid major traffic disruption. Coordination with the city or county shall occur before construction can be performed in noise-sensitive areas between 9:00 p.m. and 6:00 a.m.
- **AMM-NOI-9:** Construction laydown or staging areas shall be selected in industrially zoned areas. If industrially zoned areas are not available, commercially zoned areas may be used, or locations that are at least 100 feet from any noise-sensitive land use (e.g., homes, hotels, and motels).
- **AMM-NOI-10:** The contractor shall use a qualified acoustical engineer to prepare a Noise and Vibration Monitoring and Mitigation Plan and the contractor shall submit it for approval. The plan must outline noise and vibration monitoring procedures at predetermined noise and vibration sensitive sites. The plan also must include calculated noise and vibration levels for various construction phases and avoidance, minimization, and/or mitigation measures that meet the project specifications. The contractor shall not start any construction work or operate any noise-generating equipment at the construction site before approval of the plan. The plan must be updated every three months or sooner if there are any changes to the construction activities.

The contractor shall be required to adhere to the following administrative noise control measures:

- **AMM-NOI-11:** Once details of the construction activities become available, the contractor shall work with local authorities to develop an acceptable approach to minimize interference with business and residential communities and traffic disruptions for the total duration of the construction.

- **AMM-NOI-12:** Good public relations shall be maintained with the community to minimize objections to unavoidable construction impacts. Frequent updates of all construction activities shall be provided. A construction noise monitoring program to track sound levels and limit the impacts shall be implemented.
- **AMM-NOI-13:** In case of construction noise complaints by the public, the resident engineer shall coordinate with the construction manager, and the specific noise-producing activity may be changed, altered, or temporarily suspended, if necessary.

Certain construction activities could cause concern about vibration in the project area. During certain construction phases, processes, such as earthmoving with bulldozers, the use of vibratory compaction rollers, impact pile driving, demolition, or pavement breaking, may cause construction-related vibration impacts such as human annoyance or, in some cases, building damage. There are cases where it may be necessary to use vibration-producing equipment near residential buildings. The following procedures can be used to minimize potential impacts from construction vibration:

- **AMM-NOI-14:** Restrict the hours of vibration-intensive equipment or activities such as vibratory rollers (e.g., weekdays during daytime hours only) so that impacts on residents are minimal.
- **AMM-NOI-15:** Ensure that owners of buildings close to a construction vibration source that could damage nearby structures are entitled to a pre-construction building inspection to document the pre-construction condition of that structure.
- **AMM-NOI-16:** Conduct vibration monitoring during vibration-intensive activities.

A combination of techniques for equipment vibration control, as well as administrative measures, when properly implemented, can provide the most effective means to minimize the effects of construction activity. Application of the measures would reduce the construction impacts; however, temporary increases in vibration would likely occur at some locations.

References

California Department of Transportation, Division of Environmental Analysis. 2020. *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects*. April.

LSA Associates, Inc. 2020. *Focused Noise Study Report for the Santa Cruz Route 1 Auxiliary Lane Project*. May.

U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning. 2011. *Highway Traffic Noise: Analysis and Abatement Guidance*. December.

2.2.7 Energy

Regulatory Setting

Federal

NEPA (42 U.S. Code 4332) requires the identification of all potentially significant impacts on the environment, including energy impacts.

State

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

The state has passed several bills directing state agencies and entities such as the California Energy Commission and the California Public Utilities Commission to implement renewable energy portfolio targets and energy efficiency measures to reduce energy consumption and greenhouse gas emissions.

The statewide California Transportation Plan defines performance-based goals, policies, and strategies to achieve an integrated, multimodal transportation system. The California Transportation Plan addresses how the state will achieve maximum feasible emissions reductions, taking into consideration the use of alternative fuels, new vehicle technology, and tailpipe emissions reductions. Caltrans must consult and coordinate with related state agencies, air quality management districts, public transit operators, and regional transportation planning agencies.

Regional

The Association of Monterey Bay Area Governments is the designated Metropolitan Planning Organization for Monterey, Santa Cruz, and San Benito Counties and their respective cities. The 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy guides transportation development in the project area and includes a comprehensive discussion of regional energy policies and use.

The Association of Monterey Bay Area Governments' Energy Watch Program to maximize energy as a resource was developed in 2006 in collaboration with 21 local Monterey Bay area governments and communities. It helps achieve direct and measurable community energy efficiency targets through the installation of energy efficiency equipment for residents, municipalities, special districts, nonprofit organizations, agriculture, school districts, and

hospitality businesses. The Energy Watch Program also supported member jurisdictions to complete community greenhouse gas emissions inventories in 2005 and updates in 2009 and 2010. This data were then used to create a draft community-wide Energy Action Strategy for each jurisdiction, which in some cases was incorporated into their Climate Action Plans.

The Sustainable Santa Cruz County Plan, with a time horizon through 2035, presents a planning "vision, guiding principles, and strategies that can lead to a more sustainable development pattern in Santa Cruz County." The plan coverage includes an area surrounding the City of Capitola and Capitola Mall. (Santa Cruz County 2014:1-1, 1-3) The plan supports development designed to minimize per capita consumption of resources such as water and energy (Santa Cruz County 2014: 2-3) and safe, reliable, and efficient transportation choices that include transit, bicycling, walking, and carpooling.

The County of Santa Cruz's 2013 Climate Action Strategy (County of Santa Cruz 2013:22) identifies reducing the impact of vehicle miles traveled by increasing traffic efficiency as one of several strategies for reducing transportation greenhouse gas emissions and energy use. Encouraging the use of alternative transportation is another.

Affected Environment

The California Energy Commission reports combined nonresidential and residential energy consumption in terms of electricity and gas. The County of Santa Cruz in 2018 (the most recent year for which data are available) consumed a total of 1212.27-gigawatt-hours—one-gigawatt hour equals 1 million kilowatt-hours—of electricity. Countywide natural gas consumption in 2018 amounted to 51.87 million therms. (California Energy Commission 2020)

Direct energy consumption by the transportation sector, however, is not included in these totals even though the majority of energy consumed is from transportation fuels. The existing population of the County of Santa Cruz, estimated at about 274,255 in 2019, is heavily dependent on automobile travel due to suburban development throughout most of the county. The California Aire Resources Board Mobile Source Emissions Inventory Emission Factor 2017 web database estimates that the 2019 annual vehicle miles traveled in the County of Santa Cruz was about 1,977,948,655 miles. (Caltrans 2020a)

In the project corridor, baseline year (2019) annual vehicle miles traveled was 229,393,827, consisting of 96 percent non-trucks and 4 percent trucks. Several bottlenecks along southbound and northbound State Route 1 cause congestion during peak commute hours, significantly delaying drivers. Increasingly, drivers divert to the local street system, causing "cut-through" traffic as they seek to avoid congestion on the freeway. Average weekday mainline traffic within the project limits is expected to grow by 4.6 percent between the existing year (2019) and the opening year (2025) and by 18.3

percent between the existing year (2019) and the horizon year (2045). (Caltrans 2020a)

Existing traffic management systems such as metered ramps and changeable message signs consume additional transportation-related energy. Standard Caltrans lighting is provided at on-ramps and off-ramps within the project limits, but there is no existing lighting between the interchanges. (Caltrans 2020a, 2020b) These conditions are described in more detail in the project's traffic operations, air quality, and energy reports.

Energy efficiency efforts in California have dramatically reduced statewide per capita energy consumption relative to historical averages. California's per capita energy use is the third-lowest in the nation, partially attributable to the state's continuous pursuit of policies to reduce energy consumption, promote renewable energy, and reduce reliance on fossil fuels. California's net taxable gasoline sales in 2016 were below 2002 levels, despite population growth of at least 15 percent during the same time period. Furthermore, gasoline consumption in California decreased by about 2.2 percent between 2005 and 2017, even as vehicle miles traveled increased by 7.5 percent, from 329 billion in 2005 to 354 billion in 2017. These improvements are due in large part to a more fuel-efficient vehicle fleet. It is expected that gasoline-propulsion systems will be gradually replaced with more energy-efficient systems, such as electric vehicles, with lower greenhouse gas emissions. As of 2014, renewable fuels represented a growing fraction of transportation energy consumption at 6.2 percent, with ethanol representing 4.5 percent and other renewables representing 1.7 percent of total transportation energy consumption. (Caltrans 2020a)

Environmental Consequences

Build Alternative

The following analysis is based on the project's Energy Analysis Report (Caltrans July 2020a) unless cited otherwise.

Construction

Construction energy effects involve the one-time, non-recoverable energy inputs associated with the construction of roadways and structures. Site preparation and roadway construction would involve gasoline-powered equipment and diesel-powered equipment for clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on energy from most freeway projects would be highest during the site preparation and concrete paving phases because the excavation, handling, and transport of materials require equipment and truck fuels. It is unlikely that all pieces of equipment would operate every day during the phased construction work.

To be consistent with analyses for air quality and greenhouse gas emissions, the Sacramento Metropolitan Air Quality Management District Road Construction Emissions Model was used to estimate fuel consumption from the gasoline-powered equipment and diesel-powered equipment and vehicles that would be employed in construction activities. As shown in Table 2.52, construction would require about 258,949 gallons of diesel and 16,965 gallons of gasoline, which would be used over a 2-year construction period. This represents a small demand for local and regional fuel supplies that would be easily accommodated, and this demand would stop once construction is complete. Moreover, construction-related energy consumption would be temporary and not a permanent new source of energy demand, and demand for fuel would have no noticeable effect on peak or baseline demands for energy.

Table 2.52 Construction Fuel Consumption

Construction Phase	Duration (Months)	Diesel Consumption (Gallons)	Gasoline Consumption (Gallons)
Grubbing/Land Clearing	2.4	33,056	959
Grading/Excavation	9.6	148,740	8,631
Drainage/Utilities/Subgrade	8.4	36,887	5,406
Paving	3.6	40,266	1,969
Total	24	258,949	16,965

While construction would result in a short-term increase in energy use, construction best available control technologies would help conserve energy.

Construction activities are expected to increase traffic congestion in the area during the 24-month construction period, resulting in intermittent and temporary increases in traffic delays (see Section 2.1.3, Traffic and Transportation/Pedestrian and Bicycle Facilities). Caltrans' Standard Specifications restrict idling time for lane closure during construction to 10 minutes in each direction. Additionally, the construction contractor must comply with the California Code of Regulations Title 13, Section 2449(d)(3), which restricts the idling of construction vehicles to no longer than five consecutive minutes. Furthermore, Standard Measure TR-1, which requires a Transportation Management Plan, would be implemented to minimize delays during construction that would result in inefficient energy (fuel) consumption. See Section 2.1.3, Traffic and Transportation/Pedestrian and Bicycle Facilities, for details about the Transportation Management Plan.

Operational

In the context of transportation operations, direct energy involves all energy consumed by vehicle propulsion (e.g., automobiles, trains, and airplanes). This energy consumption is a function of traffic characteristics such as vehicle miles traveled, speed, vehicle mix, and thermal value of the fuel being used.

Direct energy consumption is calculated using Caltrans-Emission Factor 2017 based on fuel consumption. (Caltrans 2020a)

The analysis in Table 2.53 does not account for the effects of the National Highway Traffic Safety Administration and Environmental Protection Agency's Safer Affordable Fuel-Efficient Vehicles Rule Part One, which was published on September 27, 2019, and became effective November 26, 2019. The Part One Rule revokes California's authority to set its own greenhouse gas emissions standards and set zero-emission vehicle mandates in California. Future fuel consumption estimates are based on certain planning assumptions within California Air Resource Board's Emission Factor 2017 model, including California's specific emission standards for future years. Nevertheless, modeling these estimates with Emission Factor 2017 or Caltrans-Emission Factor 2017 remains the most precise means of estimating future fuel consumption.

Table 2.53 Annual Vehicle Miles Traveled, Truck Mix Percentages, and Operational Fuel Consumption

Analysis Year	Annual Vehicle Miles Traveled	Regional Fleet Mix (Truck Percentage)	Annual Gasoline Consumption (Gallons)	Annual Diesel Consumption (Gallons)
Existing Conditions (2019)	229,393,827	4 percent	8,688,558	683,780
Opening (2025) No-Build (No-Action) Alternative	239,188,160	4 percent	7,397,832	665,510
Opening (2025) Build Alternative	242,399,164	4 percent	7,605,547	683,626
Design (2045) No-Build (No-Action) Alternative	258,278,901	4 percent	5,763,327	592,126
Design (2045) Build Alternative	266,108,349	4 percent	6,240,073	641,931

Source*:* Caltrans-Emission Factor 2017.

In 2025, the project corridor annual vehicle miles traveled under the No-Build (No-Action) Alternative would be 239,188,160, with vehicle travel consuming 7,397,832 gallons of gasoline and 665,510 gallons of diesel fuel per year. With project implementation to expand corridor capacity, 2025 annual vehicle miles traveled would increase by 3,211,004, regional gasoline consumption would increase by about 207,715 gallons per year, and diesel fuel consumption would increase by about 18,116 gallons per year.

By 2045, the annual vehicle miles traveled under the Build Alternative is expected to be 7,829,448 more than under the No-Build (No-Action) Alternative and 36,714,522 more compared to the existing 2019 vehicle miles traveled. Implementation of the project would increase annual gasoline and diesel fuel consumption by about 476,746 gallons and 49,806 gallons, respectively, relative to the No-Build (No-Action) alternative.

Countywide, the mobile source emissions inventory estimates that the County of Santa Cruz on-road vehicle travel would consume about 68,919,268 gallons of gasoline and 9,693,575 gallons of diesel fuel in 2025. The additional fuel consumption spurred by the project would represent increases of about 0.3 percent for countywide gasoline consumption and 0.2 percent for countywide diesel consumption in 2025.

By 2045, implementation of the project would increase annual gasoline and diesel fuel consumption countywide by about 476,746 gallons per year and 49,806 gallons per year, respectively, relative to the No-Build (No-Action) Alternative. The California Air Resource Board's mobile source emissions inventory estimates that the County of Santa Cruz vehicle travel would consume about 54,803,966 gallons of gasoline and 7,678,675 gallons of diesel fuel in 2045. The additional fuel consumption spurred by the project would represent increases of about 0.87 percent for countywide gasoline consumption and 0.65 percent for countywide diesel consumption.

As shown in Table 2.53, annual fuel consumption would be less in the 2019 existing condition than in both 2025 and 2045, with or without the project, even as vehicle miles traveled increases through 2045.

Recurrent congestion contributes to inefficient energy consumption as vehicles use extra fuel while idling and accelerating in stop-and-go traffic or moving at slow speeds. (Federal Highway Administration and Caltrans 2018:2.2.8-1) The project proposes to build 12-foot auxiliary lanes on both northbound and southbound sides of State Route 1 between the State Park Drive and Bay Avenue/Porter Street interchanges and would save energy by reducing congestion within the project limits.

Under the Build Alternative, buses would operate on the new auxiliary lanes between pairs of freeway on-ramps and off-ramps and on freeway shoulders in the interchange areas, avoiding mainline traffic and congestion and shortening travel time. Peak-hour service frequency would also increase. The improvement in bus services would both encourage ridership and reduce energy (fuel) consumption by shifting traffic from a low-occupancy auto mode to a high-occupancy bus mode. By 2045, bus service would result in a net reduction of 310 vehicles per day on State Route 1 in each direction and the associated fuel consumption. (Santa Cruz County Regional Transportation Commission 2020:1-4, 1-7)

Building a new pedestrian and bicycle overcrossing at Mar Vista Drive and replacing the Capitola Avenue overcrossing with a structure providing dedicated sidewalks and bike lanes would allow safer crossing of State Route 1 for pedestrians and cyclists and provide connectivity to existing bicycle facilities to encourage the use of non-automobile travel modes and reduce associated fuel consumption. As such, the project would conserve

transportation energy and not result in a wasteful, inefficient, or unnecessary consumption of energy.

Indirect Energy Consumption

Periodic maintenance and landscaping activities during project operations are considered indirect energy consumption because the equipment and vehicles used to maintain the project and facilities consume fuel. This type of indirect energy consumption can only be discussed qualitatively because the exact frequency and scale of activities are unknown. Maintenance makes up energy for the day-to-day upkeep of equipment and systems, as well as the energy embedded in any replacement equipment, materials, and supplies. The energy needed to maintain the Build Alternative improvements would not be measurably higher than the energy used to maintain the existing facility within the project limits. For example, operations would not require Caltrans to purchase additional maintenance vehicles.

No-Build (No-Action) Alternative

If the project was not built, congestion would continue to increase within the project limits as the regional population and traffic grow. Energy would continue to be used by ever-increasing idling and stop-and-go traffic. Without the proposed auxiliary lanes and bus-on-shoulder facilities, bus operations would not become more efficient with the potential to attract new riders and reduce low-occupancy vehicle travel. Pedestrian and bicycle facility improvements and connectivity to regional trails also would not be built, potentially discouraging the increased use of nonmotorized transportation modes that reduce fuel energy consumption.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would be implemented to reduce energy use.

- **AMM-EN-1:** The final design plans shall provide landscaping where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting. Landscaping reduces surface warming and, through photosynthesis, decreases carbon dioxide.
- **AMM-EN-2:** The final design plans shall incorporate the use of energy-efficient lightings, such as light-emitting diode traffic signals and solar-powered flashing beacons during construction.
- **AMM-EN-3:** The Build Alternative shall incorporate the following Best Available Control Technologies related to energy use:
    - Use cement blended with the maximum feasible amount of fly ash or other materials (i.e., limestone).
    - Recycle construction materials. Recycled products typically have lower manufacturing and transport energy costs because they do not use

raw materials, which must be mined and transported to a processing facility.

- Use lighter-colored pavement where feasible to increase albedo.
- Use recycled water or grey water for fugitive dust control.
- Employ energy-efficient and fuel-efficient vehicles and equipment and zero- and/or near-zero emission technologies.
- Encourage ride-sharing and carpooling for construction crews.

These energy conservation features are consistent with state and local policies to reduce energy. Therefore, the project would not result in an inefficient, wasteful, and unnecessary consumption of energy.

References

Association of Monterey Bay Area Governments. 2018. *2040 Metropolitan Transportation Plan/Sustainable Communities Strategy*.

California Department of Transportation. 2020a. *Energy Analysis Report. Highway 1 Auxiliary Lanes – State Park Drive to Bay Avenue/Porter Street*. Santa Cruz County. EA 05-0C733. Prepared by Terry A. Hayes Associates Inc. Culver City, California. July.

California Department of Transportation. 2020b. *Air Quality Report. Highway 1 Auxiliary Lanes (Bay Street/Porter Street to State Park Drive) Project*. Santa Cruz County. EA 05-0C7330. Prepared by Terry A. Hayes Associates Inc. Culver City, California. May.

California Energy Commission. 2020. *California Energy Consumption Database*. (Consumption by County). Available: http://www.ecdms.energy.ca.gov/. Accessed: August 3, 2020.

Federal Highway Administration and California Department of Transportation (FHWA and Caltrans). 2018. *Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact*. EA 05-0C7300. December.

Santa Cruz County. 2013. *Climate Action Strategy*. Planning Department. Adopted February 26, 2013. Available: https://www.sccoplanning.com/PlanningHome/SustainabilityPlanning/ClimateActionStrategy.aspx. Accessed: August 4, 2020.

Santa Cruz County. 2014. *Sustainable Santa Cruz County Plan*. Prepared by Placeworks, Fehr & Peers, and BAE. Adopted October 28, 2014. Available: http://www.sustainablesantacruzcounty.org/sustainablesantacruzcounty/Documents/ProjectDocuments.aspx. Accessed: August 3, 2020.

2.3 Biological Environment

2.3.1 Natural Communities

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, and includes information on wildlife corridors 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.

Affected Environment

The information in this section is summarized from the Natural Environment Study prepared for the project in August 2020.

A Biological Study Area was established to evaluate the effects of the project on natural communities and other biological resources. The Biological Study Area encompasses the project footprint along with surrounding areas that project construction activities may directly or indirectly impact. For the project, the Biological Study Area consists of about 137 acres and is centered around the 2.9-mile section of State Route 1 that extends from State Park Drive to Bay Avenue/Porter Street.

Natural community/habitat types present within the Biological Study Area include riverine, riparian forest, coast live oak woodland, mixed conifer woodland, eucalyptus woodland, annual grassland, ruderal/disturbed vegetation, and developed/landscaped areas, as detailed in Table 2.54, illustrated on Figures 2-17 through 2-20, and described below.

Figure 2-17 Biological Study Area Vegetation Map (Map 1 of 4)

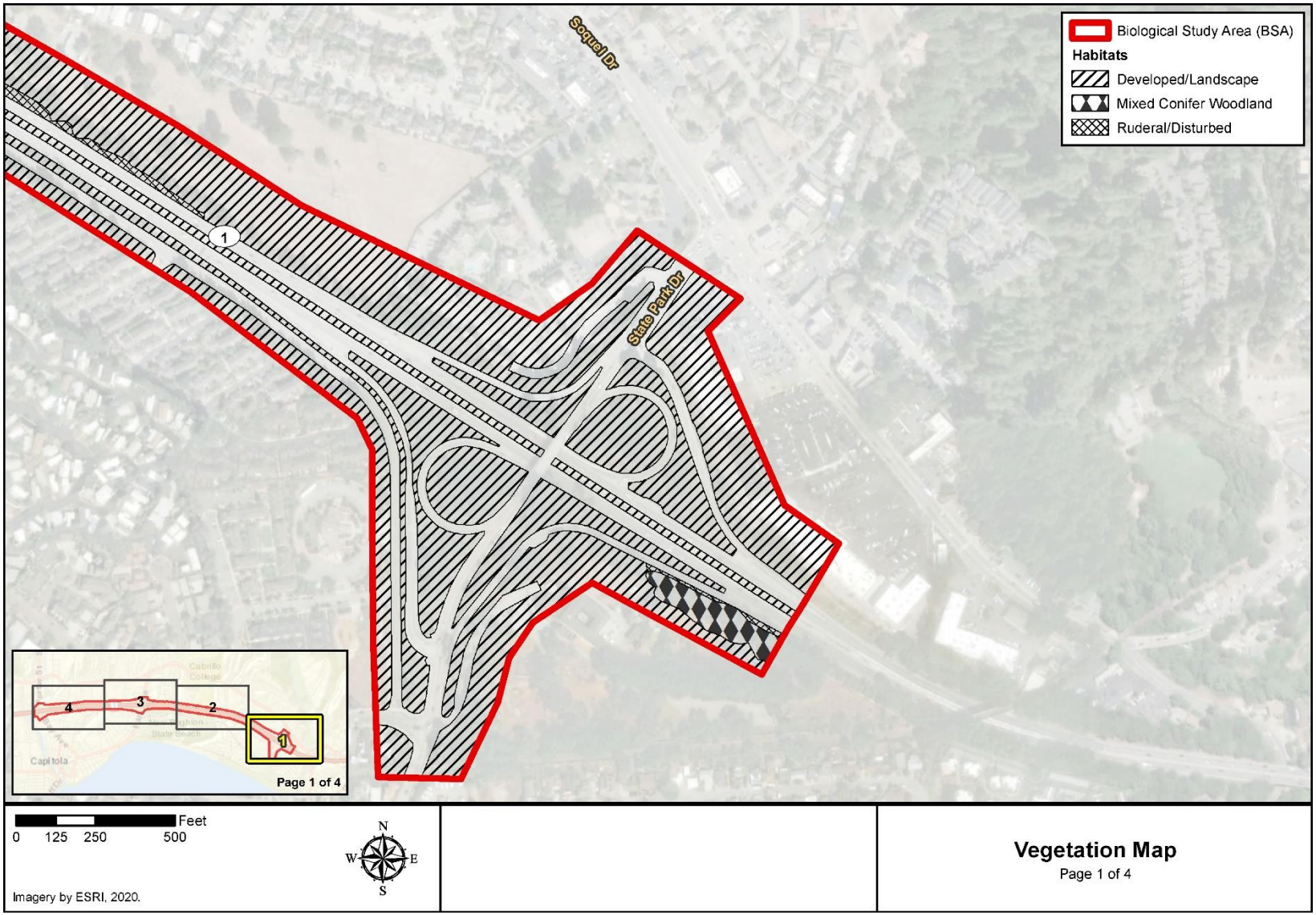


Figure 2-18 Biological Study Area Vegetation Map (Map 2 of 4)

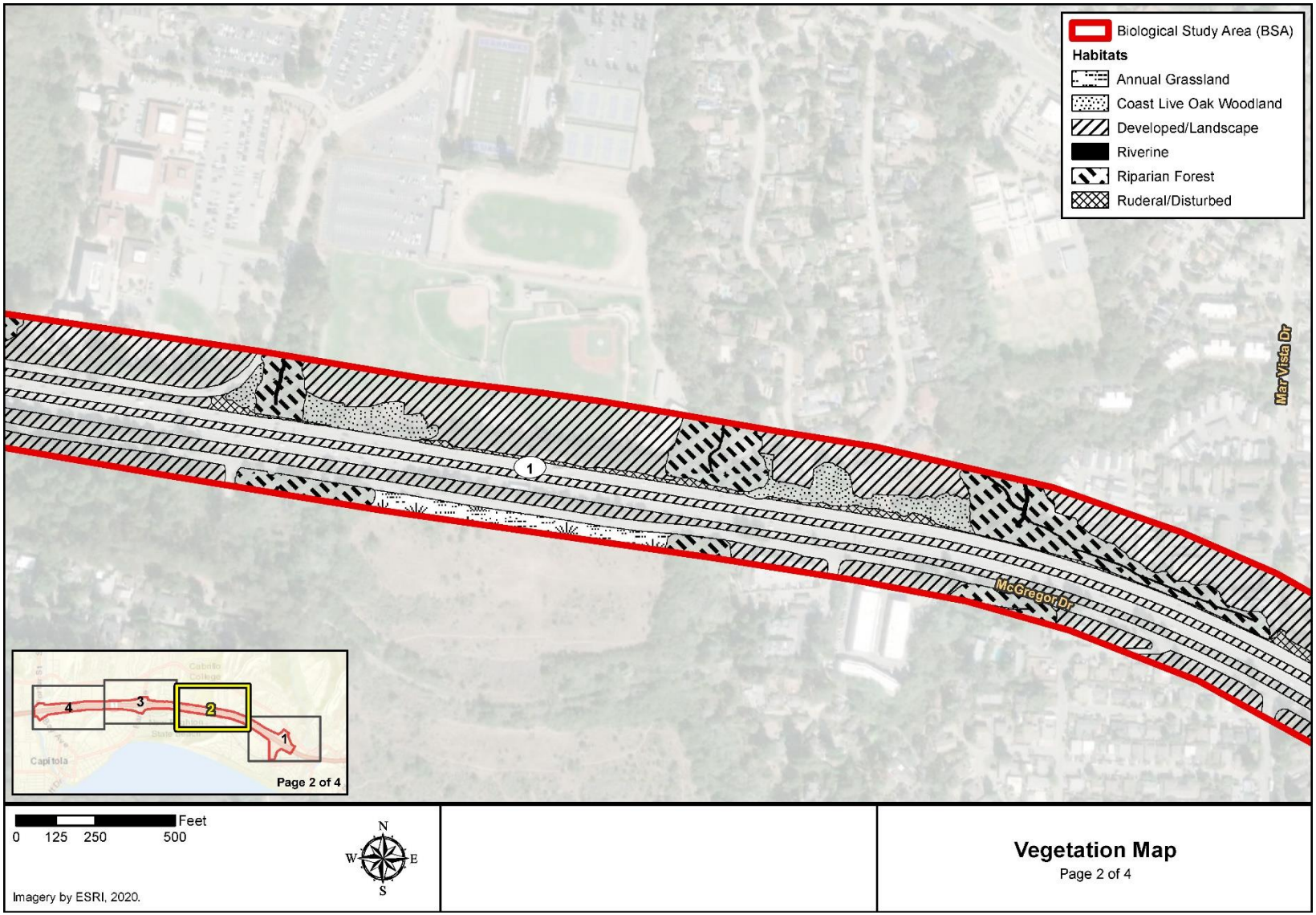


Figure 2-19 Biological Study Area Vegetation Map (Map 3 of 4)

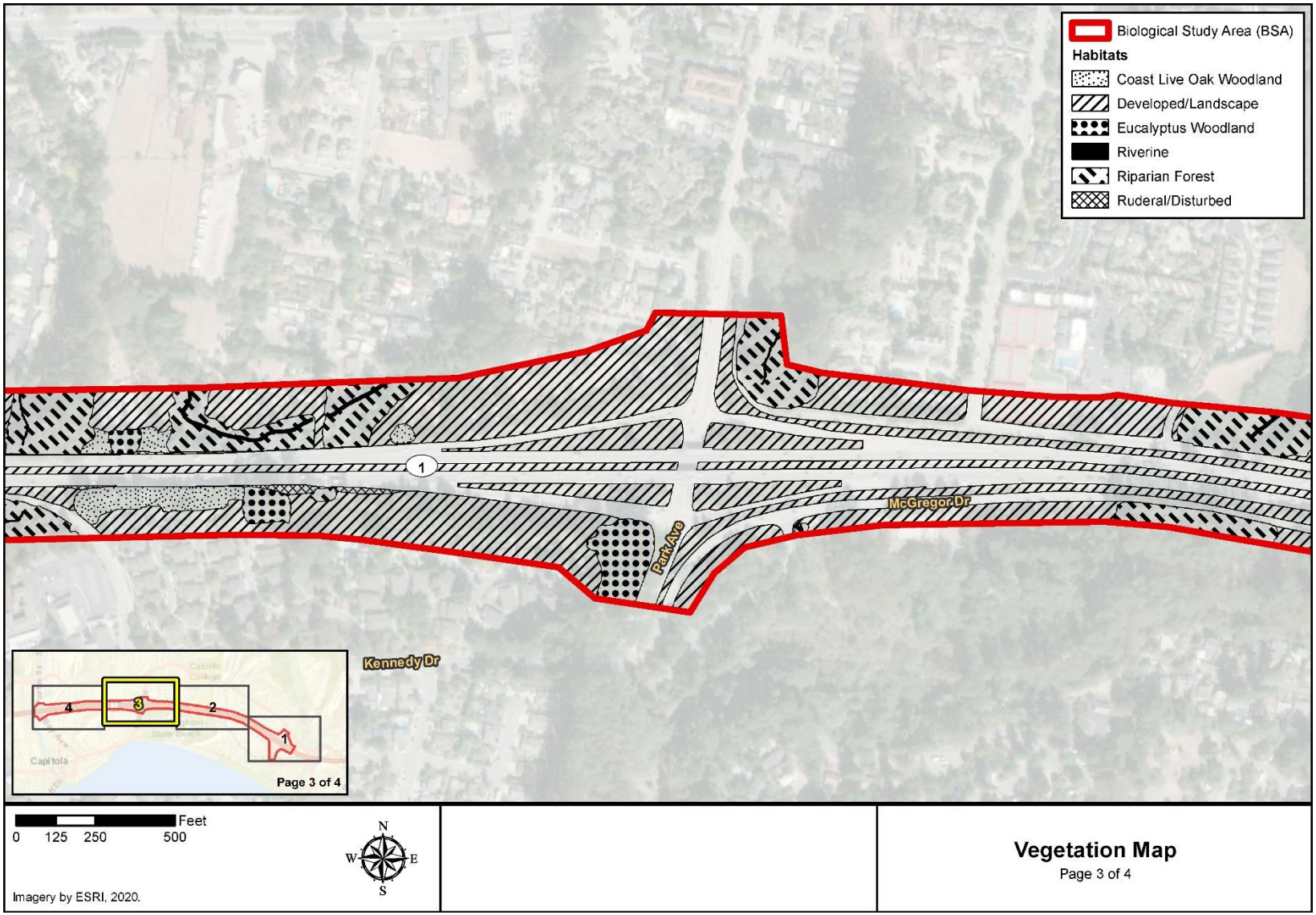


Figure 2-20 Biological Study Area Vegetation Map (Map 4 of 4)

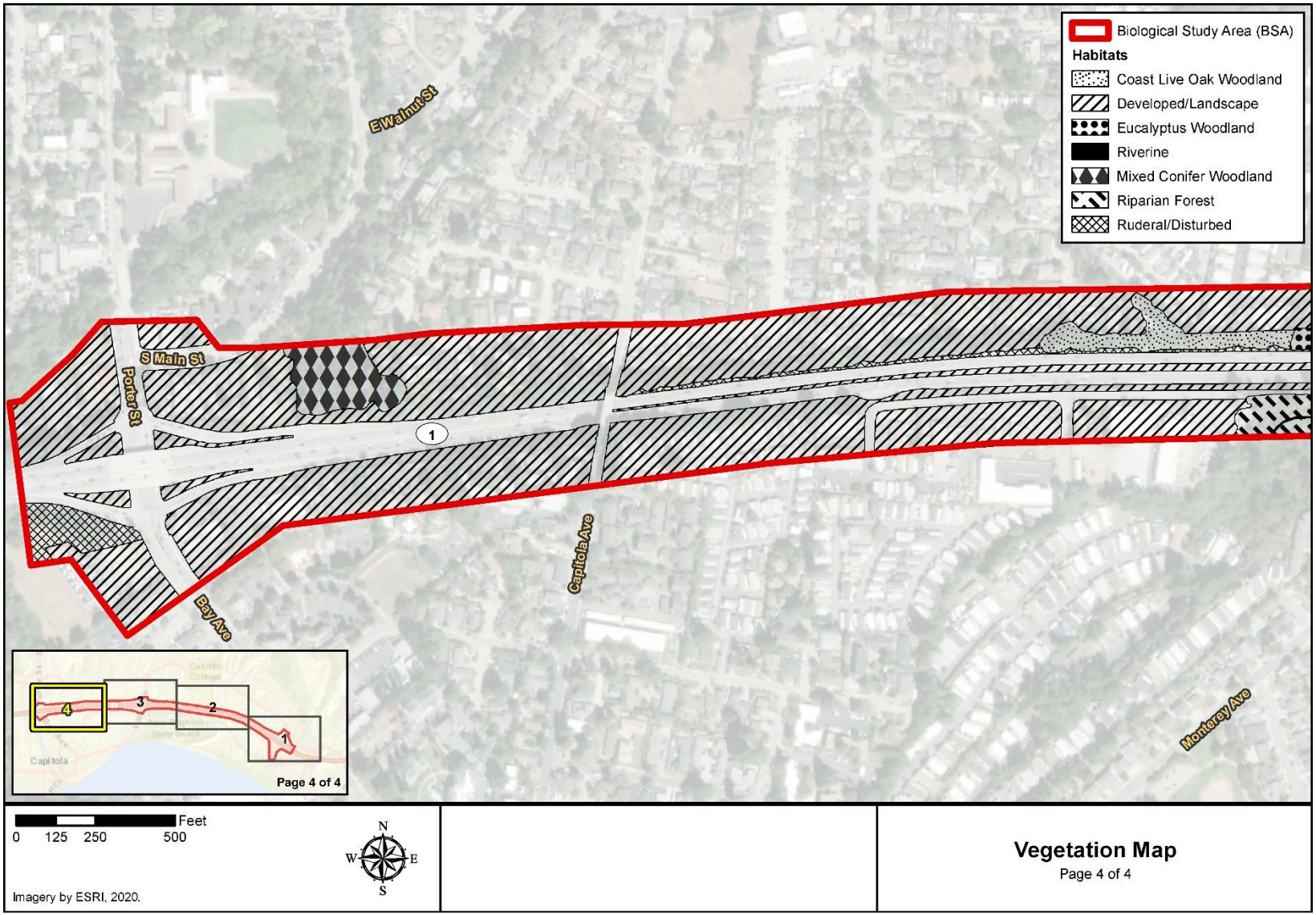


Table 2.54 Natural Communities within the Biological Study Area

Plant Community/Habitat	Acres	Square Feet
Riverine	0.464	20,183
Riparian Forest	13.206	575,253
Coast Live Oak Woodland	4.627	201,530
Mixed Conifer Woodland	2.308	100,517
Eucalyptus Woodland	1.558	67,857
Annual Grassland	1.174	51,157
Ruderal/Disturbed	3.060	133,292
Developed/Landscaped	111.014	4,835,757
Total	137.411	5,985,546

Riverine

Riverine habitat is present in the streambed of each of the creeks and drainages that traverse the Biological Study Area. This habitat type is seasonally variable and includes open water components (active, flowing channel) and unvegetated sandbars and streambed areas (riverwash, active floodplain). The stream gradient of this habitat type is low, water velocities are slow, and floodplains are typically well developed. Riverine habitat is present below the ordinary high water mark within the stream channels crossed by or next to the Biological Study Area.

Substrate within this habitat type is variable and typically consists of consolidated sand, gravel, and cobbles in the larger, perennial streams, and mud/silt in the smaller, intermittent drainages, tributaries, and drainage ditches. Under Cowardin classification, streams within the Biological Study Area can be classified as either Palustrine, Scrub-Shrub, Temporarily Flooded or Palustrine, Forested, and Temporarily Flooded, and typically support riparian wetlands and/or intermittent streams. (Cowardin et al. 1979)

The streams within the Biological Study Area are likely too small, degraded, and intermittent to support fish species; however, several wildlife species have the potential to occur within riverine habitats of the Biological Study Area, including Pacific treefrog *(Pseudacris regilla),* western toad *(Bufo boreas),* and the federally threatened California red-legged frog *(Rana draytonii).* Upon review by regulatory agencies, riverine habitats within the Biological Study Area may be considered waters of the U.S., including intermittent streams, and potentially fall under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and/or California Department of Fish and Wildlife as well as the jurisdiction of the California Coastal Commission/Local Coastal Program within the Coastal Zone).

Riparian Forest

Riparian forest habitat typically occurs within the riparian corridor next to stream channels with seasonally variable depths to the water table. The riparian forest is typically dense and provides a contiguous upper canopy of

larger tree species, with a woody vine and/or herbaceous understory layer. Riparian forest habitat occurs along Ord Gulch, Borregas Creek, Potbelly Creek, Tannery Gulch, the tributary to Tannery Gulch, the Monterey Avenue drainage ditch, and Nobel Creek. Dominant tree species of riparian forest habitats within the Biological Study Area include arroyo willow *(Salix lasiolepis),* coast live oak *(Quercus agrifolia),* alder *(Alnus sp.),* blue gum eucalyptus *(Eucalyptus globulus),* and golden wattle *(Acacia longifolia).* Common understory species seen include California blackberry *(Rubus ursinus),* poison oak *(Toxicodendron diversilobum),* and Cape ivy *(Delairea odorata).*

The riparian forest provides suitable habitat for a diverse assemblage of semiaquatic and terrestrial wildlife species. A variety of amphibian and reptile species, including those identified as having the potential to occur in association with riverine communities, are expected to occur in association with riparian forest areas of the Biological Study Area. Other vertebrate species seen or expected to occur in or frequent riparian forest habitats include the gopher snake *(Pituophis catenifer),* common garter snake *(Thamnophis sirtalis),* western fence lizard *(Sceloporus occidentalis),* Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), American goldfinch (*Carduelis tristis*), and black phoebe (*Sayornis nigricans*), as well as numerous other birds. Riparian forest areas are expected to provide important nesting, roosting, and foraging habitat for a variety of migratory songbirds and various raptor species.

Coast Live Oak Woodland

Coast live oak woodland communities are dominated by the evergreen coast live oak. Coast live oak woodlands vary substantially in structure and composition and are dependent on local environmental conditions such as slope, aspect, soils, moisture conditions, microclimatic features, and level of disturbance. Coast live oak woodland is present along upper creek bank areas and roadsides throughout large portions of the Biological Study Area. Individual oak trees are present in many other habitat types within the Biological Study Area, both as ornamental plantings and as naturally occurring trees. The coast live oak woodland understory generally consists of grassy areas and woody vines/shrubs, including milk thistle *(Silybum marianum),* California blackberry, poison oak, coyote brush *(Baccharis pilularis),* California coffeeberry (Frangula californica), black nightshade *(Solanum nigrum),* and annual grasses, such as those described in the annual grassland section below.

Oak woodland typically supports a wide diversity of wildlife due to the availability of important habitat features, such as nesting sites, escape and thermal cover, food, and dispersal corridors. Characteristic mammals expected to occur within coast live oak woodland habitats within the Biological Study Area include the western gray squirrel *(Sciurus griseus),* black-tailed deer *(Odocoileus hemionus columbianus),* raccoon, striped skunk, woodrat

(Neotoma spp.), gray fox *(Urocyon cinereoargenteus),* coyote *(Canis latrans),* Virginia opossum, and California ground squirrel (*Spermophilus beecheyi*). Various birds that occur within these habitats include plain titmouse *(Parus inornatus),* mourning dove *(Zenaida macroura),* northern flicker (*Colaptes auratus*), acorn woodpecker *(Melanerpes formicivorus),* California towhee *(Pipilo crissalis),* Stellar's jay *(Cyanocitta stelleri),* western bluebird (*Sialia mexicana*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Cooper's hawk *(Accipiter cooperii),* great-horned owl *(Bubo virginianus),* and common barn owl *(Tyto alba).* Reptiles that may occur within this habitat type include the gopher snake, western fence lizard, and common kingsnake (*Lampropeltis sirtalis*).

Mixed Conifer Woodland

Mixed conifer woodland habitat within and next to the Biological Study Area consists of California redwood *(Sequoia sempervirens),* Monterey pine *(Pinus radiata),* and Monterey cypress *(Hesperocyparis macrocarpa)* trees, primarily in planted or ornamental stands. In most areas of the Biological Study Area, these tree species are found in planted windrows along roadways and landscaping in overpass/interchange areas. Areas of mixed conifer woodland within and next to the Biological Study Area provide habitat features such as nesting and roosting sites, food, and dispersal corridors for a variety of wildlife species. Wildlife species present in conifer woodland are expected to be similar to those found in oak woodland habitats, with an increased presence of raptor species. The understory is typically composed of annual grasses and small shrubs.

Eucalyptus Woodland

Eucalyptus woodlands are the result of escaped and naturalized eucalyptus trees (typically blue gum eucalyptus) or abandoned eucalyptus plantations. Large areas of eucalyptus woodland are present along Tannery Gulch and the unnamed tributary to Tannery Gulch, the west side of Park Avenue south of State Route 1, and on the north side of State Route 1 at Nobel Creek. The eucalyptus woodland areas within the Biological Study Area are composed of blue gum eucalyptus and exhibit very little understory vegetation due to the allelopathic properties in the tree oils. Eucalyptus woodland habitat within the Biological Study Area has the potential to provide nesting habitat for raptors and migratory birds, as well as overwintering habitat for the monarch butterfly *(Danaus plexippus)* (although no known monarch overwintering roosts have been reported within the Biological Study Area). Some foraging habitat for common wildlife species is present, but habitat values of eucalyptus woodland areas are generally low except for the potential to support nesting birds and overwintering monarch butterflies.

Annual Grassland

Annual grassland is a common natural community regionally and statewide and is typically found on ridges, hill slopes, and valley floors. The structure of this community varies based on soil types and land-use practices. A small area of non-native annual grassland occurs between Borregas Creek and Potbelly Creek, immediately next to McGregor Drive. The annual grassland areas within the Biological Study Area are dominated by non-native species of common grasses, with a mixture of annual and perennial native and introduced forbs.

Dominant plant species present include soft chess brome *(Bromus hordeaceus)*, ripgut brome *(Bromus diandrus),* slender wild oat *(Avena barbata),* foxtail barley *(Hordeum murinum),* Italian ryegrass *(Festuca perennis),* filaree (*Erodium* spp.), burclover *(Medicago polymorpha),* and white sweetclover *(Melilotus alba).* Wildlife species living in nearby habitats may enter non-native annual grassland areas for foraging or migration. Species occurring in annual grassland habitat include Botta's pocket gopher *(Thomomys bottae),* California ground squirrel, black-tailed deer, western fence lizard, and mourning dove. Because of its small size and location immediately next to McGregor Drive, the annual grassland habitat in the Biological Study Area is likely too disturbed to support suitable habitat for special-status species.

Ruderal/Disturbed Vegetation

Ruderal/disturbed vegetation dominated by non-native plant species occurs in areas that have been altered by construction, landscaping, or other land-clearing types of activities. Ruderal/disturbed habitats often occur in abandoned agricultural fields, along roadsides, near developments, and in other areas experiencing severe ground surface disturbance. Areas of ruderal/disturbed vegetation within the Biological Study Area occur primarily in association with median strips, road shoulders, and disturbed areas. Characteristic weedy species present include wild radish *(Raphanus sativus),* sweet fennel *(Foeniculum vulgare),* bull thistle *(Cirsium vulgare),* prickly wild lettuce *(Lactuca serriola),* and various introduced annual grasses. Ruderal/disturbed vegetation associated with high-traffic roadways does not provide the habitat complexity necessary for diverse wildlife communities. Species expected to occur in this habitat type within the Biological Study Area include various species of mice and Botta's pocket gopher.

Developed/Landscaped Areas

Developed/landscaped habitat is the dominant community throughout the Biological Study Area. This habitat type consists of ornamental plantings in association with residential and commercial developments and roadside landscape efforts. Developed/landscaped areas are present throughout the Biological Study Area, often dominated by Acacia species. Developed/landscaped areas have been altered from their natural condition

and do not typically provide suitable habitat values for wildlife or native plants; however, various species of nesting migratory birds may potentially forage and/or nest in landscaped trees.

Special Resource Protection Areas

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in Section 2.3.4, Threatened and Endangered Species. Jurisdictional waters are discussed in Section 2.3.2, Wetlands and Other Waters.

Riparian Corridors and Fish Movement

Riparian corridors are considered sensitive and important habitats by various regulatory agencies. Within the Biological Study Area, riparian corridor areas include the riverine and riparian forest habitats associated with streams and drainages. The diversity of wildlife species occurring within riparian habitats is typically very high, and these habitats are sensitive to human activities and development. Riparian vegetation provides important roosting and foraging habitat for many migratory bird species. Riparian vegetation regulates water temperatures and provides, directly or indirectly, food sources for aquatic organisms. Riparian habitats serve as migratory corridors for wildlife, and as such, are important in linking noncontiguous or fragmented wildlife habitats. Riparian corridor areas present within the Biological Study Area may be considered Environmentally Sensitive Habitat Areas under the County of Santa Cruz and/or the City of Capitola Local Coastal Program.

The riparian corridor areas of the Biological Study Area contain tree and/or shrub canopy and, therefore, provide suitable travel corridors for various birds and terrestrial wildlife species passing through surrounding developed areas. More mobile animal species may traverse surrounding developed areas but at a greater risk of exposure. As mentioned previously, the streams within the Biological Study Area are likely too small, degraded, and intermittent to support fish species and likely do not support anadromous fish migration.

Environmental Consequences

Build Alternative

Both permanent and temporary effects on natural communities would result from the implementation of the project, as shown in Table 2.55, below.

Table 2.55 Impacts on Natural Communities

Habitats/Natural Communities	Permanent Impacts (Acres)	Temporary Impacts (Acres)
Riverine	0	0
Riparian Forest	0.156	0.440
Coast Live Oak Woodland	0.213	0.627
Mixed Conifer Woodland	0	0
Eucalyptus Woodland	0.038	0.100
Annual Grassland	0	0
Ruderal/Disturbed	0.754	0.404
Developed/Landscaped	7.879	4.943

Permanent impacts associated with the project would result from paving the median, installing a new concrete barrier at the center divider, widening the freeway and building the auxiliary lanes, installing a retaining wall along southbound and northbound State Route 1, installing structure work that pertains to the replacement of the Capitola Avenue overcrossing, building the Mar Vista Drive pedestrian and bicycle overcrossing, and placing soundwalls along the corridor as needed.

Temporary impacts would occur throughout the work area resulting from equipment operation, access, staging, worker foot-traffic, and utility relocation. Environmentally sensitive area fencing would be installed along the maximum disturbance limits to minimize disturbance to habitats/vegetation. Before the start of construction activities, environmentally sensitive areas would be delineated in the field and would be approved by Caltrans Environmental staff.

Before construction, and if required, Caltrans shall obtain a Waste Discharge Requirement from the Regional Water Quality Control Board, a Section 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife, and a Coastal Development Permit or waiver from the California Coastal Commission and applicable Local Coastal Programs.

An erosion control plan would be prepared before project implementation. The plan would include the installation of silt fencing, fiber rolls, and barriers between the project site and jurisdictional waters. Standard Caltrans Best Management Practices would be implemented to control erosion during and after project implementation.

Additionally, a Hazardous Materials Emergency Response Plan would be prepared to respond to any accidental spills. Cleaning and fueling of construction equipment and vehicles would occur only in designated staging areas, over 66 feet from aquatic areas. The applicant will adhere to Caltrans' Standard Specifications to ensure the project site remains clean and free of spills and debris.

Riverine

Riverine habitat areas are outside of proposed disturbance areas and would not be subject to either permanent or temporary impacts. The streams within the Biological Study Area are likely too small, degraded, and intermittent to support fish species and likely do not support anadromous fish migration. Therefore, the project would not result in direct or indirect impacts associated with fish passage. Potential impacts on jurisdictional waters are discussed in Section 2.3.2, Wetlands and other Waters.

Riparian Forest

About 0.156 acre of permanent impacts and 0.440 acre of temporary impacts would occur within riparian forest habitat areas. This total impact area accounts for about 4.5 percent of the total area of riparian forest present within the Biological Study Area. Appropriate avoidance and minimization measures have been identified below to address these potential impacts.

It is estimated that California has lost about 90 percent of its historical wetland and riparian resources to alternative land use. Regulatory agencies have sought to offset the additional loss of riparian areas and wetlands with restoration and revegetation requirements for projects within their respective jurisdictions. It is expected that any cumulative effects on jurisdictional waters within the Biological Study Area as a result of implementing the project are likely to be minimal because impacts on these resources would be mitigated with the measures identified below and the implementation of Best Management Practices.

Coast Live Oak Woodland

Based on current design plans, it is estimated there would be about 0.213 acre of permanent impacts and 0.627 acre of temporary impacts on coast live oak woodland. This total impact area accounts for about 18.2 percent of coast live oak woodland present within the Biological Study Area. Oak trees to be removed for construction would be surveyed and tallied during the permitting phase of the project.

Avoidance, minimization, and/or mitigation measures would provide for the protection and planting of additional oak trees in the Biological Study Area; therefore, adverse effects on coast live oak woodlands and individual trees are not expected.

Mixed Conifer Woodland

Mixed conifer woodland habitat areas are outside of proposed disturbance areas and would not be subject to either permanent or temporary impacts.

Eucalyptus Woodland

About 0.038 acre of permanent impacts and 0.100 acre of temporary impacts would occur within eucalyptus woodland habitat area. This area accounts for about 8.9 percent of the eucalyptus woodland within the project's Biological Study Area. Because eucalyptus is a non-native species and habitat values of eucalyptus woodland habitat areas are generally low, eucalyptus woodland habitat area within the Biological Study Area is not considered a sensitive natural community, and the impacts on this natural community would not warrant avoidance, minimization, and/or mitigation measures.

Annual Grassland

Annual grassland habitat areas are outside of proposed disturbance areas and would not be subject to either permanent or temporary impacts.

Ruderal/Disturbed

About 0.754 acre of permanent impacts and 0.404 acre of temporary impacts would occur within ruderal/disturbed habitat areas. This total impact area accounts for about 37.8 percent of the ruderal/disturbed habitat areas present within the Biological Study Area. Ruderal/disturbed vegetation within the Biological Study Area is dominated by non-native plant species and does not provide the habitat complexity necessary for diverse wildlife communities. Therefore, ruderal/disturbed habitat areas within the Biological Study Area are not considered a sensitive natural community; impacts on this natural community would not warrant avoidance, minimization, or mitigation measures.

Developed/Landscaped

About 7.879 acres of permanent impacts and 4.943 acres of temporary impacts would occur within a developed/landscaped area.

No-Build (No-Action) Alternative

The No-Build (No-Action) Alternative would not result in habitat changes or increases in impervious surface area or other structures. Therefore, there would be no impacts on the habitats discussed above.

Avoidance, Minimization, and/or Mitigation Measures

The following measures are recommended to avoid and/or minimize any potential impacts on riparian forest habitat.

- **AMM-NC-1:** Before construction, Caltrans shall prepare a Mitigation and Monitoring Plan to mitigate impacts on vegetation and natural habitats. The Mitigation and Monitoring Plan shall be consistent with federal and state regulatory requirements and will be amended with any regulatory permit conditions, as required. Caltrans shall implement the Mitigation and Monitoring Plan as necessary during construction and immediately following project completion.

- **AMM-NC-2:** Before starting any ground-disturbing activities, environmentally sensitive area fencing shall be installed around jurisdictional waters and the dripline of trees to be protected within project limits. Caltrans-defined environmentally sensitive areas shall be noted on design plans and delineated in the field before the start of construction activities.
- **AMM-NC-3:** A qualified biological monitor(s) will ensure compliance with mitigation measures within the project's environmental documents. Monitoring shall occur throughout the length of construction or as directed by the regulatory agencies. Full-time monitoring shall occur during vegetation removal, water diversion, and temporary erosion control installation. Monitoring may be reduced to part-time once construction activities are underway, and the potential for additional impacts are reduced.
- **AMM-NC-4:** During project activities, the biological monitor(s) shall coordinate with federal, state, and local agencies and the construction contractor to ensure construction schedules comply with biological mitigation requirements.
- **AMM-NC-5:** Before project implementation, the project site shall be clearly flagged or fenced so that the contractor is aware of the limits of allowable site access and disturbance. Areas within the designated project site that do not require regular access shall be clearly flagged as off-limit areas to avoid unnecessary damage to sensitive habitats or existing vegetation within the project site.
- **AMM-NC-6:** During project activities, work occurring within stream channels shall be conducted during the dry season, if possible (April 15 to October 15). If in-stream work will be necessary, a Diversion and Dewatering Plan shall be prepared and implemented.
- **AMM-NC-7:** The biological monitor(s) shall ensure that the spread or introduction of invasive exotic plant species will be avoided to the maximum extent possible. When practicable, invasive exotic plants in the project site shall be removed and properly disposed of offsite where appropriate and away from sensitive habitats.
- **Mitigation Measure-NC-8:** Affected jurisdictional waters (including federal, state, and/or Coastal Zone wetlands, other waters, and riparian areas) have typically been mitigated at a 1 to 1 ratio for temporary impacts and a 3 to 1 ratio for permanent impacts. The actual mitigation ratio required by the relevant agencies would be negotiated during the permitting process. Compensatory mitigation options shall include creation, restoration, enhancement, and preservation implemented either onsite (preferred) or offsite. Any removal of riparian trees would be offset by a replacement ratio as determined by the California Department of Fish and Wildlife in Section 1602 Lake or Streambed Alteration Agreement requirements. At a minimum, restoration and mitigation plantings shall

achieve 75 percent survivability at the end of a 5-year period and require no further maintenance for survival. Onsite mitigation, if implemented, shall be conducted within the watershed that is being impacted, if feasible. Compensatory mitigation shall be implemented immediately following project completion. Compensatory mitigation plantings shall be monitored quarterly, and any required maintenance shall also occur quarterly. Maintenance activities would include weeding, debris removal, replanting (if necessary), repair of any vandalism, fertilizing, and/or pest control. The results of the quarterly monitoring effort would dictate maintenance activities. Quarterly reports and annual monitoring reports shall be submitted to Caltrans, the Santa Cruz County Regional Transportation Commission, and the affected regulatory agencies. The annual monitoring report submitted at year 5 shall serve as a final completion report should the mitigation be successful.

The following measures are recommended to avoid and/or minimize any potential impacts on coast live oak woodland habitat.

- **AMM-NC-9:** Coast live oak woodland trees that are not planned for removal shall be delineated on the project plans and provided protective fencing at a distance no less than the dripline of the affected tree canopy. Project equipment shall not be permitted to enter the coast live oak dripline canopy at any time during the length of the project.
- **AMM-NC-10:** Erosion control measures shall be implemented during project activities. Silt fencing, fiber rolls, and barriers (e.g., hay bales) shall be installed between the project site and nearby coast live oak woodlands. At a minimum, silt fencing shall be checked and maintained daily throughout the construction period. The contractor shall also apply adequate dust control techniques, such as site watering, during construction.
- **AMM-NC-11:** During project activities, the cleaning and refueling of equipment and vehicles shall occur only within a designated staging area and at least 66 feet from coast live oak woodland habitat area. This staging area shall conform to Best Management Practices applicable to attaining zero discharge of stormwater runoff. At a minimum, all equipment and vehicles shall be checked and maintained daily to ensure proper operation and avoid potential leaks or spills.

In addition to measures 9 through 11, measures 1 through 8 identified above to reduce impacts on riparian forest habitats would also effectively reduce impacts on coast live oak woodland habitat.

References

Cowardin, Lewis M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Prepared for the U.S. Fish and Wildlife Service. FWS/OBS-79/31.

SWCA Environmental Consultants (SWCA). 2020. *State Route 1 Auxiliary Lanes – State Park Drive to Bay Avenue/Porter Street Natural Environment Study*. Prepared for California Department of Transportation.

2.3.2 Wetlands and Other Waters

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 Clean Water Act (33 U.S. Code 1344), is the primary law regulating wetlands and surface waters. One purpose of the Clean Water Act is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high water mark, in the absence of nearby wetlands. When nearby wetlands are present, Clean Water Act jurisdiction extends beyond the ordinary high water mark to the limits of the nearby wetlands. To classify wetlands for the purposes of the Clean Water Act, 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 Clean Water Act.

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

The U.S. Army Corps of Engineers issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effects. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide permit may be permitted under one of the U.S. Army Corps of Engineers' Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the U.S. Army Corps of Engineers' decision to approve is based on compliance with the U.S. Environmental Protection Agency's Section 404(b)(1) Guidelines (40 Code of Federal Regulations 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the U.S. Environmental Protection Agency in conjunction with the U.S. Army Corps of Engineers, 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 that would have less adverse effects. The guidelines state that the U.S. Army Corps of Engineers may not issue a permit if there is a "least environmentally damaging practicable alternative" 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 (Executive Order 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, Executive Order 11990 states that a federal agency, such as the Federal Highway Administration and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction, and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

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

The Regional Water Quality Control Boards were established under the Porter-Cologne Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements and may be required even when the discharge is already permitted or exempt under the Clean Water Act. In compliance with Clean Water Act Section 401, the Regional Water Quality Control Boards also issue water quality certifications for activities that 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 Section 2.2.2, Water Quality and Stormwater Runoff, for more details.

Affected Environment

No wetlands or other waters coordination with the relevant regulatory agencies has been conducted for the project. The project has the potential to affect resources under the jurisdiction of one or more of these agencies. Coordination with the relevant regulatory agencies, the acquisition of appropriate permits and agreements, and the implementation of avoidance and minimization measures would be required for project implementation.

The information in this section is summarized from the Natural Environment Study prepared for the project in August 2020 and the preliminary Jurisdictional Delineation Report prepared in August 2020 for the project.

A delineation/assessment of potentially jurisdictional waters was conducted within the 137-acre Biological Study Area on March 4, 5, and 6, 2020. Areas of potentially jurisdictional waters are identified in Figures 2-21 through 2-27.

The jurisdictional delineation identified potential federally jurisdictional waters of the U.S. within the Biological Study Area. These include 0.464 acre of other waters—intermittent streambed that may fall under the jurisdiction of USACE. Other waters—intermittent streambed generally occurred along streambed features bound by an ordinary high water mark but lacking one or more of the three wetland parameters.

The jurisdictional delineation identified potentially jurisdictional waters of the State within the Biological Study Area. These include 14.144 acres of riparian non-wetlands, 0.464 acre of a streambed, and 0.017 acre of a concrete ditch, for a total of 14.625 acres that may fall under the jurisdiction of the Regional Water Quality Control Board and California Department of Fish and Wildlife. Streambeds are waters of the State that are roughly equivalent to the descriptions above for federal waters of the U.S. considered other waters, respectively. Waters of the State that are characterized as riparian non-wetlands consist of riparian vegetation that extends above the ordinary high water mark and lacks one or more of the three wetland parameters; this is by far the largest potentially jurisdictional aquatic feature within the Biological Study Area in terms of acreage. The small concrete v-ditch that drains to Ord Gulch on the south side of State Route 1 is also assessed as qualifying as potential waters of the State.

Figure 2-21 Jurisdictional Delineation Impact Map (Sheet 1 of 7)

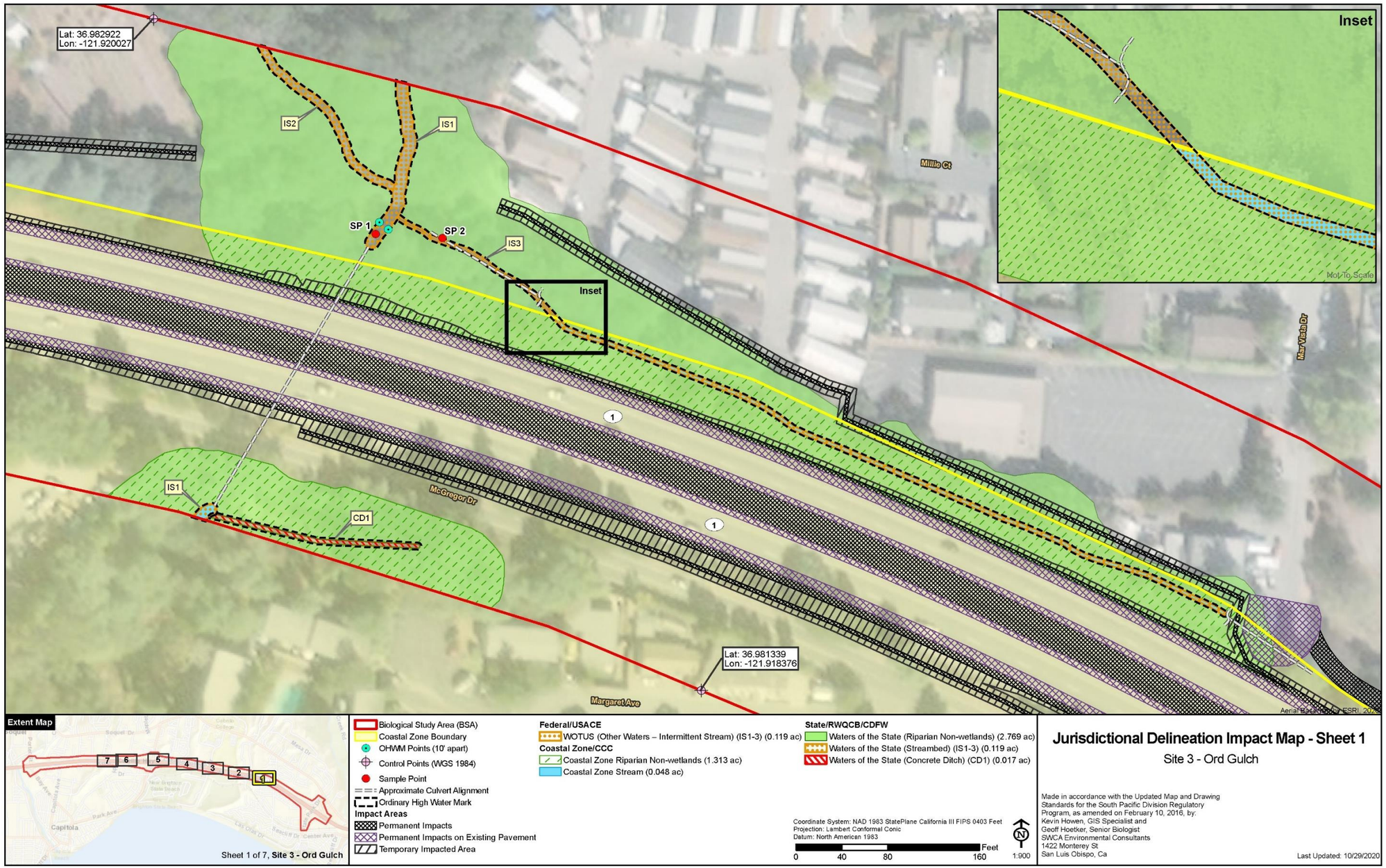


Figure 2-22 Jurisdictional Delineation Impact Map (Sheet 2 of 7)

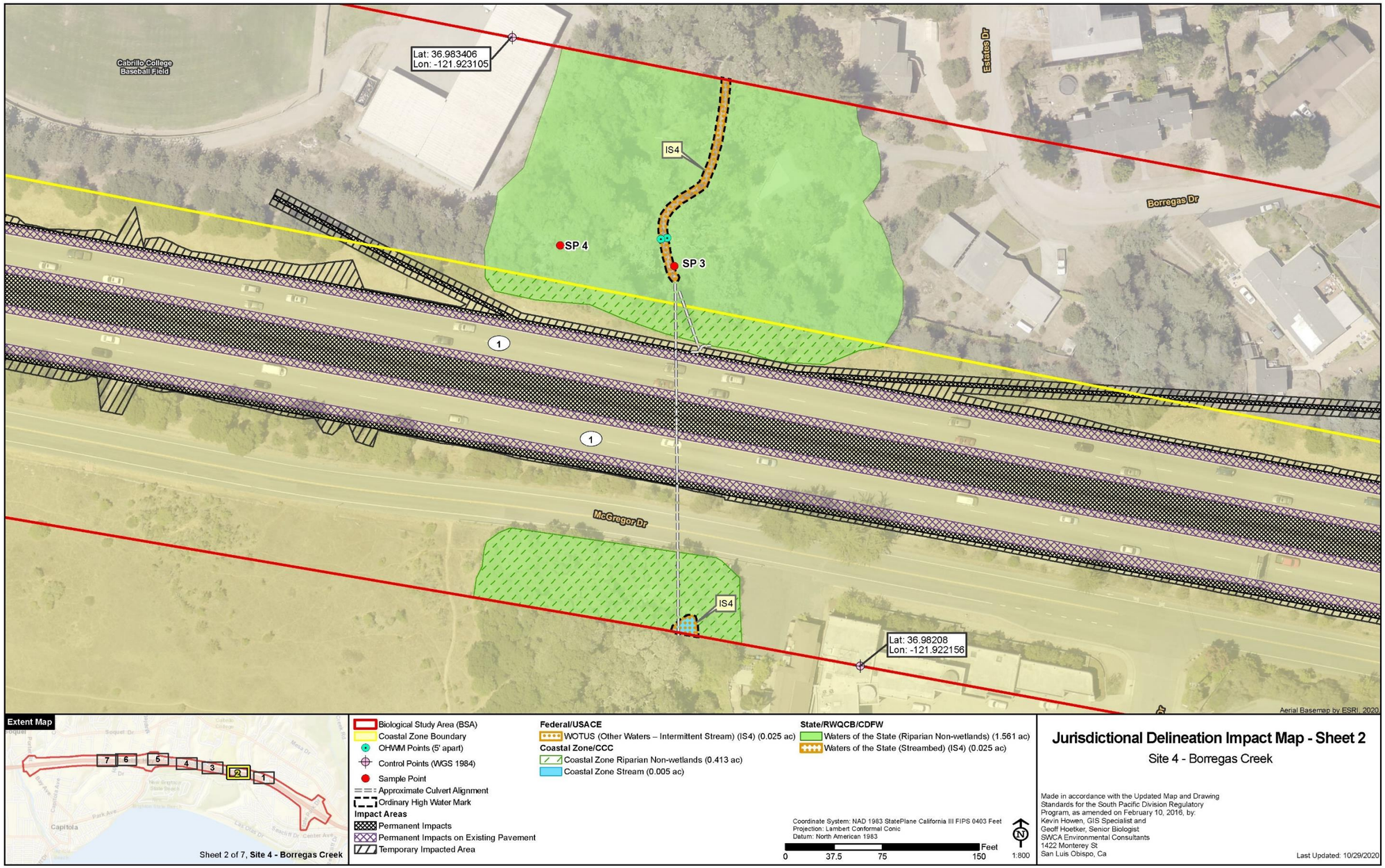


Figure 2-23 Jurisdictional Delineation Impact Map (Sheet 3 of 7)

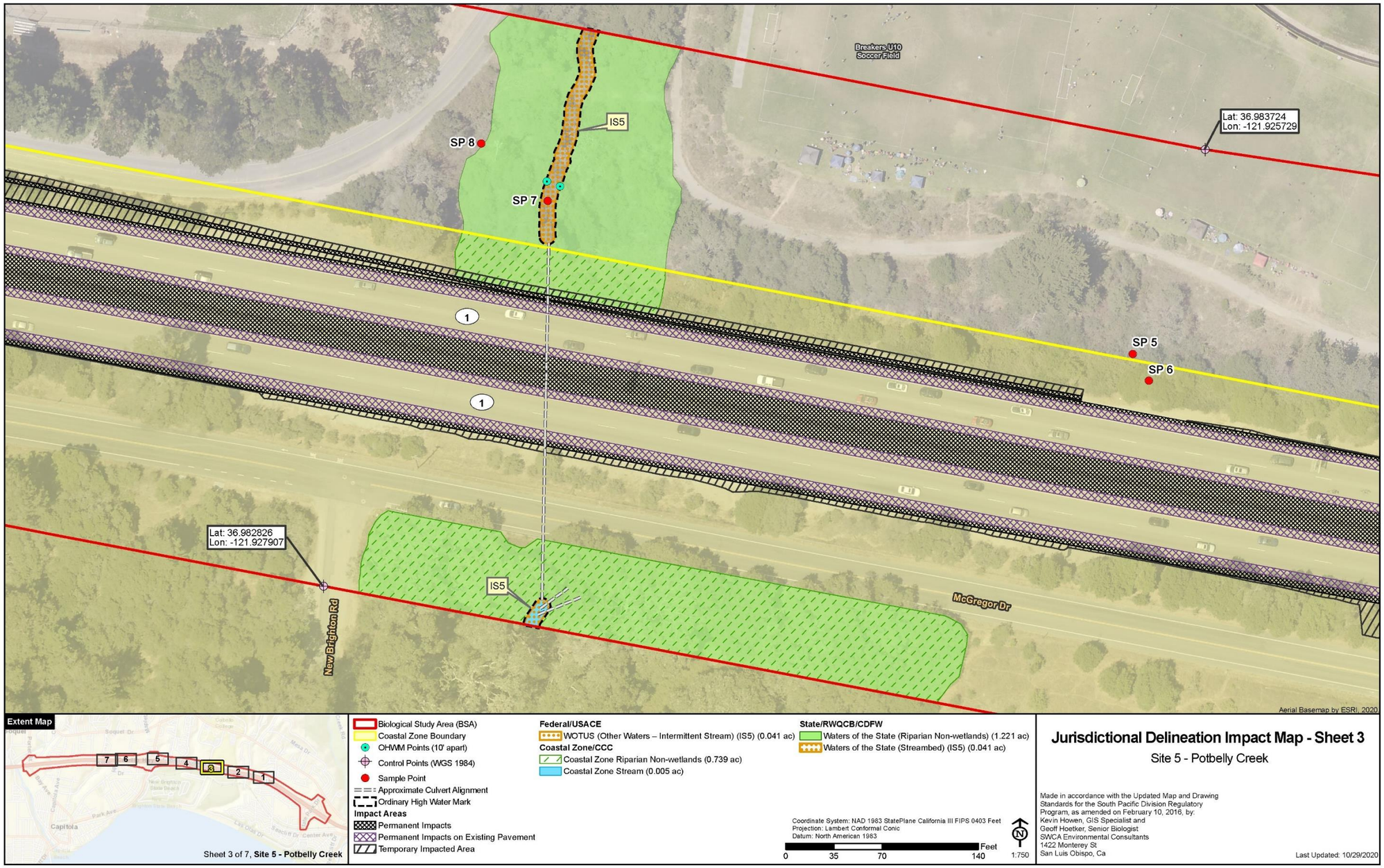


Figure 2-24 Jurisdictional Delineation Impact Map (Sheet 4 of 7)

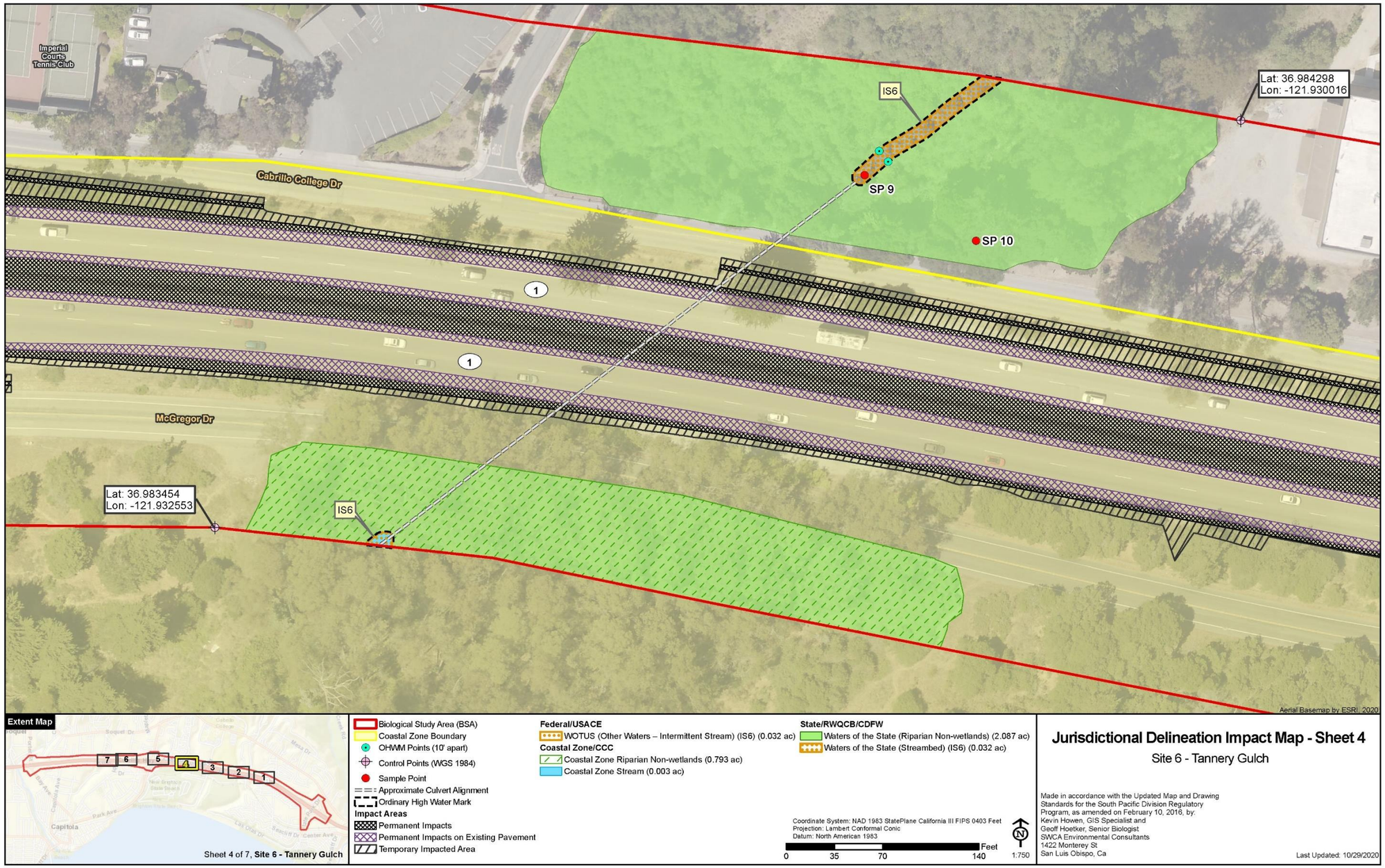


Figure 2-25 Jurisdictional Delineation Impact Map (Sheet 5 of 7)

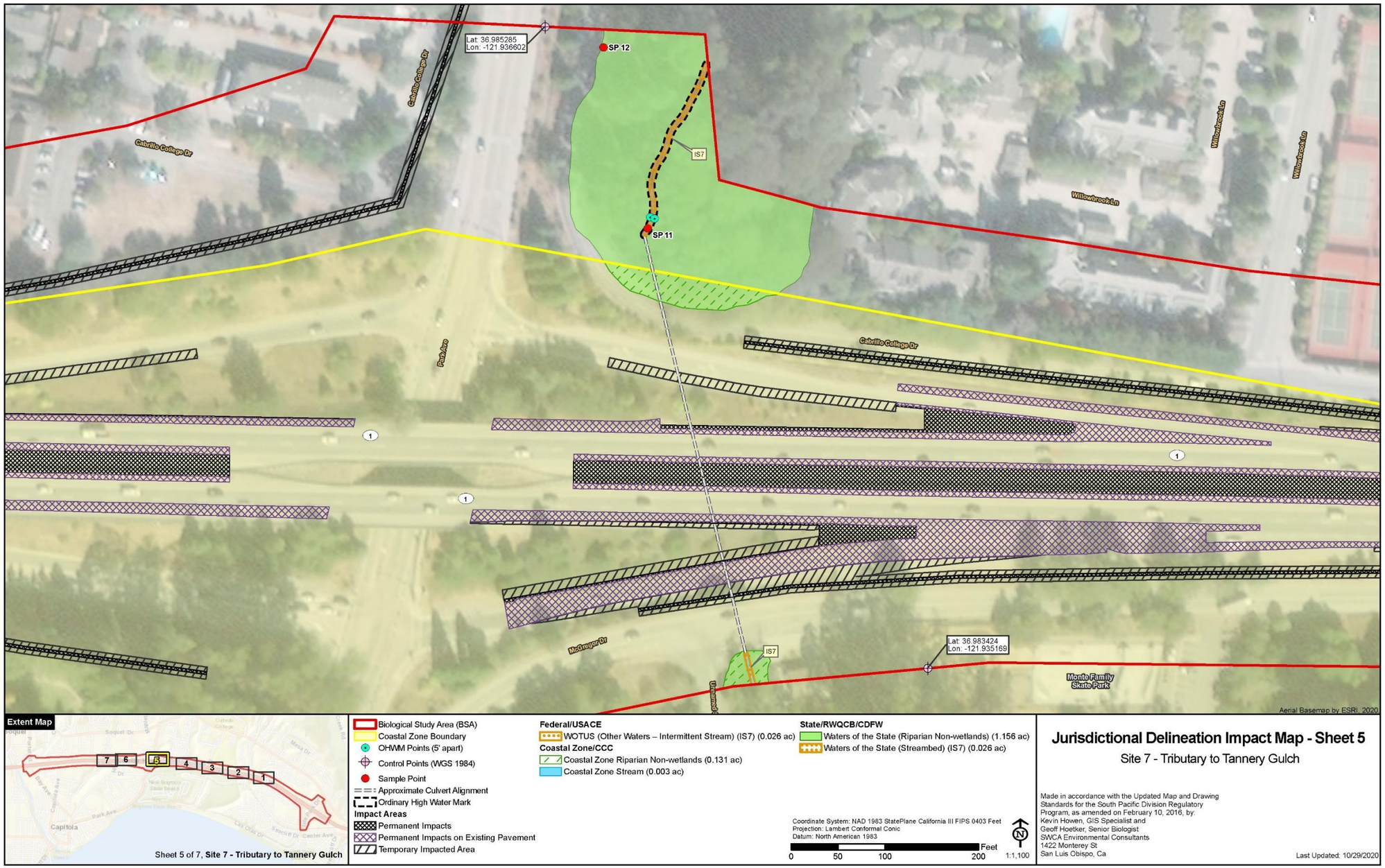


Figure 2-26 Jurisdictional Delineation Impact Map (Sheet 6 of 7)

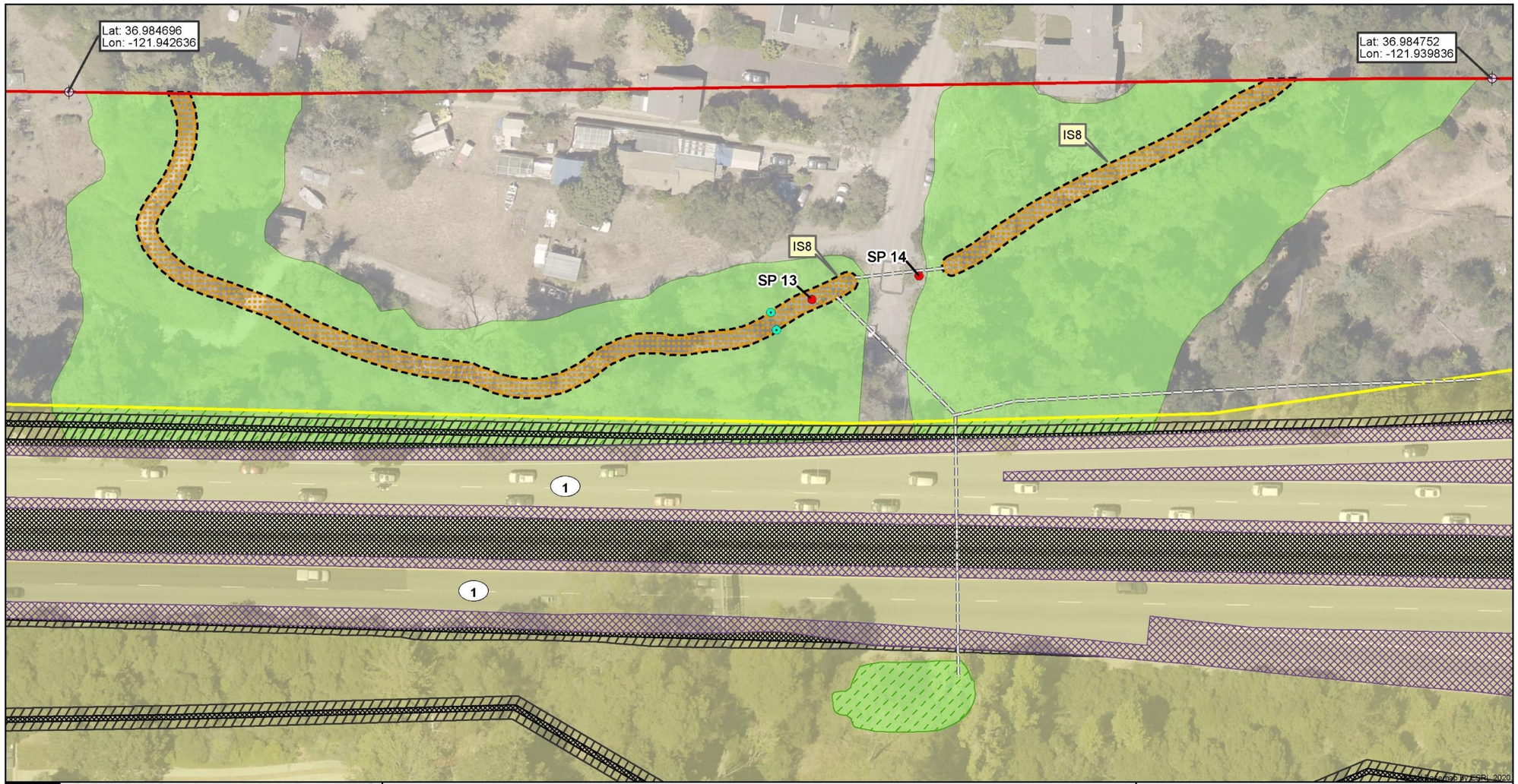
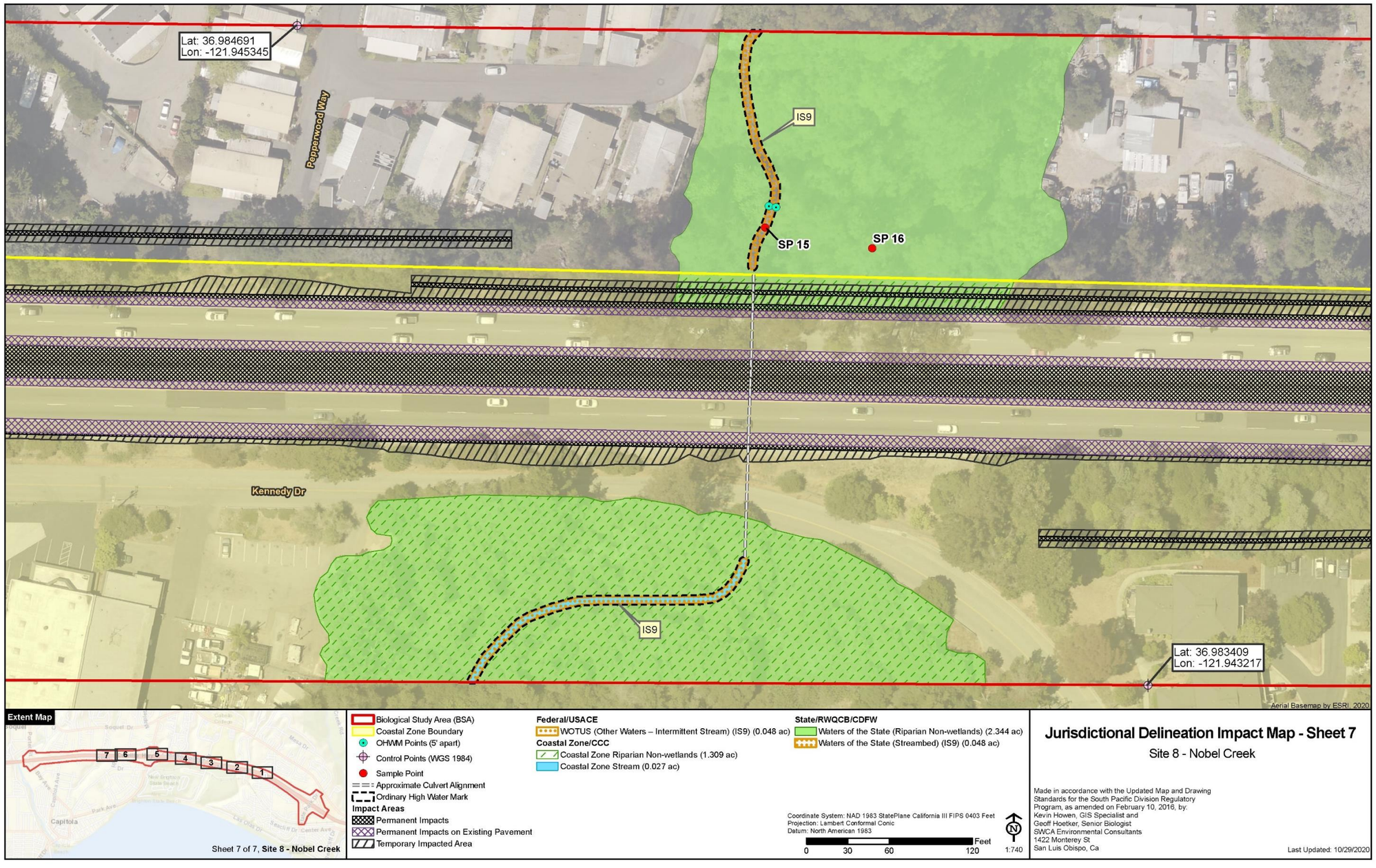


Figure 2-27 Jurisdictional Delineation Impact Map (Sheet 7 of 7)



The jurisdictional delineation identified potentially jurisdictional Coastal Zone aquatic resources within the Biological Study Area. These include 5.286 acres of Coastal Zone riparian non-wetlands, and 0.091 acre of Coastal Zone streambed, for a total of 5.377 acres that may fall under the jurisdiction of the California Coastal Commission and may be considered Environmentally Sensitive Habitat Areas under the County of Santa Cruz and/or the City of Capitola Local Coastal Programs. Coastal Zone riparian non-wetlands and streambeds are roughly equivalent to the descriptions above for waters of the State (riparian non-wetlands and streambeds, respectively). The concrete v-ditch that drains to Ord Gulch on the south side of State Route 1 has been excluded because this type of anthropogenic feature is not regulated as an Environmentally Sensitive Habitat Area based on SWCA's review of Local Coastal Program documentation.

These findings should be considered preliminary. Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies (i.e., U.S. Army Corps of Engineers, Regional Water Quality Control Board, California Department of Fish and Wildlife, and California Coastal Commission/ Local Coastal Programs) and will be confirmed during the permitting phase of the project.

Environmental Consequences

Build Alternative

Based on current design plans, the project would result in about 0.192 acre of permanent impacts and 0.540 acre of temporary impacts on waters of the State (characterized as riparian non-wetlands), and 0.144 acre of permanent impacts and 0.395 acre of temporary impacts on Coastal Zone riparian non-wetlands. There would be no impacts on waters of the U.S. (wetlands or other waters). A summary of project impacts on jurisdictional waters is provided in Table 2.56.

Table 2.56 shows the area (in acres) of permanent and temporary impacts on wetlands and other waters. The areas listed are subject to final verification and approval by the regulatory agencies. The table shows areas of potential jurisdiction categorized by their type.

The category of potential federal Waters of the U.S. that are listed as "other waters" include potentially jurisdictional features at or below the ordinary high water mark that lack one or more of the three wetland parameters. Federal other waters within the biological study area have been characterized as "Intermittent Streams." Potential Waters of the State that are characterized as "Riparian Non-Wetlands" extend to the outer edge of riparian vegetation with connectivity to a feature considered a potential Waters of the State; these features support riparian vegetation but are not three-parameter wetlands.

Potential Waters of the State (Streambed) includes federal Waters of the U.S. (Other Waters) and adjacent floodplains, if present. Potential waters of the

State (Ditch) includes anthropogenic drainage features such as concrete v-ditches that are not considered jurisdictional by the U.S. Army Corps of Engineers. Coastal Zone Riparian Non-Wetlands are equivalent to Waters of the State (Riparian Non-Wetlands) occurring within the Coastal Zone. Coastal Zone Stream areas are equivalent to federal Waters of the U.S. (Other Waters) and Waters of the State (Streambed) that include natural streams/creeks occurring within the Coastal Zone. For the purposes of this delineation, these exclude anthropogenic drainage features that may otherwise be considered Waters of the State.

Table 2.56 Impacts on Wetlands and Other Waters

Potential Jurisdictional Waters	Permanent Impacts (Acres)	Temporary Impacts (Acres)
Waters of the U.S. (Other Waters – Intermittent Stream)	0	0
Waters of the State (Riparian Non-Wetlands)	0.156	0.440
Waters of the State (Streambed)	0	0
Waters of the State (Concrete Ditch)	0	0
Coastal Zone Riparian Non-Wetlands	0.115	0.322
Coastal Zone Stream	0	0

Based on initial observations, the potentially jurisdictional waters within the Biological Study Area appear to provide low to moderate physical/hydrological functions (flood control, groundwater recharge, and sediment traps), low to moderate chemical functions (biogeochemical cycling), and moderate to high ecological functions (fish and wildlife habitat, endangered species habitat, wildlife migration). This is attributable to many of the coastal streams within the Biological Study Area supporting only ephemeral to intermittent stream flows at best, and several being subjected to deposition of trash/pollution and other disturbances. While water quality appears low, surrounding riparian habitat functions remain moderate to high because tree canopies are moderate to dense with healthy understories. Values derived from potentially jurisdictional waters within the Biological Study Area include recreation (bird and wildlife watching), aesthetics (riparian corridors are generally uncommon and valued by the public in this region), and education. Based on the scope of project impacts on jurisdictional waters and implementation of avoidance and minimization measures NC-1 through NC-7, mitigation measure NC-8, and avoidance and minimization measures NC-9 through NC-11 identified in Section 2.3.1, Natural Communities, and implementation of Best Management Practices, the project would not substantially alter the function or value of wetlands or other waters within the Biological Study Area.

It is estimated that California has lost about 90 percent of its historic wetland and riparian resources to alternative land uses. Regulatory agencies have sought to offset the additional loss of riparian areas and wetlands with restoration and revegetation requirements for projects within their respective jurisdictions. Cumulative effects on jurisdictional wetlands or other waters

within the Biological Study Area, as a result of implementing the project, are expected to be minimal because impacts on these resources would be mitigated through the implementation of avoidance and minimization measures NC-1 through NC-7, mitigation measure NC-8, and avoidance and minimization measures NC-9 through NC-11, identified in Section 2.3.1, Natural Communities, and implementation of Best Management Practices.

No-Build (No-Action) Alternative

The No-Build (No-Action) Alternative would not result in habitat modifications or increases in impervious surface areas. Therefore, there would be no impacts on the wetlands or other waters discussed above.

Avoidance, Minimization, and/or Mitigation Measures

Avoidance and minimization measures NC-1 through NC-11, as identified in Section 2.3.1, Natural Communities, are recommended to avoid and minimize any potential impacts on jurisdictional waters.

References

SWCA Environmental Consultants (SWCA). 2020a. *Jurisdictional Delineation Report for the State Route 1 Auxiliary Lanes – State Park Drive to Bay Avenue/Porter Street, Santa Cruz County, California.* Prepared for California Department of Transportation.

SWCA Environmental Consultants (SWCA). 2020b. *State Route 1 Auxiliary Lanes – State Park Drive to Bay Avenue/Porter Street Natural Environment Study*. Prepared for California Department of Transportation.

2.3.3 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts on wildlife. The U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service, and the California Department of Fish and Wildlife are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the Federal Environmental Species Act or California Environmental Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.3.4, Threatened and Endangered Species. All other special-status animal species are discussed here, including U.S. Fish and Wildlife Service or National Oceanic and Atmospheric Administration Fisheries candidate species, California Department of Fish and Wildlife fully protected species, and California Species of Special Concern.

Federal laws and regulations relevant to wildlife include the following:

  - National Environmental Policy Act
  - Migratory Bird Treaty Act
  - Fish and Wildlife Coordination Act
- State laws and regulations relevant to wildlife include the following:
  - California Environmental Quality Act
  - California Fish and Game Code Sections 1600-1603
  - California Fish and Game Code Sections 4150 and 4152

Affected Environment

The information in this section is summarized from the Natural Environment Study prepared for the project in August 2020.

The California Natural Diversity Database documents the special-status animal taxa (federally listed, state-listed, California Fully Protected, Species of Special Concern, California Natural Diversity Database Special Animals, and/or protected by the Migratory Bird Treaty Act and California Fish and Game Code) occurring within the project region (see Table 2.57).

Other taxa not appearing on the California Natural Diversity Database or U.S. Fish and Wildlife Service/National Oceanic and Atmospheric Administration Fisheries species lists but considered based on the presence of suitable habitat were the “other nesting birds” category, which was added for the various species of birds with potential to nest in the Biological Study Area that are protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3503, and the “other roosting bats” category, which was added for the various Species of Special Concern bat species and California Natural Diversity Database Special Animal bat species that could potentially roost in the Biological Study Area.

The names and legal status of each of the regionally occurring special-status species are identified in Table 2.57, as well as a general description of the habitat requirements for each and a determination as to whether suitable habitat is present and whether the species is present. The rationale section summarizes the potential for each taxon to occur in the Biological Study Area or be affected by the project. Only species with habitat present are discussed in Table 2.57.

Suitable habitat conditions occur within the Biological Study Area for numerous special-status animal species. The special-status animal species listed in Table 2.57 as present or with potential for occurrence within the Biological Study Area are discussed in more detail below.

Table 2.57 Regional Animal Species of Concern

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/Absent	Rationale
Monarch Butterfly	*Danaus plexippus*	Included on California Natural Diversity Database Special Animals List (also protected under CEQA)	Found in coastal eucalyptus and Monterey cypress stands.	Habitat Present. Suitable habitat is present in the Biological Study Area.	California Natural Diversity Database documented roosting occurring along Borregas Creek downstream/south of State Route 1; no documented roosting sites are within the Biological Study Area. Mature eucalyptus stands occur within the Biological Study Area that could potentially support seasonal roosting. No active roosts were seen during surveys in the Biological Study Area. Avoidance and minimization measures are included in this section, as well as in Appendix B.
Santa Cruz Black Salamander	*Aneides niger*	California Species of Special Concern	Occurs in mixed deciduous woodlands, coniferous forests, and coastal grasslands. Found under rocks near streams, in taluses, under damp logs, etc. Breeds and gives live birth in moist terrestrial habitats; does not require aquatic breeding sites.	Habitat Present. Suitable habitat is present in the Biological Study Area.	No known occurrences within the Biological Study Area. Suitable habitat for species occurs in the Biological Study Area. Not seen during surveys in the Biological Study Area. Avoidance and minimization measures are included in this section, as well as in Appendix B.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/Absent	Rationale
California Giant Salamander	*Dicamptodon ensatus*	California Species of Special Concern	Known to occur from wet coastal forests near streams and seeps from Mendocino County south to Monterey County, and east to Napa County. Aquatic larvae are found in cold, clear streams, occasionally in lakes and ponds. Adults known to occur in wet forests under rocks and logs near streams and lakes.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No known occurrences within the Biological Study Area. Marginal breeding and terrestrial habitat occur in the Biological Study Area. Not seen during surveys in the Biological Study Area. Avoidance and minimization measures are included in this section, as well as in Appendix B.
Western Pond Turtle	*Emys marmorata*	California Species of Special Concern	Quiet waters of ponds, lakes, streams, and marshes, typically in the deepest parts with an abundance of basking sites.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No known occurrences within the Biological Study Area. Streams within the Biological Study Area are small and intermittent and do not support suitable breeding habitat for species. There is marginal upland habitat in riparian areas within the Biological Study Area. Not expected to be affected by the project, but avoidance and minimization measures are included in this section, as well as in Appendix B.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/Absent	Rationale
Cooper's Hawk	*Accipiter cooperii*	Watch List. California Department of Fish and Wildlife Watch List Species	Typically occurs in broken riparian woodlands in canyons and floodplains, usually below 6,000 feet.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No known nesting occurrences within the Biological Study Area. Marginal nesting habitat occurs in the Biological Study Area. Not seen during surveys in the Biological Study Area. Avoidance and minimization measures are included in this section, as well as in Appendix B.
White-Tailed Kite	*Elanus leucurus*	Fully Protected	Occurs in open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No known nesting occurrences within the Biological Study Area. Marginal nesting habitat occurs in the Biological Study Area. Not seen during surveys in the Biological Study Area. Avoidance and minimization measures are included in this section, as well as in Appendix B.
Other Nesting Migratory Birds	Class Aves	Migratory Bird Treaty Act/California Fish and Game Code Section 3503	Migratory birds have the potential to nest in various habitats within the Biological Study Area.	Habitat Present. Suitable habitat is present in the Biological Study Area.	No active bird nests were seen within the Biological Study Area. Suitable nesting habitat occurs in the Biological Study Area. Nesting birds in the Biological Study Area are reasonably expected to occur. Avoidance and minimization measures are included in this section, as well as in Appendix B.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/Absent	Rationale
Pallid Bat	*Antrozous pallidus*	California Species of Special Concern	Inhabits deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No active bat roosts were seen within the Biological Study Area. Marginal roosting habitat occurs in the Biological Study Area in trees and under the Capitola Avenue overcrossing. Roosting bats in the Biological Study Area are reasonably expected to occur. Avoidance and minimization measures are included in this section, as well as in Appendix B.
Townsend's Big-Eared Bat	*Corynorhinus townsendii*	California Species of Special Concern	Occurs throughout California in a wide variety of habitats, mostly in mesic sites. Roosts in the open. Hang from walls and ceilings. Roosting sites are limited. They are extremely sensitive to human disturbance.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No active bat roosts were seen within the Biological Study Area. Marginal roosting habitat occurs in the Biological Study Area in trees and under the Capitola Avenue overcrossing. Roosting bats in the Biological Study Area are reasonably expected to occur. Avoidance and minimization measures are included in this section, as well as in Appendix B.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/Absent	Rationale
Hoary Bat	*Lasiurus cinereus*	Included on California Natural Diversity Database Special Animals List (also protected under CEQA)	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No active bat roosts were seen within the Biological Study Area. Marginal roosting habitat occurs in the Biological Study Area in trees. They are not expected to roost under the Capitola Avenue overcrossing. Roosting bats in the Biological Study Area are reasonably expected to occur. Avoidance and minimization measures are included in this section, as well as in Appendix B.
Other Roosting Bats	Order Chiroptera	CEQA/Several Special Status Assessments and Included on California Natural Diversity Database Special Animals List (also protected under CEQA)	Bats may potentially roost in trees within the Biological Study Area.	Habitat Present. Suitable habitat is present in the Biological Study Area. (Marginal)	No active bat roosts were seen within the Biological Study Area. Marginal roosting habitat occurs in the Biological Study Area in trees and under the Capitola Avenue overcrossing. Roosting bats in the Biological Study Area are reasonably expected to occur. Avoidance and minimization measures are included in this section, as well as in Appendix B.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/Absent	Rationale
San Francisco Dusky-Footed Woodrat	*Neotoma fuscipes annectens*	California Species of Special Concern	Found in forest habitats with moderate canopy and moderate-to-dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by the availability of nest-building materials.	Habitat Present. Suitable habitat is present in the Biological Study Area.	Potential nests were seen near streams during jurisdictional delineation field studies in March 2020. Suitable habitat occurs in the Biological Study Area. Avoidance and minimization measures are included in this section, as well as in Appendix B.

Monarch Butterfly

Monarch butterfly *(Danaus plexippus)* winter roosting habitat is considered rare under State CEQA Guidelines Section 15380 because of declining habitat availability and the species being included on the California Department of Fish and Wildlife Special Animals List. No monarch butterflies or monarch butterfly roosts were seen within the Biological Study Area during reconnaissance surveys. There is one documented monarch butterfly roosting occurrence about 0.1 mile downstream/south of the Biological Study Area at Borregas Creek "along the east boundary of New Brighton State Beach, west of New Brighton Road." The roosts at this site are in planted eucalyptus, pine, and cypress trees. Monarch butterflies were seen to use this location from 1967 to 2014, with a high of 100,000 butterflies estimated in 1969, down to a low of only 14 butterflies counted in 2014. The California Natural Diversity Database polygon has an estimated 0.4-mile radius and may overestimate the specificity of the habitat for winter roosting monarch butterflies. The area of Borregas Creek within the Biological Study Area and other areas with large stands of eucalyptus trees within the Biological Study Area may provide suitable habitat for winter roosting monarch butterflies.

Santa Cruz Black Salamander

The Santa Cruz black salamander *(Aneides niger)* is recognized as an SSC by the California Department of Fish and Wildlife. No focused surveys for Santa Cruz black salamanders were conducted, and the species was not seen during reconnaissance surveys. There is no formal survey protocol for the species. There are several California Natural Diversity Database occurrence records for the species throughout the region but none within the Biological Study Area. The nearest California Natural Diversity Database record of the species is about 2.4 miles north of the eastern end of the Biological Study Area along a fire road next to Aptos Creek, where a juvenile was most recently seen in 2016. The Biological Study Area supports suitable upland habitat for the species, particularly in riparian areas next to streams.

California Giant Salamander

The California giant salamander *(Dicamptodon ensatus)* is recognized as an SSC by the California Department of Fish and Wildlife. No focused surveys for California giant salamanders were conducted, and the species was not seen during reconnaissance surveys. There is no formal survey protocol for the species. There are several California Natural Diversity Database occurrence records for the species throughout the region but none within the Biological Study Area. The nearest California Natural Diversity Database record of the species is about 2.4 miles northwest of the western end of the Biological Study Area along Paul Sweet Road, where an adult was collected in 1987. The Biological Study Area supports marginal aquatic and upland habitat for the species in riparian areas next to streams.

Western Pond Turtle

The western pond turtle *(Emys marmorata)* is considered an SSC by the California Department of Fish and Wildlife. No western pond turtles were seen during past protocol California red-legged frog surveys or recent reconnaissance surveys conducted within the Biological Study Area. The nearest known western pond turtle occurrence reported by the California Natural Diversity Database is about 5.7 miles west of Bay Avenue/Porter Street at Schwan Lake/Schwan Lagoon next to Santa Cruz Harbor. Streams within the Biological Study Area are small and intermittent and do not support suitable breeding habitat for this species. **There is** what can be considered extremely marginal upland habitat in riparian areas within the Biological Study Area.

Cooper's Hawk, White-Tailed Kite, and Other Nesting Migratory Birds

Cooper's hawk *(Accipiter cooperii),* white-tailed kite *(Elanus leucurus),* and other nesting migratory birds have been addressed as a group because it is expected that bird species would be subjected to similar potential project-related impacts, particularly during the nesting season. Cooper's hawk is a California Department of Fish and Wildlife Watch List species. White-tailed kite is a California Department of Fish and Wildlife Fully Protected species. Numerous other nesting migratory bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3503 have the potential to nest within artificial structures, riparian trees, landscaped trees, and other vegetation within the Biological Study Area.

No special-status bird species or active nests of any migratory bird species were seen during surveys of the Biological Study Area. There are California Natural Diversity Database records and suitable habitat for several bird species in the region. On March 24, 2020, the Capitola Avenue overcrossing was evaluated for the potential to support American cliff swallow *(Petrochelidon pyrrhonota)* mud nests and nests for other nesting birds. No evidence of mud nests or other nests was seen, but future nesting attempts could occur with time.

Pallid Bat, Townsend's Big-Eared Bat, Hoary Bat, and Other Roosting Bats

Roosting bat species are addressed here as a group because they each may potentially roost within trees or anthropogenic habitats (e.g., bridges) within the Biological Study Area. The California Department of Fish and Wildlife considers the pallid bat *(Antrozous pallidus)* a Species of Special Concern. Additionally, the California Department of Fish and Wildlife considers Townsend's big-eared bat *(Corynorhinus townsendii)* a Species of Special Concern, which was also considered a candidate for state listing as threatened. However, on October 25, 2016, the California Department of Fish and Wildlife determined that listing was not warranted. The California Natural Diversity Database's Special Animals List includes the hoary bat *(Lasiurus cinereus)*.

No active bat roosts were seen during reconnaissance surveys of the Biological Study Area. On March 24, 2020, the Capitola Avenue overcrossing was evaluated for the potential to support roosting bats. No roosting activity was seen, and no evidence of recent roosting (e.g., guano deposits, grease stains, insect remains) was seen; however, it is acknowledged that future roosting attempts could occur with time.

San Francisco Dusky-Footed Woodrat

The San Francisco dusky-footed woodrat *(Neotoma fuscipes annectens)* is considered an SSC by the California Department of Fish and Wildlife. No woodrat middens/nests were seen during reconnaissance surveys of the Biological Study Area. The nearest California Natural Diversity Database record is about 4.1 miles north of the Biological Study Area on the west side of Laurel Glen Road just northwest of the junction with Breckenridge Lane, about 3.3 miles east–southeast of Scotts Valley. It is acknowledged that San Francisco dusky-footed woodrat nests have a moderate potential to occur within the Biological Study Area, particularly in riparian and other woodland areas.

Environmental Consequences

Build Alternative

This section discusses the environmental consequences of the Build Alternative (project) on special-status animal species.

Monarch Butterfly

The removal of eucalyptus and other suitable roosting trees during the monarch butterfly winter roosting season could impact potential winter roosting habitat. It could also directly impact monarch butterflies if they are found to be using eucalyptus trees onsite as winter roosts, which could result in stress, injury, or mortality to butterflies. Indirect impacts could result from the reduction of potential winter roosting habitat, which would require monarch butterflies to find alternative roosting sites.

If project-related impacts on overwintering habitat for monarch butterflies were to occur, adverse effects would not result because the loss of suitable habitat for this species is likely to be minimal and compensatory mitigation for impacts on overwintering habitat throughout the Biological Study Area is expected to be sufficient to mitigate impacts.

Santa Cruz Black Salamander

Grading or another earthwork could impact Santa Cruz black salamanders in the Biological Study Area, where Caltrans proposes shoulder improvements for the project, particularly in uplands next to streams along State Route 1. Individuals could, therefore, be subjected to injury or mortality as a result of ground-disturbing activities. The potential need to capture and relocate Santa Cruz black salamanders could subject these animals to stresses that could

result in adverse effects. Injury or mortality could occur via accidental crushing by construction equipment or even worker foot-traffic. Pre-construction surveys, construction monitoring, and capture and relocation of Santa Cruz black salamanders would reduce the potential for injury or mortality.

If project-related impacts on Santa Cruz black salamanders were to occur, it is estimated that cumulative effects would not result because the loss of suitable habitat for this species is likely to be minimal, and compensatory mitigation for impacts on suitable habitat throughout the Biological Study Area is expected to be sufficient to mitigate impacts.

California Giant Salamander

Grading or another earthwork could impact California giant salamanders in the Biological Study Area, where Caltrans proposes shoulder improvements for the project, particularly in uplands next to streams along State Route 1. Individuals could, therefore, be subjected to injury or mortality as a result of ground-disturbing activities. The potential need to capture and relocate California giant salamanders could subject these animals to stresses that could result in adverse effects. Injury or mortality could occur via accidental crushing by construction equipment or even worker foot-traffic. Pre-construction surveys, construction monitoring, and capture and relocation of California giant salamanders would reduce the potential for injury or mortality.

If project-related impacts on California giant salamanders were to occur, it is estimated that cumulative effects would not result because the loss of suitable habitat for this species is likely to be minimal, and compensatory mitigation for impacts on suitable habitat throughout the Biological Study Area is expected to be sufficient to mitigate impacts.

Western Pond Turtle

Based on the lack of suitable breeding habitat and extremely marginal upland habitat, western pond turtles are assessed as having an extremely low likelihood of occurring within the Biological Study Area. In the unlikely event that they are present, grading or another earthwork could impact western pond turtles where Caltrans proposes shoulder improvements for the project, particularly in uplands next to streams along State Route 1. Individuals could be subjected to injury or mortality as a result of ground-disturbing activities.

If project-related impacts on western pond turtles were to occur, it is estimated that cumulative effects would not result because the loss of suitable habitat for this species is likely to be minimal, and compensatory mitigation for impacts on suitable habitat throughout the Biological Study Area is expected to be sufficient to mitigate impacts.

Cooper's Hawk, White-Tailed Kite, and Other Nesting Migratory Birds

Caltrans typically expects the bird nesting season to occur from February 1 to September 30. The removal of vegetation and/or nests could directly impact bird nests and any eggs or young birds living in nests. Because birds can be sensitive to noise disturbances, temporary indirect impacts could also result from noise and disturbance associated with construction, which could alter perching, foraging, and/or nesting behaviors. As stated previously, no evidence of mud nests or other nests was seen on the Capitola Avenue overcrossing, which would be replaced during project construction. However, future nesting attempts under the bridge could occur and could be impacted if present during construction.

Most project impacts on nesting migratory bird species are expected to be temporary. Compensatory mitigation for any permanent impacts on wetland or riparian habitat may be used by nesting migratory bird species as described previously. No additional compensatory mitigation is proposed.

Pallid Bat, Townsend's Big-Eared Bat, Hoary Bat, and Other Roosting Bats

Direct impacts on bats could result from the project if bats are found to be roosting in trees or under the Capitola Avenue overcrossing before construction starts. These direct effects could result in the injury or mortality of bats or harassment that could alter roosting behaviors. Indirect impacts could also result from noise and disturbances associated with construction, which could also alter roosting behaviors. Implementation of pre-activity surveys and exclusion measures would reduce the potential for adverse effects.

If project-related impacts on roosting bats were to occur, it is estimated that cumulative effects would not result in threats to or extinction of bat species. Potential impacts would be mostly temporary, and permanent impacts would be minimal with the implementation of the avoidance and minimization measures provided below.

San Francisco Dusky-Footed Woodrat

The removal of vegetation and/or the disturbance/removal of San Francisco dusky-footed woodrat nests could directly impact nests and any adults or young living in nests. Temporary indirect impacts could also result from noise and disturbances associated with construction, which could alter foraging and/or nesting behaviors.

If project-related impacts on San Francisco dusky-footed woodrats were to occur, it is estimated that cumulative effects would not result because the loss of suitable habitat is likely to be minimal, and compensatory mitigation for impacts on suitable habitat throughout the Biological Study Area **are** expected to be sufficient to mitigate impacts.

No-Build (No-Action) Alternative

The No-Build (No-Action) Alternative would not result in habitat modifications. Therefore, there would be no impacts on the special-status animal species discussed above.

Avoidance, Minimization, and/or Mitigation Measures

The following measures are recommended to avoid and minimize any potential impacts on animal species.

Monarch Butterflies

- **AMM-AS-1:** If feasible, avoid eucalyptus tree removal or other disturbance of eucalyptus habitat from November 1 to March 1 to avoid potential impacts on winter roosting monarch butterflies.
- **AMM-AS-2:** If construction activities would impact suitable monarch butterfly overwintering habitat between November 1 and March 1, a qualified biologist shall conduct pre-construction surveys for overwintering monarch butterflies. Overwintering monarch butterfly surveys shall consist of a pre-construction survey before eucalyptus tree removal, with weekly surveys continuing until March 1. If no roosts are seen within the project site, then construction would be allowed to continue. If active roosts are seen, tree removal activities shall be delayed, and an appropriate setback for other construction-related activities shall be maintained until monarch butterflies have migrated from the site. All tree removal shall be monitored and documented by the biological monitor(s) regardless of the time of year.
- **Mitigation Measure-AS-3:** The removal of trees identified as active monarch butterfly winter roost sites shall be offset with the planting of native tree species, such as Monterey pine *(Pinus radiata)* or Monterey cypress *(Cupressus macrocarpa),* which monarch butterflies use for overwintering. Replacement of any lost overwintering habitat would occur at a 1 to 1 ratio. Replacement efforts shall achieve 75 percent success at the end of 5 years and require no further maintenance for survival. The compensatory mitigation shall be implemented immediately following project completion. Compensatory mitigation plantings shall be monitored quarterly, and any required maintenance shall also occur quarterly. Maintenance activities shall include weeding, debris removal, replanting (if necessary), repair of any vandalism, fertilizing, and/or pest control. The results of the quarterly monitoring effort would dictate maintenance activities. Quarterly reports, annual monitoring reports, and a final completion report shall be submitted to Caltrans, the Santa Cruz County Regional Transportation Commission, and the affected regulatory agencies. The annual monitoring report submitted at Year 5 shall serve as a final completion report should the mitigation be successful.

Santa Cruz Black Salamander, California Giant Salamander, and Western Pond Turtle

- **AMM-AS-4:** Qualified biologists shall conduct a pre-construction survey for Santa Cruz black salamanders, California giant salamanders, and western pond turtles in areas of suitable habitat where construction would occur. If regulatory agency approval allows, the qualified biologists shall capture and relocate any Santa Cruz black salamanders, California giant salamanders, and western pond turtles (if present) or other sensitive species to suitable habitat outside of the area of impact.

Bird Species

- **AMM-AS-5:** If feasible, removal of trees shall be scheduled to occur in the fall and winter (between October 1 and January 31), outside of the typical nesting season.
- **AMM-AS-6:** If construction activities are proposed to occur during the typical nesting season (February 1 to August 31), qualified biologists shall conduct a nesting bird survey of the area of disturbance no more than two weeks before construction to determine the presence/absence of nesting birds within the project area.
- **AMM-AS-7:** If evidence of migratory birds nesting that may be impacted by construction activities is discovered, or when birds are injured or killed as a result of construction activities, the contractor shall immediately notify an engineer or biological monitor. At a minimum, a 500-foot radius of the nest shall be designated an ESA for nesting raptors, and a 250-foot radius shall be designated an ESA for other nesting avian species unless otherwise directed by the U.S. Fish and Wildlife Service or California Department of Fish and Wildlife. Nests, eggs, or young of birds covered by the Migratory Bird Treaty Act and California Department of Fish and Wildlife would not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later. Adult birds would not be killed, injured, or harassed at any time. The ESA shall remain in place until such time that the nest is no longer considered active by the qualified biologist. The qualified biologist shall provide written notification to Caltrans, the Santa Cruz County Regional Transportation Commission, and the resource agencies.
- **AMM-AS-8:** If white-tailed kites are identified within the Biological Study Area at any time during the project, the biological monitor shall thoroughly document the species' activity and ensure that immediate project activities avoid any impacts on the species. If there is a potential for take, California Department of Fish and Wildlife shall be contacted immediately to ensure that avoidance of take is maintained throughout project activities.
- **AMM-AS-9:** Vegetation removal in potential nesting habitats shall be monitored and documented by the biological monitor(s) regardless of the time of year.

- **AMM-AS-10:** To prevent potential nesting bird conflicts and construction delays, it is recommended that bird nests be excluded from the existing Capitola Avenue overcrossing. Nesting bird exclusion methods may include installing thick plastic sheeting, installing one-way exclusion devices over drain holes, removing/knocking down nests before they contain eggs or nestlings, or other methods approved by the California Department of Fish and Wildlife. The required time for the installation of bird exclusion devices is outside of the nesting season (i.e., implement exclusion methods from October 1 to January 31).

The measures included previously for nesting birds can be used to avoid impacts on the southwestern willow flycatcher *(Empidonax traillii extimus)* and least Bell's vireo *(Vireo bellii pusillus)*. No additional avoidance or minimization measures are necessary for southwestern willow flycatcher and least Bell's vireo because these species are not expected to occur in or near the Biological Study Area.

Roosting Bat Species

- **AMM-AS-11:** A qualified biologist shall conduct pre-construction surveys the year before construction for bat species that could use existing structures or trees for roosting habitat. If bats are identified as using areas within the Biological Study Area for day or night roosting, the qualified biologist shall identify the species of bat present. The biologist(s) conducting the pre-construction surveys shall also identify how the bat is using the bridge (i.e., maternity roost, day roost, or night roost).
- **AMM-AS-12:** If bat species are identified as roosting in areas that would be impacted, a plan to exclude bat species from impact areas shall be prepared before construction starts. This plan shall discuss methods of eliminating bat access to the identified roosting habitat before construction starts so that bats are not able to return to and occupy the roost. The appropriate timing for exclusion implementation shall be determined by the species identified as occurring within the project site. A qualified biologist shall survey roost areas before implementing exclusion methods to ensure that no bats are trapped within. This plan shall be submitted to the appropriate regulatory agency for approval.
- **AMM-AS-13:** Demolition of existing structures and vegetation removal shall occur outside of the bat maternity roosting season, typically during the spring and summer months.
- **AMM-AS-14:** If bats cannot be excluded from bat roosts, work activities shall be avoided within 100 feet of active maternity roosts until bat pups have been weaned and are deemed independent by a qualified biologist. Regulatory agencies shall be contacted for additional guidance if roosting bats are seen within the Biological Study Area during construction.
- **AMM-AS-15:** A qualified biologist shall be present periodically during construction activities to monitor the bat populations to ensure that all

practicable measures are employed to avoid incidental disturbance to special-status bat species. Monitoring would be timed to occur during key construction events (e.g., removal of existing structures or trees with roosting habitat).

- **Mitigation Measure-AS-16:** If the project permanently affects a major roost location, compensatory mitigation would be required. Compensatory mitigation shall include replacement of suitable habitat that follows the guidance included within Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions. (H.T. Harvey and Associates 2019)

San Francisco Dusky-Footed Woodrat

- **AMM-AS-17:** No more than 14 days before construction activities start, a qualified biologist shall conduct a pre-construction survey within the Biological Study Area in suitable habitat to determine the presence or absence of San Francisco dusky-footed woodrat middens.
- **AMM-AS-18:** If San Francisco dusky-footed woodrat middens are present during the pre-construction survey, the qualified biologist shall establish a minimum 25-foot buffer around each midden that can feasibly be avoided by project activities.
- **AMM-AS-19:** If project activities cannot avoid impacting the middens, a qualified biologist shall dismantle the middens by hand before the start of grading or vegetation removal activities. The midden dismantling shall be conducted such that the midden material is slowly removed, looking for young San Francisco dusky-footed woodrats. The material shall be placed in a pile at the closest undisturbed habitat and more than 50 feet from construction activities.
- **AMM-AS-20:** If young San Francisco dusky-footed woodrats are encountered during midden dismantling, the qualified biologist shall stop the dismantling activity and replace the material on the nest. The nest shall be left alone and rechecked weekly to see if the young San Francisco dusky-footed woodrats are out of the nest or capable of being independent without relying on adult care, as determined by a qualified biologist). Once the young San Francisco dusky-footed woodrats are determined to be independent, the nest dismantling can continue.

References

California Department of Fish and Wildlife (CDFW). 2018. *Considerations for Conserving the Foothill Yellow-legged Frog*. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=157562&inline. Accessed on April 1, 2020.

H.T. Harvey & Associates. 2019. *Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions*. Prepared for California Department of Transportation in collaboration with HDR, Inc. July 2019 (Updated September 2019).

SWCA Environmental Consultants (SWCA). 2020. *State Route 1 Auxiliary Lanes – State Park Drive to Bay Avenue/Porter Street Natural Environment Study*. Prepared for California Department of Transportation.

U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service). 2011. *Programmatic Biological Opinion for Projects Funded or Approved under the Federal Highway Administration's Federal Aid Program*. May 4, 2011.

2.3.4 Threatened and Endangered Species

Regulatory Setting

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

California has enacted a similar law at the state level, the California Environmental Species Act, California Fish and Game Code Section 2050, et seq. The California Environmental Species Act emphasizes early consultation to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife is the agency responsible for implementing the California Environmental Species Act. Section 2080 of the California Fish and Game Code prohibits take of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California Environmental Species Act allows for take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by the California Department of

Fish and Wildlife. For species listed under both the Federal Environmental Species Act and California Environmental Species Act requiring a Biological Opinion under Section 7 of the Federal Environmental Species Act, the California Department of Fish and Wildlife may also authorize impacts on California Environmental Species Act species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the U.S., 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.

This section of the document also discusses special-status plant species, including California Department of Fish and Wildlife Species of Special Concern, U.S. Fish and Wildlife Service candidate species, and California Native Plant Society rare and endangered plants.

The regulatory requirements for the Federal Environmental Species Act can be found at 16 U.S. Code 1531, et seq. See also 50 Code of Federal Regulations 402. The regulatory requirements for California Environmental Species Act can be found at California Fish and Game Code Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code Section 1900-1913, and CEQA, found at California PRC Sections 21000-21177.

Affected Environment

Build Alternative

The information in this section is summarized from the Natural Environment Study prepared for the project in August 2020.

The following is a chronological summary of regulatory agency coordination and correspondence:

- **September 16, 2020:** Caltrans Biologist Larissa Clarke submitted a request online through the U.S. Fish and Wildlife Service Information for Planning and Consultation for an official U.S. Fish and Wildlife Service species list for the proposed project, and a list was generated the same day.

- **September 16, 2020:** Larissa Clark generated an official National Oceanic and Atmospheric Administration Fisheries species list from the National Oceanic and Atmospheric Administration California Species List Tool for the project area, and the official National Oceanic and Atmospheric Administration Fisheries species list was received via email the same day.

Botanical surveys within the Biological Study Area for sensitive plants were conducted in April and May 2019; additional plant species were seen during delineation of potentially jurisdictional waters in March 2020. A list of species seen in the Biological Study Area is included in the Natural Environment Study prepared for the project. None of the special-status plant species included in the U.S. Fish and Wildlife Service species list or National Oceanic and Atmospheric Administration Fisheries species list were seen during botanical surveys of the Biological Study Area, and none are expected to be impacted by the project.

The California Natural Diversity Database documents the special-status animal taxa (federally listed, state-listed, California Fully Protected, SSC, California Natural Diversity Database Special Animals, and/or protected by the Migratory Bird Treaty Act and California Department of Fish and Wildlife) occurring within the project region (see Table 2.58). In addition to species already included in the California Natural Diversity Database search, the official federal species list received from the U.S. Fish and Wildlife Service included the following additional federally listed animal taxa: San Francisco garter snake *(Thamnophis sirtalis tetrataenia),* California least tern *(Sterna antillarum browni),* least Bell's vireo *(Vireo bellii pusillus),* and southwestern willow flycatcher (*Empidonax traillii extimus*). The official federal species list received from National Oceanic and Atmospheric Administration Fisheries also included green sturgeon Southern Distinct Population Segment *(Acipenser medirostris).* Numerous other marine species appearing on the National Oceanic and Atmospheric Administration Fisheries species list were excluded from further consideration because the project occurs in an inland location.

Table 2.58 identifies the names and legal status of each of the regionally occurring special-status species. Table 2.58 also identifies a general description of the habitat requirements for each species and a determination as to whether suitable habitat is present, whether the species is present, and/or whether the Biological Study Area is within a federally designated critical habitat unit. The rationale section summarizes the potential for each taxon to occur in the Biological Study Area or be affected by the project. Species that do not have habitat present are not discussed in Table 2.58.

Table 2.58 Threatened and Endangered Species

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/ Absent	Rationale
California Red-Legged Frog	*Rana draytonii*	Federally Threatened, California Species of Special Concern. The project footprint is within federally designated critical habitat but does not necessarily mean that suitable habitat is present.	Occurs in aquatic habitats with little or no flow, presence of surface water to at least early June, surface water depths to at least 2.3 feet, and presence of fairly sturdy underwater supports cattails.	Suitable habitat is present in the Biological Study Area. (Marginal)	No known occurrences within the Biological Study Area, which is outside of critical habitat for this species. Marginal breeding and terrestrial habitat occur in the Biological Study Area. Not seen during surveys in the Biological Study Area. The project could affect the species; Caltrans has inferred the presence of the species in the Biological Study Area. The effects determination is that the project may affect and is likely to adversely affect California red-legged frogs. There would be no effect on critical habitat for the California red-legged frog. Avoidance and minimization measures are included in this section.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/ Absent	Rationale
Foothill Yellow-Legged Frog	*Rana boylii*	State Endangered/California Species of Special Concern	Found in pebble/cobble river bars along riffles and pools with shade. Occasionally in moderately vegetated backwaters, isolated pools, and slow-moving rivers with mud substrates. Unlike most other ranid frogs in California, this species is rarely encountered (even on rainy nights) far from permanent water.	Marginal suitable habitat is present in the Biological Study Area.	No known occurrences within Biological Study Area; nearest occurrence is from Soquel Creek, which runs northwest of Biological Study Area. California Natural Diversity Database currently indicates species is a State Candidate Threatened species, but populations in the County of Santa Cruz were officially listed as State Endangered by the California Fish and Game Commission on March 10, 2020 (California Department of Fish and Wildlife 2020). Streams within Biological Study Area are small and intermittent and do not support suitable breeding habitat for species; there is extremely marginal upland habitat in riparian areas within Biological Study Area. Not expected to be affected by project, but avoidance and minimization measures included in this section.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/ Absent	Rationale
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Federal Endangered, State Endangered. The project footprint is within federally designated critical habitat but does not necessarily mean that suitable habitat is present.	Inhabits riparian woodlands in southern California. Requires dense riparian habitats (cottonwood/willow and tamarisk vegetation) for nesting. Habitat not suitable for nesting may be used for migration and foraging.	Riparian habitat is present but unsuitable.	No known nesting occurrences within the Biological Study Area. No California Natural Diversity Database occurrences within the County of Santa Cruz, but included in the U.S. Fish and Wildlife Service official species list for the county. The Biological Study Area is outside of the critical habitat for this species. Marginal habitat may occur in riparian areas but with low potential for occurrence. The effects determination is that the project would have no effect on the southwestern willow flycatcher or its critical habitat. Additional information to support this rationale is included in this section.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/ Absent	Rationale
Least Bell's Vireo	*Vireo bellii pusillus*	Federal Endangered, State Endangered	(Nesting) A summer resident of southern California in riparian habitats near water or dry river bottoms, below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willows, coyote brush, or mesquite.	Riparian habitat is present but unsuitable.	No known nesting occurrences within the Biological Study Area. No California Natural Diversity Database occurrences within the County of Santa Cruz, but included in the U.S. Fish and Wildlife Service official species list for the county. The Biological Study Area is outside of critical habitat for this species. Marginal habitat may occur in riparian areas but with low potential for occurrence. The effects determination is that the project would not affect least Bell's vireo or its critical habitat. Additional information to support this rationale is included in this section.
Marsh Sandwort	*Arenaria paludicola*	Federal Endangered, State Endangered, California Rare Plant Rank 1B.1	Coastal bogs and fens, marshes, and swamps. Flowers from May-August. Present at elevation 3-170 meters.	Suitable habitat is present in the Biological Study Area.	No known occurrences within the Biological Study Area. Not seen during surveys. The effects determination is that the project would not affect the marsh sandwort.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/ Absent	Rationale
Monterey Spineflower	*Chorizanthe pungens* var. *pungens*	Federal Threatened, California Rare Plant Rank 1B.2. The project footprint is within federally designated critical habitat but does not necessarily mean that suitable habitat is present.	Maritime chaparral, cismontane woodlands, coastal dunes, coastal scrub, and valley and foothill grasslands; sandy soils. Flowers from April-June (July). Present at elevation: 3-450 meters	Suitable habitat is present in the Biological Study Area.	No known occurrences within the Biological Study Area. The Biological Study Area is outside of critical habitat for the species. Not seen during surveys. The effects determination is that the project would not affect the Monterey spineflower or its critical habitat.
Robust Spineflower	*Chorizanthe robusta* var. *robusta*	Federal Endangered, California Rare Plant Rank 1B.1. The project footprint is within federally designated critical habitat but does not necessarily mean that suitable habitat is present.	Cismontane woodland, coastal dunes, and coastal scrubs; gravelly or sandy soils. Flowers from April-September. Present at elevation: 3-300 meters.	Suitable habitat is present in the Biological Study Area.	No known occurrences within the Biological Study Area. The Biological Study Area is outside of critical habitat for the species. Soils are not suitable for this species in the Biological Study Area. Not seen during surveys. The effects determination is that the project would not affect the robust spineflower or its critical habitat.

Common Name	Scientific Name	Status Federal/State/Other	General Habitat Description	Habitat Present/ Absent	Rationale
Santa Cruz Tarplant	*Holocarpha macradenia*	Federal Threatened, State Endangered, California Rare Plant Rank 1B.1. The project footprint is within federally designated critical habitat but does not necessarily mean that suitable habitat is present.	Coastal prairie, coastal scrub, and valley and foothill grassland; often clay or sandy soils. Flowers from June-October. Present at elevation: 10-220 meters.	Suitable habitat is present in the Biological Study Area.	One California Natural Diversity Database occurrence record from 1933 is about 0.3 mile south of the west end of the Biological Study Area; this site was removed by development. The Biological Study Area is outside of critical habitat for this species. Not seen during surveys. The effects determination is that the project would not affect the Santa Cruz tarplant or its critical habitat.

Foothill Yellow-Legged Frog

The California Natural Diversity Database currently indicates the foothill yellow-legged frog *(Rana boylii)* is a State Candidate Threatened species, but populations in the County of Santa Cruz were officially listed as State Endangered by the California Department of Fish and Wildlife on March 10, 2020. It is also recognized as a species of special concern by the California Department of Fish and Wildlife.

No focused surveys for foothill yellow-legged frogs were conducted, and the species was not seen during reconnaissance surveys. There is no formal survey protocol for the species. There are several California Natural Diversity Database occurrence records for the species throughout the region but none within the Biological Study Area. The nearest California Natural Diversity Database record of the species is just north of the Biological Study Area along Soquel Creek, where foothill yellow-legged frogs have been detected periodically since 1992 and annually since 2010. Streams within the Biological Study Area are small and intermittent and do not support suitable breeding habitat for this species. There is what can be considered extremely marginal upland habitat in riparian areas within the Biological Study Area, but the species would be unlikely to occur.

California Red-Legged Frog

The California red-legged frog *(Rana draytonii)* is a federal threatened species and considered an SSC by the California Department of Fish and Wildlife. Federal critical habitat has been designated for the species, but not within the Biological Study Area.

Focused California red-legged frog surveys were conducted in suitable habitat within the Biological Study Area from September 30, 2003 to October 2, 2003, under an old U.S. Fish and Wildlife Service guidance/protocol before the release of the current protocol. Suitable habitat areas included all riparian areas within the Biological Study Area, including creek channels, but no California red-legged frogs were seen during this survey effort. The protocol survey effort was not repeated. No California red-legged frogs were seen during 2019 reconnaissance surveys or jurisdictional delineation work along creeks in the Biological Study Area in 2020.

The nearest known California red-legged frog occurrence reported by the California Natural Diversity Database is about 2.5 miles southwest of Bay Avenue/Porter Street along Moore Creek. Due to the presence of marginal breeding and nearby upland habitat, California red-legged frogs have been inferred in the Biological Study Area by Caltrans.

Southwestern Willow Flycatcher and Least Bell's Vireo

Southwestern willow flycatcher and least Bell's vireo have been addressed together because they are both federally and state-listed species with similar

habitat requirements. Additionally, it is expected that bird species would be subjected to similar potential project-related impacts, particularly during the nesting season. The southwestern willow flycatcher and least Bell's vireo are federal and state endangered species. Federal critical habitat has been designated for these species, but not within the Biological Study Area.

Southwestern willow flycatcher and least Bell's vireo were included for consideration because they appear on the official U.S. Fish and Wildlife Service species list. There are no California Natural Diversity Database records for the species in or near the Biological Study Area or any known recent nesting records in the vicinity of the Biological Study Area. No southwestern willow flycatchers or least Bell's vireos were seen during reconnaissance surveys of the Biological Study Area.

Caltrans coordinated with biologist Jim Greaves in 2008 for his professional opinion regarding the potential for least Bell's vireo nesting activity in the County of Santa Cruz region. Jim Greaves is a respected least Bell's vireo biologist who has conducted numerous least Bell's vireo protocol surveys throughout California. Jim Greaves conducted background research and a site visit of riparian habitats in the County of Santa Cruz region in 2008, and they did not appear to be of the type preferred by least Bell's vireo. Generally, least Bell's vireos breed in broad floodplain forests or tributaries fairly near such forests, but not in isolated patches of disjunct habitat or steeply incised areas such as those along State Route 1.

There are no known "extralimital" breeding sites (sites outside of typical breeding range) in Monterey and Santa Cruz Counties. The species is virtually limited during the breeding season to riparian habitats in interior central Santa Barbara, southward along several major rivers in coastal counties (Ventura, Santa Clara, and southward through San Diego), and in a few desert riparian areas of southern California and northern Baja California, Mexico.

The investigation by Jim Greaves ultimately determined that protocol-level surveys were not warranted. While some plant species (e.g., willows, nettles, blackberry) and vegetative features (e.g., shrubs, forbs) are also present where the least Bell's vireo typically occurs, their presence alone does not predict the presence of least Bell's vireo. Other features of the study site must also be considered when making recommendations to conduct protocol-level surveys such as habitat breadth, ravine depth, canopy density, etc. Other factors may be equally important in helping to determine whether an area might also harbor least Bell's vireo, including riparian width and vegetation, plant species composition, and avian communities. It was concluded that it is unlikely that least Bell's vireo would ever be in the area, in addition to and regardless of the current and/or future urban pressures put on the place, or even if they are all removed. It was also determined that the Biological Study

Area is outside of the known range of the southwestern willow flycatcher, which would also not be expected to occur in the region.

Environmental Consequences

Build Alternative

This section discusses the environmental consequences of the Build Alternative (project) for listed threatened and endangered species. Chapter 3 includes a discussion of the significance of impacts under CEQA.

Foothill Yellow-Legged Frog

Based on the lack of suitable breeding habitat and extremely marginal upland habitat, the foothill yellow-legged frog is assessed as having an extremely low likelihood of occurring within the Biological Study Area. In the unlikely event that they are present, grading or another earthwork could impact foothill yellow-legged frogs where Caltrans proposes shoulder improvements for the project, particularly in uplands next to streams along State Route 1. Individuals could, therefore, be subjected to injury or mortality as a result of ground-disturbing activities. Pre-construction surveys and construction monitoring to verify absence can provide the necessary assurances to avoid take.

If project-related impacts on foothill yellow-legged frogs were to occur, it is estimated that cumulative effects would not result because the loss of suitable habitat for this species is likely to be minimal, and compensatory mitigation for impacts on suitable habitat throughout the Biological Study Area is expected to be sufficient to mitigate impacts.

California Red-Legged Frog

Construction within the Biological Study Area could directly impact California red-legged frogs, which could result in injury or death to individual California red-legged frogs if they are found to be breeding in riparian areas or estivating in nearby uplands. Grading or another earthwork could impact California red-legged frogs where Caltrans proposes shoulder improvements for the project, particularly in uplands next to streams along State Route 1. Individuals could, therefore, be subjected to injury or mortality as a result of ground-disturbing activities.

The Federal Environmental Species Act Section 7 effects determination is that the project may affect, and is likely to adversely affect, California red-legged frogs. The basis for this determination is that the presence of the California red-legged frog has been inferred within the Biological Study Area, and there would be a low but possible potential for take of the species during construction. No designated California red-legged frog critical habitat occurs in or near the Biological Study Area; therefore, there will be no effect on California red-legged frog critical habitat. It is assumed that the project would qualify for coverage under the Programmatic Biological Opinion for Projects

Funded or Approved under the Federal Aid Program, 8-8-10-F-58 (U.S. Fish and Wildlife Service 2011), which provides approved avoidance and minimization measures for California red-legged frogs.

If project-related impacts on California red-legged frogs were to occur, it is estimated that cumulative effects would not result in threats to or extinction of the species. Potential impacts would be mostly temporary, and permanent impacts would be minimal with the implementation of the avoidance and minimization measures below. Furthermore, the implementation of compensatory mitigation for the loss of any wetlands or riparian areas is expected to be sufficient to mitigate potential impacts on California red-legged frog habitat.

Southwestern Willow Flycatcher and Least Bell's Vireo

There are no known records for the southwestern willow flycatcher in the region; the nearest records for the southwestern willow flycatcher are hundreds of miles away along the Santa Ynez River in Santa Barbara County near the City of Buellton. While areas along State Route 1 support riparian habitat, areas within the Biological Study Area were assessed to be marginal habitat at best because they lack dense riparian vegetative cover low to the ground, and the riparian corridor lacks a stratified canopy within the Biological Study Area.

The Federal Environmental Species Act Section 7 effects determination is that the project would not affect the southwestern willow flycatcher and least Bell's vireo. The basis for this determination is that riparian habitat within the Biological Study Area is unsuitable, and there are no known nesting records in or near the Biological Study Area. Additionally, measures would be implemented to avoid impacts on nesting birds. There would also be no effect on the southwestern willow flycatcher or least Bell's vireo critical habitat because none occurs in or near the Biological Study Area.

The southwestern willow flycatcher and least Bell's vireo are also state-listed taxa under the California Environmental Species Act. However, because these taxa are not expected to be encountered during construction and measures would be implemented to avoid impacts on nesting birds, no Section 2081 Incidental Take Permit from the California Department of Fish and Wildlife would be required.

No cumulative impacts for the southwestern willow flycatcher or least Bell's vireo are expected.

No-Build (No-Action) Alternative

The No-Build (No-Action) Alternative would not result in habitat modifications or disturbances. Therefore, there would be no impacts on the threatened or endangered species discussed above.

Avoidance, Minimization, and/or Mitigation Measures

Foothill Yellow-Legged Frog

- **AMM-TE-1:** Biologists shall conduct a pre-construction survey for foothill yellow-legged frogs in areas of suitable habitat where construction would occur. Surveys for the foothill yellow-legged frog shall follow the recommendations (considered non-protocol) of the California Department of Fish and Wildlife Considerations for Conserving the Foothill Yellow-Legged Frog. (California Department of Fish and Wildlife 2018) In the unlikely event that foothill yellow-legged frogs are seen during pre-construction surveys, Caltrans shall coordinate with the California Department of Fish and Wildlife to determine if a Section 2081 Incidental Take Permit would be required before the start of construction. After negative pre-construction survey findings, in the unlikely event that foothill yellow-legged frogs are seen during monitoring of construction, all construction activities shall stop within 500 feet of the location, and Caltrans shall coordinate with the California Department of Fish and Wildlife to determine if a Section 2081 Incidental Take Permit would be required.

California Red-Legged Frog

The following measures are provided by the Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program, 8-8-10-F-58 (U.S. Fish and Wildlife Service 2011), to avoid and minimize potential impacts on California red-legged frogs.

- **AMM-TE-2:** Implement measures provided by the Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program, 8-8-10-F-58 (U.S. Fish and Wildlife Service 2011), to avoid and minimize potential impacts on California red-legged frogs. Such measures include but are not limited to obtaining a U.S. Fish and Wildlife Service-approved biologist to conduct training and participate in activities associated with surveys and the capture, handling, and monitoring of California red-legged frogs. Measures also include returning habitat contours to their original configuration, limiting access routes and staging areas, and scheduling work activities to avoid California red-legged frogs.

Southwestern Willow Flycatcher and Least Bell's Vireo

Implementation of Measures AMM-AS-5 through AMM-AS-10 identified for nesting birds in Section 2.3.3, Animal Species, would effectively avoid impacts on the southwestern willow flycatcher and least Bell's vireo. No additional avoidance or minimization measures are necessary for the southwestern willow flycatcher and least Bell's vireo because these species are not expected to occur in or near the Biological Study Area.

References

U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service). 2011. *Programmatic Biological Opinion for Projects Funded or Approved under the Federal Highway Administration's Federal Aid Program*. May 4, 2011.

2.3.5 Invasive Species

Regulatory Setting

On February 3, 1999, President William J. Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the U.S. 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." Federal Highway Administration guidance issued August 10, 1999, directs the use of the state's invasive species list, maintained by the Invasive Species Council of California, to define the invasive species that must be considered as part of NEPA analysis for a proposed project.

Affected Environment

The information in this section is summarized from the Natural Environment Study prepared for the project in August 2020.

A total of 50 exotic and invasive plant species, as identified by the California Invasive Plant Council Inventory, were seen in the Biological Study Area and are listed in Table 2.59. Table 2.59 shows all plant species identified in the Biological Study Area, of which exotic and invasive species are a subset. No invasive animals were seen within the Biological Study Area. Plants seen within the Biological Study Area with the high invasiveness rating include red brome *(Bromus madritensis ssp. rubens),* ice plant *(Carpobrotus edulis),* pampas grass *(Cortaderia jubata),* cape ivy *(Delairea odorata),* sweet fennel *(Foeniculum vulgare),* French broom *(Genista monspessulana),* and English ivy *(Hedera helix).* The Ord Gulch, Borregas Creek, Tannery Gulch, and Nobel Creek areas contained cape ivy and/or English ivy. Scattered occurrences of invasive plant species are also present in other areas of the Biological Study Area.

Table 2.59 Plant Species Identified in the Biological Study Area

Scientific Name	Common Name	Family	Origin California Invasive Plant Council Status
Acacia dealbata	Silver Wattle	Fabaceae	Exotic/California Invasive Plant Council Moderate
Acacia longifolia	Sydney Golden Wattle	Fabaceae	Exotic
Acacia melanoxylon	Blackwood Acacia	Fabaceae	Exotic/California Invasive Plant Council Limited
Ageratina adenophora	Sticky Snakeroot	Asteraceae	Exotic/California Invasive Plant Council Moderate
Allium triquetrum	Three-Cornered Leek	Alliaceae	Exotic
Arbutus unedo	Strawberry Tree	Ericaceae	Exotic
Avena barbata	Slender Wild Oat	Poaceae	Exotic/California Invasive Plant Council Moderate
Bellis perennis	English Lawn Daisy	Asteraceae	Exotic
Betula papyrifera	Paper Birch	Betulaceae	Exotic
Borago officinalis	Common Borage	Boraginaceae	Exotic
Brassica nigra	Black Mustard	Brassicaceae	Exotic/California Invasive Plant Council Moderate
Brassica rapa	Rape Mustard	Brassicaceae	Exotic/California Invasive Plant Council Limited
Briza maxima	Big Rattlesnake Grass	Poaceae	Exotic/California Invasive Plant Council Limited
Briza minor	Little Rattlesnake Grass	Poaceae	Exotic
Bromus carinatus	California Brome Grass	Poaceae	Native
Bromus catharticus	Rescuegrass	Poaceae	Exotic
Bromus diandrus	Ripgut Brome	Poaceae	Exotic/California Invasive Plant Council Moderate
Bromus hordeaceous	Soft Chess Brome	Poaceae	Exotic/California Invasive Plant Council Limited
Bromus madritensis ssp. *rubens*	Red Brome	Poaceae	Exotic/California Invasive Plant Council High
Calendula arvensis	Field Marigold	Asteraceae	Exotic
Campsis radicans	Trumpet Creeper	Bignoniaceae	Exotic
Capsella bursa-pastoris	Shepherd's Purse	Brassicaceae	Exotic
Carduus pycnocephalus	Italian Thistle	Asteraceae	Exotic/California Invasive Plant Council Moderate
Carpobrotus edulis	Ice Plant	Aizoaceae	Exotic/California Invasive Plant Council High
Cedrus deodara	Deodar Cedar	Pinaceae	Exotic

Scientific Name	Common Name	Family	Origin California Invasive Plant Council Status
Centranthus ruber	Red Valerian	Valerianaceae	Exotic
Cirsium vulgare	Bull Thistle	Asteraceae	Exotic/California Invasive Plant Council Moderate
Cistus sp.	Rockrose	Cistaceae	Exotic
Conium maculatum	Poison Hemlock	Apiaceae	Exotic/California Invasive Plant Council Moderate
Convolvulus arvensis	Field Bindweed	Convolvulaceae	Exotic
Cortaderia selloana	Pampas Grass	Poaceae	Exotic/California Invasive Plant Council High
Cotoneaster franchetii	Franchetii Cotoneaster	Rosaceae	Exotic/California Invasive Plant Council Moderate
Cotoneaster integrifolius	Entire-Leaved Cotoneaster	Rosaceae	Exotic
Cotoneaster pannosus	Silverleaf Cotoneaster	Rosaceae	Exotic/California Invasive Plant Council Moderate
Delairea odorata	Cape Ivy	Asteraceae	Exotic/California Invasive Plant Council High
Dimorphotheca ecklonis	Blue and White Daisybush	Asteraceae	Exotic
Echium candicans	Pride of Madeira	Boraginaceae	Exotic/California Invasive Plant Council Limited
Ehrharta erecta	Panic Veldt Grass	Poaceae	Exotic/California Invasive Plant Council Moderate
Eriobotrya japonica	Loquat	Rosaceae	Exotic
Erodium botrys	Long-Beaked Filaree	Geraniaceae	Exotic
Escallonia rubra	Red Claws	Grossulariaceae	Exotic
Eschscholzia californica	California Poppy	Papaveraceae	Native
Eucalyptus globulus	Blue Gum	Myrtaceae	Exotic/California Invasive Plant Council Limited
Euphorbia peplus	Petty Spurge	Euphorbiaceae	Exotic
Festuca myuros	Rattail Fescue	Poaceae	Exotic/California Invasive Plant Council Moderate
Festuca perennis	Italian Ryegrass	Poaceae	Exotic/California Invasive Plant Council Moderate
Foeniculum vulgare	Fennel	Apiaceae	Exotic/California Invasive Plant Council High
Fumaria capreolata	White Ramping Fumitory	Papaveraceae	Exotic
Galium aparine	Common Bedstraw	Rubiaceae	Native
Gastridium phleoides	Nit Grass	Poaceae	Exotic

Scientific Name	Common Name	Family	Origin California Invasive Plant Council Status
Genista monspessulana	French Broom	Fabaceae	Exotic/California Invasive Plant Council High
Geranium dissectum	Cutleaf Geranium	Geraniaceae	Exotic/California Invasive Plant Council Limited
Geranium molle	Dove's Foot Geranium	Geraniaceae	Exotic
Geranium robertianum	Robert's Geranium	Geraniaceae	Exotic
Geranium rotundifolium	Roundleaf Geranium	Geraniaceae	Exotic
Hedera helix	English Ivy	Araliaceae	Exotic/California Invasive Plant Council High
Helminthotheca echioides	Bristly Oxtongue	Asteraceae	Exotic/California Invasive Plant Council Limited
Holcus lanatus	Common Velvet Grass	Poaceae	Exotic/California Invasive Plant Council Moderate
Hordeum marinum ssp. *gussoneanum*	Seaside Barley	Poaceae	Exotic/California Invasive Plant Council Moderate
Hordeum jubatum	Foxtail Barley	Poaceae	Exotic/California Invasive Plant Council Moderate
Hypochaeris glabra	Smooth Cat's Ear	Asteraceae	Exotic/California Invasive Plant Council Limited
Hypochaeris radicata	Hairy Cat's Ear	Asteraceae	Exotic/California Invasive Plant Council Moderate
Lactuca serriola	Prickly Lettuce	Asteraceae	Exotic
Lantana camara	Lantana or Yellow Sage	Verbenaceae	Exotic/Watch List
Lavandula stoechas	French Lavender	Lamiaceae	Exotic
Linum bienne	Narrow Leaved Flax	Linaceae	Exotic
Liquidambar styraciflua	Sweetgum	Hamamelidaceae	Exotic
Lobularia maritima	Sweet Alyssum	Brassicaceae	Exotic/California Invasive Plant Council Limited
Lonicera japonica	Japanese Honeysuckle	Caprifoliaceae	Exotic
Lophostemon confertus	Brisbane Box	Myrtaceae	Exotic
Lysimachia arvensis	Scarlet Pimpernel	Primulaceae	Exotic
Malus domestica	Orchard Apple Tree	Rosaceae	Exotic
Medicago lupulina	Black Medick	Fabaceae	Exotic
Medicago polymorpha	Burclover	Fabaceae	Exotic/California Invasive Plant Council Limited
Melaleuca citrinus	Crimson Bottlebrush	Myrtaceae	Exotic
Melilotus alba	White Sweetclover	Fabaceae	Exotic
Melilotus indicus	Annual Yellow Sweetclover	Fabaceae	Exotic
Morella californica	California Wax Myrtle	Myricaceae	Native

Scientific Name	Common Name	Family	Origin California Invasive Plant Council Status
Myosotis latifolia	Broadleaf Forget-Me-Not	Boraginaceae	Exotic/California Invasive Plant Council Limited
Nerium oleander	Oleander	Apocynaceae	Exotic
Oxalis corniculata	Creeping Woodsorrel	Oxalidaceae	Exotic
Oxalis incarnata	Crimson Woodsorrel	Oxalidaceae	Exotic
Oxalis pes-caprae	Bermuda Buttercup	Oxalidaceae	Exotic/California Invasive Plant Council Moderate
Parietaria judaica	Spreading Pellitory	Urticaceae	Exotic
Parthenocissus quinquefolia	Virginia Creeper	Vitaceae	Exotic
Paspalum dilatatum	Dallis Grass	Poaceae	Exotic
Phalaris aquatica	Harding Grass	Poaceae	Exotic/California Invasive Plant Council Moderate
Phormium tenax	New Zealand Flax	Asphodelaceae	Exotic
Photinia x fraseri	Fraser's Photinia	Rosaceae	Exotic
Pinus halepensis	Aleppo Pine	Pinaceae	Exotic
Pittosporum undulatum	Australian Cheesewood	Pittosporaceae	Exotic
Plantago coronopus	Cutleaf Plantain	Plantaginaceae	Exotic
Plantago lanceolata	English Plantain	Plantaginaceae	Exotic/California Invasive Plant Council Limited
Poa annua	Annual Bluegrass	Poaceae	Exotic
Polypogon monspeliensis	Rabbitsfoot Grass	Poaceae	Exotic/California Invasive Plant Council Limited
Prunus avium	Sweet Cherry	Rosaceae	Exotic
Prunus cerasifera	Purple Leaf Plum	Rosaceae	Exotic/California Invasive Plant Council Limited
Raphanus raphanistrum	Wild Radish	Brassicaceae	Exotic/California Invasive Plant Council Limited
Rosa sp.	Garden Rose	Rosaceae	Exotic Hybrid Cultivar
Rosmarinus officinalis	Rosemary	Lamiaceae	Exotic
Rubus ulmifolius	Elmleaf Blackberry	Rosaceae	Exotic
Rubus ursinus	California Blackberry	Rosaceae	Native
Rumex acetosella	Sheep Sorrel	Polygonaceae	Exotic/California Invasive Plant Council Moderate
Rumex crispus	Curly Dock	Polygonaceae	Exotic/California Invasive Plant Council Limited
Salvia leucantha	Mexican Bush Sage	Lamiaceae	Exotic
Scandix pecten-veneris	Shepherd's Needle	Apiaceae	Exotic
Senecio vulgaris	Common Groundsel	Asteraceae	Exotic
Sequoia sempervirens	Coast Redwood	Cupressaceae	Native

Scientific Name	Common Name	Family	Origin California Invasive Plant Council Status
Silybum marianum	Milk Thistle	Asteraceae	Exotic/California Invasive Plant Council Limited
Solanum laxum	Potato Vine	Solanaceae	Exotic
Sonchus asper	Prickly Sow Thistle	Asteraceae	Exotic
Sonchus oleraceus	Common Sowthistle	Asteraceae	Exotic
Stellaria media	Chickweed	Caryophyllaceae	Exotic
Stipa miliacea var. *miliacea*	Smilo grass	Poaceae	Exotic/California Invasive Plant Council Limited
Torilis arvensis	Field Hedge Parsley	Apiaceae	Exotic/California Invasive Plant Council Moderate
Tragopogon porrifolius	Purple Salsify	Asteraceae	Exotic
Trifolium angustifolium	Narrowleaf Crimson Clover	Fabaceae	Exotic
Trifolium hirtum	Rose Clover	Fabaceae	Exotic/California Invasive Plant Council Limited
Triticum aestivum	Common Wheat	Poaceae	Exotic
Tropaeolum majus	Garden Nasturtium	Tropaeolaceae	Exotic
Ulmus parvifolia	Chinese Elm	Ulmaceae	Exotic
Vicia sativa ssp. *sativa*	Spring Vetch	Fabaceae	Exotic
Vicia villosa	Smooth Vetch	Fabaceae	Exotic
Vinca major	Bigleaf Periwinkle	Apocynaceae	Exotic/California Invasive Plant Council Moderate
Yucca gigantea	Giant Yucca	Agavaceae	Exotic
Zantedeschia	Calla Lily	Araceae	Exotic

Environmental Consequences

Build Alternative

Ground disturbance and other activities related to project construction could potentially spread or introduce invasive species within the Biological Study Area. Dense populations of cape ivy and English ivy occur in riparian habitat and along stream channels and compete with and displace native plants.

In compliance with the Executive Order on Invasive Species, Executive order 13112, and guidance from the Federal Highway Administration, the landscaping and erosion control measures included in the project would not use species listed as invasive. All equipment and materials would be inspected for the presence of invasive species and cleaned if necessary. In areas of particular sensitivity, extra precautions would be taken if invasive species are found in or next to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. Potential impacts related to the introduction and spread of invasive species would be avoided and/or minimized through the implementation of measures identified below.

No-Build (No-Action) Alternative

The No-Build (No-Action) Alternative would not result in site disturbances or other activities that would have the potential to introduce or spread the invasive species discussed above. Therefore, there would be no impacts associated with invasive species.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures are recommended to address invasive species.

- **AMM-IS-1:** To avoid the spread of invasive species, the contractor shall stockpile topsoil and redeposit the stockpiled soil on slopes after construction is complete or transport all topsoil to a certified landfill for disposal.
- **AMM-IS-2:** During construction, the contractor shall make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing onsite should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free of invasive plant species, or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar.
- **AMM-IS-3:** The landscape and restoration planting plans shall emphasize the use of native species expected to occur in the area. Project plans shall avoid the use of plant species that the Cal-IPC, California Department of Fish and Wildlife, or other resource organizations consider to be invasive or potentially invasive. Before issuance of grading permits, all project landscape and restoration plans shall be verified to ensure that the plans do not include the use of any species considered invasive by the Cal-IPC or California Department of Fish and Wildlife.

References

SWCA Environmental Consultants (SWCA). 2020. *State Route 1 Auxiliary Lanes—State Park Drive to Bay Avenue/Porter Street Natural Environment Study*. Prepared for California Department of Transportation.

2.3.6 Cumulative Impacts

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 freeway 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.

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

Approach and Methodology

The information in this section is summarized from the Cumulative Impact Analysis Technical Report prepared for the project in September 2020, which follows the eight-step cumulative impact analysis methodology developed by Caltrans in cooperation with the Federal Highway Administration and the Environmental Protection Agency.

- Step 1 identifies the resources to consider in the cumulative impact analysis.
- Step 2 defines the resource study area for each resource addressed by the analysis. A resource study area is the geographic area within which impacts on a resource are analyzed. The boundaries of a resource study area are often broader than the boundaries used for project-specific analysis, such as a Biological Study Area. The delineation of the resource study area was based on a review of the documentation of the work that has been accomplished on the project, focusing on technical studies.
- Step 3 assesses the current health and historical context of resources. This assessment was based on a review of the technical studies, as well as the County of Santa Cruz General Plan/Local Coastal Program, the General Plan/Local Coastal Program's Environmental Impact Report, and other data sources documented in the Cumulative Impact Analysis Technical Report.
- Step 4 identifies the direct and indirect impacts of the proposed project that might contribute to a cumulative impact by reviewing the impacts identified in the technical studies for the proposed project. For each impact of the proposed project for the topics identified in Step 1, the specific

contributions to cumulative impacts that could result from the proposed project were considered.

- Step 5 requires the identification of current and reasonably foreseeable projects. A list of projects was compiled by first identifying projects listed on the websites of the City of Capitola, the County of Santa Cruz, and the Governor's Office of Planning and Research's CEQANet database. The Regional Transportation Plan, local general plans and specific plans, and Caltrans Transportation Concept Reports were also consulted to identify projects that have a reasonable probability of being implemented over the next 20 years. Staff members from planning departments of the City of Capitola and the County of Santa Cruz were consulted to assess the likelihood that the projects identified in the respective general plans would be built over the next 20 years and to identify any other reasonably foreseeable projects. Information about the projects, including expected environmental impacts and mitigation, was obtained to the extent available.
- The Step 6 analysis began with a review of the information gathered in Steps 3 through 5 regarding the historical context and current health of each resource included in the Cumulative Impact Analysis Technical Report, the impacts of the proposed project on these resources, and the impacts of reasonably foreseeable future projects on the resources. The next step was to assess, for each resource, whether cumulative impacts exist, whether the identified cumulative impacts could be considered beneficial or adverse, and whether the proposed project would have a considerable contribution to the cumulative impact.
- Step 7 is to document the results of the stepwise cumulative impact analysis process. The activities associated with Step 7 consisted of preparing the analysis in Steps 1 through 6 that are presented in Sections 3 through 6 of the technical report.
- Step 8 of the cumulative impact analysis process involves assessing the need for mitigation to address the overall cumulative impact on each resource.

Affected Environment

The information in this section is summarized from the Cumulative Impact Analysis Technical Report prepared for the project in September 2020.

To identify current and reasonably foreseeable projects, as required in Step 5 of the analysis, a list of projects was compiled by first identifying projects listed on the websites of the City of Capitola, the County of Santa Cruz, and the Governor's Office of Planning and Research's CEQANet database. The Regional Transportation Plan, local general plans and specific plans, and Caltrans Transportation Concept Reports were also consulted to identify projects that have a reasonable probability of being implemented over the next 20 years. Staff members from planning departments of the City of Capitola

and the County of Santa Cruz were consulted to assess the likelihood that the projects identified in the respective general plans would be built over the next 20 years and to identify any other reasonably foreseeable projects. Information about the projects, including expected environmental impacts and mitigation, was obtained to the extent available. The list of current and reasonably foreseeable projects includes 23 projects, each of which is listed and described in the Cumulative Impact Analysis Technical Report.

Resources assessed for cumulative impacts fall into four categories: no potential for cumulative impacts, resources assessed with a projection approach, resources with less than significant impacts and in good/stable health, and resources with potential for cumulative impacts.

No Potential for Cumulative Impacts

Based on the Caltrans eight-step guidance for cumulative impact analysis, resource areas with no impact do not need to be considered further in this analysis. The project would have no impact on the following resource areas:

- Wild and Scenic Rivers
- Farmlands and Timberlands
- Mineral Resources
- Public Services
- Recreation

Resources Assessed with a Projection Approach

The following resources are at risk or are in poor or declining health but were not included in the eight-step cumulative impact analysis because they are addressed in other technical studies in their respective analyses using modeling projections. In a cumulative impacts analysis, the identification of "past, present, and reasonably foreseeable future actions can use either the "list approach" or the "projection approach." The list approach identifies specific projects in the vicinity, typically provided by a local planning department. The "projection approach" or adopted plan approach relies on current general plans, transportation plans, or other planning documents, which by definition account for cumulative growth in a defined area.

For this analysis, the "projection approach" was used for the assessment of cumulative growth, traffic, air quality, and greenhouse gas emissions. As an example, the Association of Monterey Bay Area Governments' Regional Travel Demand Model was used to project future build and no-build conditions and is based on planned regional growth, as contained in adopted general plans. The model also accounts for planned growth in nearby areas. For all other resource areas discussed, the "list approach" is used and takes into consideration past, present, and reasonably foreseeable future actions.

Resources with Less Than Significant Impacts and in Good/Stable Health

The following resources have less than significant impacts but are currently in good/stable health and are therefore not discussed in this cumulative impact analysis:

- Land Use
- Consistency with State and Local Plans and Policies
- Community Character and Cohesion
- Relocations and Real Property Acquisition
- Environmental Justice
- Utilities and Emergency Services
- Cultural Resources
- Hydrology and Floodplain
- Water Quality and Stormwater Runoff
- Geology/Soils/Seismic/Topography
- Paleontology
- Hazardous Waste/Materials
- Noise
- Energy
- Plant Species
- Invasive Species

Resources with Potential for Cumulative Impacts

The following resources either have significant impacts identified or are in poor or declining health and are therefore discussed in this cumulative impact analysis:

- Coastal Zone Resources (Coastal Zone riparian non-wetlands)
- Visual/Aesthetics
- Natural Communities (coast live oak woodland)
- Wetlands and Other Waters (riparian non-wetlands, Coastal Zone riparian non-wetlands)
- Special-Status Animal Species (monarch butterfly, Santa Cruz black salamander, California giant salamander, western pond turtle, Cooper’s hawk, white-tailed kite, pallid bat, Townsend’s big-eared bat, hoary bat)
- Threatened and Endangered Species (foothill yellow-legged frog, California red-legged frog)

For those resources that have the potential for a cumulative impact, the sections below describe the resource study areas, current health and historical context, impacts of the project that may contribute to a cumulative impact, and impacts of reasonably foreseeable future projects for each resource analyzed for cumulative impacts. These sections also present the cumulative impacts of each resource.

Environmental Consequences

The information presented in these sections includes the results of Steps 2 through 6 of the cumulative impact analysis. Step 7 of the cumulative impact analysis requires the reporting of the information found in Steps 2 through 6; these sections document those results and satisfy the requirements of Step 7.

Visual/Aesthetics

The visual resource study area encompasses the project limits, including the Bay Avenue/Porter Street overcrossing above State Route 1 on the north and the State Park Drive overcrossing above State Route 1 on the south. On the inland side of State Route 1, the resource study area extends to the first ridgeline above the freeway, tapering down to encompass only properties next to the freeway south of the southern project terminus. On the seaward side of State Route 1, the visual Road Safety Audit extends about 0.5 mile from State Route 1, except in locations where there are visual obstructions due to topography, development, and vegetation. In those locations, the visual Road Safety Audit extends only to properties next to the freeway.

The current health and historical context of visual and aesthetic resources in the Road Safety Audit are defined by sweeping changes to the visual environment accompanying the rapid development of the mid-twentieth century, which have left visual resources in poor health. However, the growth management policies instituted more recently, even as development continues, suggest that the trend is for conditions to remain in a stable condition of poor health.

The improvements under the project would have an adverse impact on the visual quality of the corridor due to the associated structural, landscaping, and miscellaneous elements. Temporary impacts during the construction period would result from the use of equipment, stockpiling of soils and materials, and clearing of vegetation. Potential permanent impacts to visual and aesthetic resources from reasonably foreseeable future actions may include the removal of trees, widened freeway cross section, soundwalls, and retaining walls, ranging from low to moderate-high levels of visual quality change.

Although the trend for visual resources is considered to be in a generally stable condition, this resource is in a condition of poor health, and the effects of past, current, and future development, including the proposed project, has the potential to further reduce the visual quality in the Road Safety Audit. Therefore, an adverse cumulative impact was identified. The context and

extent of the project's contribution to this cumulative impact were considered, noting the distribution of visual impacts of the project, including the loss of mature trees along the project corridor, the length of time required for replacement trees to reach maturity, and the inability to fully mitigate the visual impacts of the proposed project. These factors suggest that the incremental contribution of the proposed project to the cumulative visual impact may be considerable.

Coast Live Oak Woodland

The resource study area for coast live oak woodland encompasses the oak woodland, mixed conifer woodland, and eucalyptus woodland habitats mapped within the Biological Study Area, New Brighton State Park, and areas of open land between the western and eastern portions of New Brighton State Park, extending to the Pacific shore.

The current health and historical context of coast live oak woodland include the effects of grazing, wood harvesting, invasive species, land clearing, and urban expansion, which have led to the elimination of extensive areas of coast live oak woodland in the region. Though local laws and regulations may decrease the future impact of development, the health of this resource is considered poor and may continue to decline given the remaining threat of invasive species.

Impacts on coast live oak woodland resulting from the project would include 0.185 acre of permanent impacts and 0.550 acre of temporary impacts. Potential impacts to coast live oak woodland from reasonably foreseeable future actions may include the permanent and temporary loss of coast live oak woodland, including land disturbance and tree removal within areas of coast live oak woodland habitat.

Coast live oak woodland is considered to be in a condition of poor health, and the trend for this resource may be in decline, although there is a possibility for improvement. The effects of past, current, and future development, including the proposed project, has the potential to degrade this resource further. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the impacts would occur in an existing transportation corridor and would be addressed by avoidance and minimization measures and compensatory mitigation, as described in Section 2.3, Biological Environment. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on the coast live oak woodland natural community would not be considerable.

Riparian Non-Wetlands (Riparian Forest) and Coastal Zone Riparian Non-Wetlands

The Road Safety Audit for riparian non-wetlands (riparian forest) and Coastal Zone riparian non-wetlands encompasses the areas of riparian habitat within the Biological Study Area and extends beyond the Biological Study Area to include the watersheds of the following resources: Ord Gulch, Borregas Creek, Potbelly Creek, Tannery Gulch, a tributary to Tannery Gulch, and Nobel Creek.

The current health and historical context of riparian non-wetlands (riparian forest) and Coastal Zone riparian non-wetlands include significant decreases in the extent of riparian habitats within the County of Santa Cruz region over the past 200 years, due to the encroachment of agriculture, domestic animal grazing, urban development, roadway crossings, water diversions and channelization for drainage and flood control. Given the significant loss of riparian forest that has occurred, this resource appears to be in poor health. Despite the small remaining amount of old-growth forest, the regulatory protections for riparian corridors suggest that conditions are remaining stable, with a potential for improvement.

Impacts on riparian non-wetlands (riparian forest) from the proposed project include 0.192 acre of permanent impacts and 0.540 acre of temporary impacts. Impacts on Coastal Zone riparian non-wetland habitat from the proposed project include 0.144 acre of permanent impacts and 0.395 acre of temporary impacts. Potential impacts to riparian non-wetlands (riparian forest) and Coastal Zone riparian non-wetlands from reasonably foreseeable future actions include the permanent and temporary loss of riparian non-wetlands, including land disturbance and tree removal within areas of riparian non-wetland (riparian forest) habitat.

Although the trend for the riparian non-wetland (riparian forest) and Coastal Zone riparian non-wetlands (riparian forest natural community) is considered to be generally stable with a potential for improvement, this resource is in a condition of poor health. The effects of past, current, and future development, including the proposed project, has the potential to degrade this resource further. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the impacts would occur in an existing transportation corridor, would not introduce new stream crossings in previously undeveloped areas, would be addressed by avoidance and minimization measures and compensatory mitigation as described in Section 2.3, Biological Environment, and the overall scale of the riparian forest would not be substantially affected. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on the riparian non-wetland (riparian forest) and Coastal Zone riparian non-wetland habitat would not be considerable.

Monarch Butterfly

The Road Safety Audit for the monarch butterfly encompasses the oak woodland, mixed conifer woodland, and eucalyptus woodland habitats mapped within the Biological Study Area, New Brighton State Park, and areas of open land between the western and eastern portions of New Brighton State Park, extending to the Pacific shore.

The current health and historical context of monarch butterflies include historical habitat loss and recent population declines. The current health of this resource is poor. Monarch butterfly populations are impacted by habitat loss and land-use practices in the Road Safety Audit and elsewhere (including other states and countries) due to their migration patterns. Efforts to monitor, protect, and improve habitat for this species are underway though threats remain; therefore, the health of monarch butterfly habitat is expected to remain poor but stable.

The removal of eucalyptus trees and other suitable roosting trees during the monarch butterfly winter roosting season as a result of the proposed project could impact potential winter roosting habitat and could directly impact monarch butterflies if they are found using eucalyptus trees onsite as winter roosts, which could result in stress, injury, or mortality to the butterflies. About 0.028 acre of permanent impacts and 0.078 acre of temporary impacts of eucalyptus woodland would result from the proposed project. Potential impacts to the monarch butterfly from reasonably foreseeable future actions also include the permanent and temporary loss of overwintering habitat.

Although the trend for the monarch butterfly is considered to be generally stable, monarch butterfly habitat is in a condition of poor health, and the effects of past, current, and future development, including the proposed project, has the potential to degrade monarch butterfly habitat further. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the impacts would occur in an existing transportation corridor and would be addressed by avoidance and minimization measures and compensatory mitigation, as described in Section 2.3, Biological Environment. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on monarch butterflies would not be considerable.

Santa Cruz Black Salamander and California Giant Salamander

The Road Safety Audit for Santa Cruz black salamanders and California giant salamanders encompasses the water bodies in the Biological Study Area (Ord Gulch, Borregas Creek, Potbelly Creek, Tannery Gulch, a tributary to Tannery Gulch, and Nobel Creek) and a 1.3-mile radius around these water bodies. A 1.3-mile buffer was chosen because this is the maximum distance salamanders travel between breeding ponds and upland habitat.

The health and historical context of the Santa Cruz black salamander and the California giant salamander include the historical conversion of Santa Cruz black salamander and California giant salamander habitat to agricultural and urban land uses. This has caused habitat fragmentation and loss, as well as a decline in the population of these species. Given the ongoing threats to reproduction and dispersal due to continued urbanization, these species are considered to be in poor health with a declining trend in population.

Grading or another earthwork included in the project could impact Santa Cruz black salamanders and California giant salamanders in the Biological Study Area, where Caltrans proposes shoulder improvements for the project, particularly in uplands next to streams along State Route 1. Individuals could, therefore, be subjected to injury or mortality as a result of ground-disturbing activities. The potential need to capture and relocate Santa Cruz black salamanders or California giant salamanders could subject these animals to stresses that could result in adverse effects. Injury or mortality could occur via accidental crushing by construction equipment or even worker foot-traffic. Potential impacts from reasonably foreseeable future projects to Santa Cruz black salamanders and California giant salamanders also include the disturbance of habitat.

Santa Cruz black salamanders and California giant salamanders are considered to be in a condition of poor health, with a declining trend. The effects of past, current, and future development, including the proposed project, has the potential to degrade this resource further. Therefore, an adverse cumulative impact was identified. The context and extent of the proposed project's contribution to this cumulative impact were considered, noting that the proposed project would implement the avoidance and minimization measures and compensatory mitigation described in Section 2.3, Biological Environment. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on Santa Cruz black salamanders and California giant salamanders would not be considerable.

Western Pond Turtle and Foothill Yellow-Legged Frog

The Road Safety Audit for the western pond turtle and the foothill yellow-legged frog encompasses the areas of riparian forest habitat mapped within the Biological Study Area and extends beyond these areas to include the length of streams (extending upstream to the first ridgeline and downstream to the Pacific Coast), encompassing a 1,400-foot buffer.

The health and historical context for the western pond turtle include adverse conditions that affect several coastal drainages between the San Francisco Bay and the Santa Clara River. Most of the Santa Joaquin Valley and the Salinas and Pajaro drainages include the effects of drought, habitat alteration, changes in land and water use, and abusive grazing practices. Given the historical and recent population declines, existing threats, and age trends, the

health of this resource is considered to be poor and likely to continue to decline. The health and historical context for foothill yellow-legged frogs include historical population declines and continued threats from exotic species and climate changes. The health of this resource is considered to be poor, with a declining trend going forward.

Based on the lack of suitable breeding habitat and extremely marginal upland habitat, western pond turtles and foothill yellow-legged frogs are assessed as having an extremely low likelihood of occurring within the Biological Study Area. In the unlikely event that they are present, grading or another earthwork associated with the proposed project could impact western pond turtles and foothill yellow-legged frogs where Caltrans proposes shoulder improvements for the proposed project, particularly in uplands next to streams along State Route 1. Individuals could be subjected to injury or mortality as a result of ground-disturbing activities. Potential impacts from reasonably foreseeable future projects to western pond turtles and foothill yellow-legged frogs include the permanent and temporary loss of habitat.

Western pond turtles and foothill yellow-legged frogs are considered to be in a condition of poor health, with a declining trend. The effects of past, current, and future development, including the proposed project, has the potential to degrade these species' condition further. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the impacts would occur in an existing transportation corridor, would be addressed by avoidance and minimization measures and compensatory mitigation as described in Section 2.3, Biological Environment, and the overall scale of riparian forest habitat would not be substantially affected. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on the western pond turtle and foothill yellow-legged frog would not be considerable.

Cooper's Hawk

The Road Safety Audit for Cooper's hawk includes the oak woodland and riparian forest habitat mapped within the Biological Study Area and extends along each stream crossed by the proposed project, downstream to the Pacific Coast, and upstream to ridgelines above the urbanized areas (thereby encompassing foothill areas). A 3-mile buffer is included along each stream. The Road Safety Audit also includes New Brighton State Park and areas of open land between the western and eastern portions of New Brighton State Park; aerial imagery was used to identify areas of open land.

The health and historical context of Cooper's hawk includes the gradual loss of habitat (logging in forested areas as well as development), which has been identified as a current threat for Cooper's hawk population in California. The current population is considered to be at or near carrying capacity in available nesting territories. In recent years, Cooper's hawk populations have

increased, and range expansions have been seen, especially the colonizing of urban and suburban areas by breeding pairs. Given recent increases in population and range expansions, the health of this resource is considered to be good and is expected to be either stable or improving.

The removal of vegetation and/or nests as a result of the proposed project could directly impact bird nests and any eggs or young living in nests. Because birds can be sensitive to noise disturbances, temporary indirect impacts could also result from noise and disturbance associated with construction, which could alter perching, foraging, and/or nesting behaviors. No evidence of mud nests or other nests was seen on the Capitola Avenue overcrossing (which would be replaced during construction), but future nesting attempts under the bridge could occur and could be impacted if present during construction. Potential impacts from reasonably foreseeable future projects to Cooper's hawks include the permanent and temporary loss of nesting habitat through tree removal or nest disturbance.

Cooper's hawk is considered to be in a condition of good health, with a trend that is stable or improving. However, the effects of past, current, and future development, including the proposed project, could potentially degrade this resource. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the impacts would occur in an existing transportation corridor, would be addressed by avoidance and minimization measures and compensatory mitigation as described in Section 2.3, Biological Environment, and the overall scale of riparian forest and potential nesting habitat would not be substantially affected. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on Cooper's hawk would not be considerable.

White-Tailed Kite

The Road Safety Audit for the white-tailed kite encompasses the areas of riparian forest habitat mapped within the Biological Study Area and extends beyond these areas to include the length of the streams the project corridor crosses (and upstream to the ridgeline above State Route 1, and downstream to the Pacific Coast), encompassing a 3-mile buffer.

The health and historical context of white-tailed kites include a severe decline in population in the early 1900s, followed by an increase in population and distribution from the 1940s to 1970s. This species is considered to be in fair health and have a stable or increasing population trend.

The removal of vegetation and/or nests resulting from the proposed project could directly impact bird nests and any eggs or young living in nests. Because birds can be sensitive to noise disturbances, temporary indirect impacts could also result from noise and disturbance associated with construction, which could alter perching, foraging, and/or nesting behaviors.

No evidence of mud nests or other nests was seen on the Capitola Avenue overcrossing (which would be replaced during construction), but future nesting attempts under the bridge could occur and could be impacted if present during construction. Potential impacts from reasonably foreseeable future projects to white-tailed kites also include the permanent and temporary loss of nesting habitat through tree removal or nest disturbance.

The white-tailed kite is considered to be in a condition of fair health, with a stable or improving trend. The effects of past, current, and future development, including the proposed project, has the potential to degrade this species' condition further. Avoidance and minimization measures would avoid all take of white-tailed kites; however, as described in Section 2.3, Biological Environment, birds can be sensitive to noise disturbances, and temporary indirect impacts may result from noise and disturbance associated with construction, which could alter perching, foraging, and/or nesting behaviors. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the project would implement the avoidance and minimization measures and compensatory mitigation described in Section 2.3, Biological Environment. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on white-tailed kites would not be considerable.

Pallid Bat, Townsend's Big-Eared Bat, and Hoary Bat

There is one Road Safety Audit for the pallid bat, Townsend's big-eared bat, and hoary bat. This Road Safety Audit encompasses the areas of grassland, riparian forest, and oak woodland habitat mapped within the Biological Study Area and extends downstream to the Pacific Coast and upstream to ridgelines above the urbanized areas encompassing a 3-mile buffer of the streams that the project crosses. The Road Safety Audit also includes New Brighton State Park and areas of open land between the western and eastern portions of New Brighton State Park.

The health and historical context of these bat species varies. The pallid bat is believed to be intolerant of urban development, and populations are thought to have declined in recent decades. While populations are stable nationally, the health of this species is likely declining in coastal areas of California. Townsend's big-eared bat's perceived susceptibility to human disturbance at roost sites is usually cited as a key behavioral characteristic, putting the species at conservation risk. Based on the limited available information about this species, it appears to be in a condition of poor health, and there is potential that the condition of Townsend's big-eared bat in California is declining. While the urbanization of the Road Safety Audit may have been a factor in the lack of recorded occurrences of the hoary bat since 1940, statewide and nationwide, the hoary bat is thought to be in relatively good health and be in stable condition.

Direct impacts on bats could result from the project if bats are found to be roosting in trees or under the Capitola Avenue overcrossing before construction. These direct effects could result in the injury or mortality of bats or harassment that could alter roosting behaviors. Indirect impacts could also result from noise and disturbances associated with construction, which could also alter roosting behaviors. Implementation of pre-activity surveys and exclusion measures would reduce the potential for adverse effects. Potential impacts from reasonably foreseeable future projects to bat species include tree removal.

These species are in varied health, as described above. The effects of past, current, and future development, including the proposed project, could potentially degrade this resource. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the impacts would occur in an existing transportation corridor and would be addressed by avoidance and minimization measures and compensatory mitigation, as described in Section 2.3, Biological Environment. These factors indicate that the incremental contribution of the proposed project to the cumulative impact on the pallid bat, Townsend's big-eared bat, and the hoary bat would not be considerable.

California Red-Legged Frog

The Road Safety Audit for California red-legged frogs encompasses the areas of riparian forest habitat mapped within the Biological Study Area and extends beyond these areas to include the length of the streams the project corridor crosses (and upstream to the ridgeline above State Route 1, and downstream to the Pacific Coast), encompassing a 3-mile buffer. The Road Safety Audit for California red-legged frogs is within a core source area for California red-legged frog (Recovery Unit 5 Central Coast--Core Area 19--Watsonville Slough--Elkhorn Slough) which provides connectivity between known populations. (U.S. Fish and Wildlife Service 2002)

The health and historical context of the California red-legged frog is that, although once widespread in California, it has been weeded out from 70 percent of its former range and faces continued threats in the form of habitat loss, predation, and competition. While a recovery plan has been developed and initiated for this threatened species, it is considered to be in poor health with a declining population trend.

Construction within the Biological Study Area could result in direct impacts on California red-legged frogs, which could result in injury or death to individual California red-legged frogs if they are found to be breeding in riparian areas or estivating in nearby uplands. Grading or another earthwork could impact California red-legged frogs where Caltrans proposes shoulder improvements for the project, particularly in uplands next to streams along State Route 1. Individuals could, therefore, be subjected to injury or mortality as a result of ground-disturbing activities. Potential impacts from reasonably foreseeable

future projects to California red-legged frogs include the disturbance of habitat.

California red-legged frogs are considered to be in a condition of poor health, with a declining trend. The effects of past, current, and future development, including the proposed project, has the potential to degrade this species' condition further. Therefore, an adverse cumulative impact was identified. The context and extent of the project's contribution to this cumulative impact were considered, noting that the project area is an existing transportation corridor, the project would implement the avoidance and minimization measures and compensatory mitigation described in Section 2.3, Biological Environment, and the overall scale of riparian forest habitat would not be substantially affected. These factors indicate that the incremental contribution of the project to the cumulative impact on California red-legged frogs would not be considerable.

Avoidance, Minimization and/or Mitigation Measures

The following avoidance, minimization, and/or mitigation measures from Sections 2.1.4, Visual/Aesthetics, 2.3.1, Natural Communities, 2.3.4, Threatened and Endangered Species, and 2.3.5, Invasive Species, would be implemented to avoid, minimize, and/or mitigate cumulative impacts:

- Visual Resources: AMM-VA-1 through AMM-VA-16.
- Riparian non-wetlands (riparian forest) and Coastal Zone riparian non-wetlands: AMM-NC-1 through AMM NC-7 and MM-NC-8.
- Coast live oak woodlands: AMM-NC-1 through AMM NC-7; MM-NC-8; AMM-NC-9 through AMM-NC-11.
- Monarch butterfly: AMM-AS-1 through AMM-AS-3.
- Santa Cruz black salamander, California giant salamander, and western pond turtle: AMM-AS-4.
- Foothill yellow-legged frog: AMM-TE-1.
- Cooper's hawk and white-tailed kite: AMM-AS-5 through AMM-AS-10.
- Pallid bat, Townsend's big-eared bat, and hoary bat: AMM-AS-11 through AMM-AS-16.
- California red-legged frog: AMM-TE-2.

In addition to the avoidance and minimization measures and mitigation measures listed above, the following agency recommendations are provided for future projects within the resource study areas to consider:

Coast Live Oak Woodland

The California Department of Fish and Wildlife, County of Santa Cruz, and the City of Capitola have regulatory authority over coast live oak woodland.

Recommendations for agencies to mitigate overall cumulative impacts include prioritizing preservation and planting of coast live oaks via building permits, development approvals, and project permitting. Additionally, recommendations would also include encouraging sustainable and larger ecosystem mitigation efforts rather than smaller, piecemeal mitigation efforts by looking at advanced mitigation and establishing mitigation banking opportunities.

Monarch Butterfly

The California Department of Fish and Wildlife has regulatory authority over monarch butterflies. Recommendations for agencies to mitigate overall cumulative impacts include supporting efforts to restore habitat restoration for monarch butterflies. For example, the Environmental Defense Fund is partnering with the Monarch Joint Venture and the Iowa Monarch Conservation Consortium to develop a Monarch Butterfly Habitat Exchange, which would incentivize farmers and ranchers to maintain and increase the availability of milkweed, which is vital to the monarch butterfly life cycle. (Environmental Defense Fund 2019)

Riparian Forest/Associated Resources

Agencies with regulatory authority over riparian non-wetlands and Coastal Zone riparian non-wetlands are the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, Central Coast Regional Water Quality Control Board, the County of Santa Cruz, and the City of Capitola. Within the Coastal Zone, the California Coastal Commission also has jurisdiction over Coastal Zone riparian non-wetlands. California Department of Fish and Wildlife has regulatory authority over Cooper's hawks and white-tailed kites.

Recommendations for agencies to mitigate overall cumulative impacts include supporting local efforts to restore these resources. As an example, the U.S. Fish and Wildlife Service is undertaking efforts at the Ellicott Slough National Wildlife Refuge to remove non-native invasive plant species such as eucalyptus species and pampas grass and to revegetate with native plant species. Efforts to restore wetland and other waters would benefit species that use these habitats, including white-tailed kites.

Additionally, recommendations for these agencies to mitigate overall cumulative impacts include supporting local efforts to restore riparian forest habitats, which would, in turn, benefit species that use riparian forest habitat, including Cooper's hawk. For example, the Resource Conservation District of Santa Cruz County's current Soquel Corridor Restoration Project is focused on restoring 2,500 feet of riparian corridor, reconnecting portions of the historical floodplain to the main channel, and stabilizing a landslide that is discharging significant amounts of fine sediment into Soquel Creek. (Resource Conservation District of Santa Cruz County 2020)

Santa Cruz Black Salamander and California Giant Salamander

The California Department of Fish and Wildlife has regulatory authority over Santa Cruz black salamanders and California giant salamanders. Recommendations for agencies to mitigate overall cumulative impacts include prioritizing the preservation of areas of undeveloped land that would benefit both resources and support connectivity and genetic exchange between subpopulations of the species. An example of taking measures to preserve these undeveloped areas is the efforts of the Land Trust of Santa Cruz County to identify important areas for multi-benefit conservation in its Conservation Blueprint. (Land Trust of Santa Cruz County 2013)

Western Pond Turtle, Foothill Yellow-Legged Frog, and California Red-Legged Frog

The U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife have regulatory authority over California red-legged frogs. California Department of Fish and Wildlife has regulatory authority over foothill yellow-legged frogs and western pond turtles. Due to the similarities in habitat requirements for these species, recommendations for agencies to mitigate overall cumulative impacts on these species include supporting local efforts to protect California red-legged frog habitat, including habitat restoration and enhancement. An example of local efforts to protect California red-legged frog habitat is the partnership between the nonprofit organization Save The Frogs! and the Land Trust of Santa Cruz County to restore habitat for California red-legged frogs at Antonelli Pond in the City of Santa Cruz. (Save The Frogs! 2018) These organizations are involving the community in efforts to plant native vegetation and to eradicate invasive weeds, predatory fish, and bullfrogs to protect the habitat for California red-legged frogs and provide environmental education to the public.

Visual/Aesthetics

The County of Santa Cruz and the City of Capitola have regulatory authority over visual resources associated with the project. Recommendations for agencies to mitigate overall cumulative impacts include prioritizing tree preservation and planting and encouraging or requiring screening plantings.

Pallid Bat, Townsend's Big-Eared Bat, and Hoary Bat

The California Department of Fish and Wildlife has regulatory authority over the pallid bat, Townsend's big-eared bat, and hoary bat. Recommendations for agencies to mitigate overall cumulative impacts include supporting efforts to monitor bats in the Central Coast. For example, the Central Coast Bat Survey, the main research project of the Pacific Coast Conservation Alliance, is seeking to investigate the relationship between Central Coast bats and viticulture and the effects of habitat enhancements on bat populations. The Central Coast Bat Survey is intended to address concerns regarding the economic impact that declines in bat populations could have on agricultural productivity and the effectiveness of measures to improve bat survivorship,

such as the installation of bat boxes, reduction of pesticide application, and creation of bat-friendly habitats. (Pacific Coast Conservation Alliance 2018)

References

Environmental Defense Fund. 2019. *Monarch Butterfly Habitat Exchange.* November 12. Available: www.edf.org/ecosystems/monarch-butterfly-habitat-exchange. Accessed: June 17, 2020.

Land Trust of Santa Cruz County. 2013. *Highlights from a Conservation Blueprint*. Available: www.landtrustsantacruz.org/blueprint/conservation-blueprint-highlights.pdf. Accessed: June 17, 2020.

Pacific Coast Conservation Alliance. 2018. *Central Coast Bat Survey*. Available: https://centralcoastbatsurvey.org/. Accessed: June 17, 2020.

Santa Cruz County Resource Conservation District. 2020. *Case Studies Santa Cruz*. Available: iwrp.rcdsantacruz.org/santa-cruz. Accessed: June 17, 2020.

Save the Frogs!. 2018. *Antonelli Pond – Santa Cruz, CA*. Available: www.savethefrogs.com/ d/actions/antonelli/index.html. Accessed: June 17, 2020.

Chapter 3 California Environmental Quality Act Evaluation

3.1 Determining Significance under CEQA

The proposed project is a joint project by Caltrans and the Federal Highway Administration and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both NEPA and CEQA. The Federal Highway Administration'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 U.S. Code 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the Federal Highway Administration and Caltrans. Caltrans is the lead agency under NEPA and CEQA.

One of the main differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an Environmental Impact Statement, or a lower level of documentation, will be required. NEPA requires that an Environmental Impact Statement 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 Environmental Impact Statement, 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 document.

CEQA, on the other hand, does require that Caltrans 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 Environmental Impact Report and mitigated if feasible. In addition, the State CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an Environmental Impact Report. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

3.2 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. Potential impact determinations include Significant and Unavoidable Impact, Less Than Significant with Mitigation Incorporated, Less Than Significant Impact, and No Impact. In many cases, background studies performed in connection with a project will indicate that there are no impacts on a particular resource. A No Impact answer reflects this determination. The words “significant” and “significance” used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this checklist are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, and standard measures that are applied to all or most Caltrans projects such as Best Management Practices and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below; see Chapters 1 and 2 for a detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 to provide you 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.

3.2.1 Aesthetics

CEQA Significance Determinations for Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:

a) Have a substantial adverse effect on a scenic vista?

Significant and Unavoidable Impact—Within the project vicinity, scenic vistas are available where the roadway viewing position allows visual access to the hillsides and ridgelines. Roadway widening would have a moderate impact on the scenic quality of the project location. The vegetation and tree removal required to facilitate the widening would be kept to the minimum required but would still result in moderate to moderate-high impacts. Therefore, the changes from construction and operation could not result in a substantial adverse effect on a scenic vista. Implementation of AMMs VA-1 through VA-16 would reduce this impact, but not to a less than significant level.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Significant and Unavoidable Impact—State Route 1 is an eligible state scenic highway, meaning it is eligible for future listing on the State Scenic Highways system but has not been officially designated. (Caltrans 2019a) Within the County of Santa Cruz, State Route 1 is designated as a scenic road, valued for its vistas. (County of Santa Cruz 1994) The County of Santa Cruz also has a tree removal policy, restricting the removal of healthy trees unless they pose a traffic hazard or for road widening, and the replacement of trees nearby is required. These designations and policies suggest high local values. The proposed project would require vegetation removal for the widening and construction of soundwalls and retaining walls, which would result in moderate to moderate-high impacts. Implementation of AMMs VA-1 through VA-16 would reduce impacts on scenic resources, but significant impacts would remain.

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 would be consistent with aesthetic and coastal resource protection goals for the State Route 1 corridor. The project would not adversely affect the visual environment with the incorporation of avoidance, minimization, and mitigation measures described in Section 2.1.4, Visual/ Aesthetics. This impact would be less than significant.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less Than Significant Impact—No new sources of light or glare are expected. However, nighttime construction would likely occur, and some nighttime lighting at the construction site would be required and could result in light nuisance if not properly designed. The project would result in a nominal increase in daytime glare by increasing the paved area and by removing some of the roadside vegetation that provides shade. However, the pavement would be dark, which would greatly reduce glare, and roadside vegetation would still be present along the right-of-way to provide some shade. Light and glare effects would be potentially significant; however, implementation of avoidance and minimization measures would reduce the effects of nighttime construction and light and glare impacts from lighted intersections. Therefore, the changes would not result in a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. This impact would be less than significant.

3.2.2 Agriculture and Forest Resources

CEQA Significance Determinations for Agriculture and Forest Resources

In determining whether impacts on 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 on 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 the California Air Resources Board.

Would the project:

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 Impact—There is no farmland in the project vicinity. Therefore, there would be no impacts.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact—There are no lands designated for agricultural use or lands enrolled in a Williamson Act contract in the project vicinity. Therefore, there would be no impacts.

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 Impact—There are no lands zoned for forest land or timberland in the project vicinity. Therefore, there would be no impacts.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact—There are no lands zoned for forest land or timberland in the project vicinity. Therefore, there would be no impacts.

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—No farmland would be converted, and therefore there would be no impacts.

3.2.3 Air Quality

CEQA Significance Determinations for 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:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact—The project is in the North Central Coast Air Basin and is within the jurisdiction of the Monterey Bay Air Resources District and California Air Resources Board. The Monterey Bay Air Resources District is the main agency responsible for writing the Air Quality Management Plan in cooperation with the Santa Cruz County Regional Transportation Commission, local governments, and the private sector. The Air Quality Management Plan provides the blueprint for meeting state and federal ambient air quality standards. This project is a capacity-increasing transportation project, but it would result in shifts from auto to transit modes, improve freeway level of service and average speed, improve the level of service with the Capitola overcrossing, and improve pedestrian and bicycle connectivity near Mar Vista Drive. The project would generate a less than significant amount of pollutants during construction due to the short duration of project construction. The project is included in the Santa Cruz County Regional Transportation Commission's Regional Transportation Plan and Regional Transportation Improvement Program, both of which were found to be conforming (see Section 2.2.5, Air Quality). Therefore, the project would not conflict with the Air Quality Management Plan. Impacts would be less than significant. No mitigation would be required.

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—Though the project is a capacity-increasing transportation project, it would generate a less than significant amount of pollutants during construction due to the short duration of construction. Additionally, the project would result in shifts from auto to transit modes, improve freeway Level of Service and average speed, and improve the level

of service with the Capitola Avenue overcrossing. The project would also improve pedestrian and bicycle connectivity near Mar Vista Drive, generating no change in tons of emissions per day under most conditions. Additional analysis (see Section 2.2.5, Air Quality) shows that the project would generate minimal air quality impacts for federal Clean Air Act criteria pollutants.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact—Although there are several sensitive receptors within 500 feet of the project site, the project would generate only minimal air quality impacts. There would be less than significant impacts.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact—Temporary construction activities could generate fugitive dust from the operation of construction equipment. The project would comply with construction standards adopted by Monterey Bay Air Resources District as well as Caltrans' standard procedures for minimizing air pollutants during construction. Impacts would be less than significant. No mitigation would be required.

3.2.4 Biological Resources

CEQA Significance Determinations for Biological Resources

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less Than Significant with Mitigation Incorporated—As stated in Section 2.3.4, Threatened and Endangered Species, streams within the Biological Study Area are small and intermittent and do not support suitable breeding habitat for foothill yellow-legged frogs. No designated California red-legged frog critical habitat occurs in or near the Biological Study Area. However, the presence of the California red-legged frog has been inferred within the Biological Study Area. Because there is a low but potential take for this species during construction, this impact is potentially significant, and AMMs are required to reduce this impact.

There are no known records for the southwestern willow flycatcher in the region. While areas along State Route 1 support riparian habitat, areas within the Biological Study Area were assessed to be marginal habitat at best because they lack dense riparian vegetative cover low to the ground, and the

riparian corridor lacks a stratified canopy within the Biological Study Area. The Federal Environmental Species Act Section 7 effects determination is that the project would not affect the southwestern willow flycatcher and least Bell's vireo. The basis for this determination is that riparian habitat within the Biological Study Area is unsuitable, and there are no known nesting records in or near the Biological Study Area.

Avoidance, minimization, and/or mitigation measures described in Section 2.3.4, Threatened and Endangered Species, would be implemented to avoid potential impacts on these species. Additionally, the project would qualify for coverage under the Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program, 8-8-10-F-58 (U.S. Fish and Wildlife Service 2011), which provides approved avoidance and minimization, and/or mitigation measures for California red-legged frogs.

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—As discussed in Section 2.3.1, Natural Communities, 13.206 acres of riparian forest habitat occur in the project study area. About 0.156 acre of riparian forest habitat would be permanently removed, and 0.440 acre would be temporarily disturbed to build the project. Implementation of Best Management Practices, as well as the implementation of avoidance and minimization measures NC-1 through NC-7, Mitigation Measure NC-8, and avoidance and minimization measures NC-9 through NC-11, would ensure this impact would be less than significant.

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—As discussed in the Section 2.3.2, Wetlands and Other Waters, the project would result in about 0.192 acre of permanent impacts and 0.540 acre of temporary impacts on waters of the State (characterized as riparian non-wetlands), and 0.144 acre of permanent impacts and 0.395 acre of temporary impacts on Coastal Zone riparian non-wetlands. There would be no impacts on waters of the U.S. (wetlands or other waters).

Based on the scope of project impacts on jurisdictional waters and implementation of avoidance and minimization measures AMM-NC-1 through AMM-NC-7, mitigation measure NC-8, and avoidance and minimization measures AMM-NC-9 through AMM-NC-11, identified in Section 2.3.1, Natural Communities, and implementation of BMPs, the project would not

substantially alter the function or value of wetlands or other waters within the Biological Study Area.

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 Impact—As discussed in Section 2.3.1, Natural Communities, no migration corridors were identified in the project study area. The streams within the Biological Study Area are likely too small, degraded, and intermittent to support fish species and likely do not support anadromous fish migration. This impact would be less than significant.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less Than Significant with Mitigation Incorporated—The County of Santa Cruz has a Riparian Corridor and Wetlands Protection Ordinance that aims to minimize and eliminate any development activities in the riparian corridor. The project would be potentially inconsistent with this ordinance. Potentially jurisdictional U.S. Army Corps of Engineers waters of the U.S. (other waters), Regional Water Quality Control Board waters of the State (streambed and riparian non-wetlands), California Department of Fish and Wildlife streams and riparian areas, and Coastal Zone/California Coastal Commission streams and riparian non-wetlands were identified within the project corridor, associated with creeks or drainages. The project has the potential to result in temporary and permanent impacts on riparian and wetland resources and be inconsistent with buffers established by this ordinance. As mentioned previously, the streams within the Biological Study Area are likely too small, degraded, and intermittent to support fish species and likely do not support anadromous fish migration. AMMs NC-1 through NC-11, described in Section 2.3.1, Natural Communities, would reduce this 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 County of Santa Cruz has no adopted conservation plan. Therefore, the project would not conflict with a conservation plan, and no impact would occur.

3.2.5 Cultural Resources

CEQA Significance Determinations for Cultural Resources

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?

No Impact—As discussed in the Cultural Resources section in Chapter 2, the area of potential effects encompasses no known National Register of Historic Places-eligible, National Register of Historic Places-listed, or previously unevaluated built environment resources. This impact would be less than significant.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less Than Significant Impact—Two previously identified archaeological resources—CA-SCR-179 and CA-SCR-214—are within the APE but would not be affected by the project. If cultural materials are discovered during construction, all earthmoving activities within and around the immediate discovery area would be diverted until a qualified archaeologist can assess the nature and significance of the find. This impact would be less than significant.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less Than Significant Impact—There is always the potential for discovering human remains during excavation and other ground-disturbing activities. If human remains are discovered, California Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the county coroner should be contacted. If the coroner thinks the remains are Native American, the coroner would notify the Native American Heritage Commission, who, per Public Resources Code Section 5097.98, would then notify the Most Likely Descendant. At this time, the person who discovered the remains would contact the Caltrans District 5 Office of Cultural Resources so that they may work with the Most Likely Descendant on the respectful treatment and disposition of the remains. Further provisions of the Public Resources Code Section 5097.98 are to be followed as applicable. This impact would be less than significant.

3.2.6 Energy

CEQA Significance Determinations for Energy

Would the project:

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact—Adding vehicle capacity would improve freeway Level of Service and average speed to improve fuel efficiency. The criterion of 45 miles per hour during peak hours would be met in the horizon year (2045) under Build conditions, except during the southbound evening peak hour, allowing more-efficient fuel consumption than under congested conditions. Shifting traffic from auto to transit mode would reduce vehicle use and save energy used by single-occupancy vehicles. Nominally increased demand would largely be offset by reductions in vehicle miles traveled resulting from Bus-on-Shoulder operations. These project features and benefits, along with construction avoidance and minimization measures and compliance with Caltrans and state regulations and requirements, would result in a less than significant impact.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact—Project design and construction energy conservation features are consistent with state and local policies to reduce energy. Therefore, the project would not result in an inefficient, wasteful, and unnecessary consumption of energy. Accordingly, there would be no impacts.

3.2.7 Geology and Soils

CEQA Significance Determinations for Geology and Soils

Would the project:

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, ii) Strong seismic ground shaking, iii) Seismic-related ground failure, including liquefaction, iv) Landslides; or

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 onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?

Less Than Significant Impact (a, c)— There are no known active faults in the area. Thus, impacts on construction workers or the traveling public related to surface fault rupture would be less than significant.

The project area, which is influenced mostly by the San Andreas Fault system, has a potential for strong seismic ground shaking. There is no obvious evidence of landslides in the project area. Based on similar structure locations, the soils are not prone to ground failure, such as liquefaction. Additionally, a geotechnical field investigation would be conducted, and a

Geotechnical Design Report with recommended design parameters would be prepared per Caltrans' Highway Design Manual. (Caltrans 2012) The project would be designed according to Caltrans' seismic standards, as provided in Caltrans' Highway Design Manual, minimizing the risk to construction workers or the traveling public from strong seismic ground shaking.

There is a low risk for landslides because of the topography and because the project would not involve cuts and fills or steep excavation. There would be no impacts on construction workers or the traveling public.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact—Ground-disturbing earthwork associated with road grading and construction could increase soil erosion rates and loss of topsoil. The Best Management Practices described in Section 2.2.1, Hydrology and Floodplain, and Section 2.2.2, Water Quality and Stormwater Runoff, would minimize erosion and the loss of topsoil. The impact would be less than significant. No mitigation would be required.

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?

Less Than Significant Impact—The project area is on soils known to not be expansive (i.e., have a high shrink-swell potential) and would be verified during a detailed field investigation conducted during the design phase. Additionally, minimization measures in the Geotechnical Design Report, such as the use of subgrade enhancement geotextile and cementitious binder, as well as BMPs, would be implemented to address soil issues, minimizing the risk to construction workers and the traveling public.

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 project would not require alternative wastewater disposal systems. There would be no impacts.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant with Mitigation Incorporated—As discussed in Section 2.2.3, Paleontology, fossil-bearing sediments can be found within the project boundaries, and fossils could be damaged during earthwork operations. Implementation of a paleontological mitigation plan that includes construction monitoring and fossil salvage, as described in standard measure PALEO-1, would reduce impacts to less than significant.

3.2.8 Greenhouse Gas Emissions

CEQA Significance Determinations for Greenhouse Gas Emissions

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact—As discussed in Section 3.3, Climate Change, the project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. As shown in Table 3.3, the construction of the project would result in a short-term increase of about 3,079 tons of carbon dioxide equivalent. Table 3.2 indicates that the long-term operation of the Build Alternative would increase greenhouse gas emissions slightly relative to conditions under the No-Build (No-Action) Alternative. The increase in emissions relative to the No-Build (No-Action) Alternative is primarily due to increases in traffic volume and vehicle miles traveled. The impact would be less than significant. No mitigation would be required.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact—Based on currently available scientific data, the project-level analysis of greenhouse gas emissions is limited. Although a greenhouse gas analysis is included for this project, numerous key greenhouse gas variables (e.g., fuel economy) that are likely to change dramatically during the design life of the project would further reduce the projected carbon dioxide emissions. Additionally, the project would not conflict with an applicable plan, policy, or regulation adopted to reduce the emissions of greenhouse gases because the project is consistent with the Santa Cruz County Regional Transportation Commission's Metropolitan Transportation Plan and the Association of Monterey Bay Area Governments' Regional Transportation Plan/Sustainable Communities Strategy, which considers goals stipulated by Assembly Bill 32, etc. The project would, therefore, not conflict with Senate Bill 375. Additionally, the project is consistent with the policies in the applicable city and county general plans; the project would help achieve the goals of providing a safe and efficient transportation system. This impact would be less than significant.

3.2.9 Hazards and Hazardous Materials

CEQA Significance Determinations for Hazards and Hazardous Materials

Would the project;

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or

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 Impact (a, b)—As discussed in Section 2.2.4, Hazardous Waste and Materials, humans and the environment could be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. Construction would involve the use of heavy equipment, involving small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous conditions in the project area.

Disturbing either yellow or white pavement markings by grinding or sandblasting, or removing treated wood posts or guardrails, could expose construction workers or the general public to lead chromate and other harmful chemicals unless standard removal protocols are followed. Exposing construction workers or the general public to these hazardous materials or wastes could pose a possible threat to human health. Soils on agricultural parcels could contain hazardous chemicals from past pesticide/herbicide use. Exposing construction workers or the general public to these hazardous materials or wastes could pose a possible threat to human health. The project would implement Caltrans' standard measure (HAZ-1) identified in Section 1.4.1, Build Alternative. Therefore, this impact would be less than significant.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

Less Than Significant Impact—As stated in Section 2.2.4, Hazardous Waste and Materials, there are several schools within 0.25 mile of the project. Humans and the environment could be exposed to various constituents from the accidental release of hazardous materials during construction activities. The use of heavy equipment would involve small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous releases in the project area. Caltrans routinely handles the types of hazardous releases that may occur during project construction through its Standard Specifications and Standard Special Provisions for removal, storage, and disposal of hazardous materials and wastes. This impact would be less than significant.

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—As discussed in Section 2.2.4, Hazardous Waste and Materials, there are hazardous waste and substance sites on the Cortese List within a 1-mile search of the project site. Testing for Aerially

Deposited Lead would be conducted during the project's design phase to determine whether elevated lead concentrations would be encountered during project construction activities and develop appropriate procedures for handling, reusing, and/or disposing of soils. This impact 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 2 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 closest public airport is the Watsonville Municipal Airport, which is about 10 miles southeast of the project area. Additionally, no aspect of the project would result in a safety hazard for people living or working in the project area. No impact would occur.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact—There may be temporary disruptions to the existing freeway during the construction period. Any required closures would be coordinated with emergency service providers, so their services are not affected. Project operation would improve traffic congestion and allow for formal passing opportunities. The project would make the highway safer, more reliable, and more efficient for emergency service providers and would benefit those served by these providers.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant Impact—There is the potential for wildland fires in the region, given the moderate Mediterranean climate and wind. However, the project site is not in a fire hazard severity zone, according to the California Department of Forestry and Fire Protection's Fire Hazard Severity Zone Map for the County of Santa Cruz. (California Department of Forestry and Fire Protection January 2020) The impact would be less than significant. No mitigation would be required.

3.2.10 Hydrology and Water Quality

CEQA Significance Determinations for Hydrology and Water Quality

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or groundwater quality; or

e) conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact (a, e)—The project area is within the jurisdiction of the Central Coast Regional Water Quality Control Board. The project's receiving waters are Nobel Creek, Ord Gulch, Potbelly Creek, Tannery Gulch, an unnamed tributary to Tannery Gulch, Borregas Creek, Soquel Creek, and Aptos Creek. Nobel Creek is a tributary to Soquel Creek, which ultimately drains to the Pacific Ocean. Ord Gulch is a tributary to Borregas Creek, which also drains to the Pacific Ocean. Additionally, Tannery Gulch, Potbelly Creek, and Aptos Creek drain to the Pacific Ocean.

Potential temporary impacts on existing water quality would result from staging and active construction areas, which could result in the release of fluids, concrete material, construction debris, sediment, and litter beyond the perimeter of the site. Sediment from construction would be minimized by using Caltrans' construction Best Management Practices for stormwater, including silt fence, fiber roll, check dam, concrete wash-out, and street sweeping.

Because the intended acreage of disturbed soil area would be more than 1 acre, a Stormwater Pollution Prevention Plan would be completed to minimize pollution and stormwater runoff during construction (see Section 2.2.2, Water Quality and Stormwater Runoff). A Stormwater Pollution Prevention Plan would be prepared by the contractor and approved by Caltrans. The Stormwater Pollution Prevention Plan would address potential temporary impacts via the implementation of appropriate Best Management Practices. Further, groundwater dewatering would not be necessary for project operation and maintenance activities. The project would not violate any water quality standards or waste discharge requirements or result in substantial degradation of surface or groundwater quality. Therefore, impacts on water quality would be less than significant. No mitigation would be required.

During construction, potentially sediment-laden flow can result from runoff over DSAs that 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. Earthmoving and other construction activities could cause minor erosion and runoff of topsoil into the drainage systems along the project corridor during construction, which could temporarily affect water quality in local waterways.

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

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—As discussed in Section 2.2.1, Hydrology and Floodplain, increased impervious surfaces could reduce the ability for groundwater recharge within the localized groundwater aquifer system. Soquel Creek and Aptos Creek are both listed in the Water Quality Control Plan for the Central Coast Region as having the groundwater recharge beneficial use. The reduction in the local aquifer and groundwater recharge also has the potential to impact the beneficial uses of groundwater basins. However, considering the size of the groundwater basin, the increase in the impervious surface area would not reduce water infiltration into the groundwater aquifer or cause a widespread, regional change in groundwater levels. To address the additional flows associated with increased impervious surface areas, the project would include stormwater runoff Best Management Practices to collect and retain or detain the additional flows within the project limits, as required by Caltrans' National Pollutant Discharge Elimination System MS4 permit and a Stormwater Management Plan. The project is not expected to have a long-term impact on surface water or groundwater. Local aquifer and groundwater recharge could occur during construction, but because the project would comply with the Caltrans MS4 permit, Best Management Practices would reduce this effect. The project would not impede sustainable groundwater management of the basin. The impact would be less than significant, and no mitigation would be required.

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 onsite or offsite; ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite; 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 iv) Impede or redirect flood flows?

Less Than Significant Impact (c.i through c.iv)—Earthmoving and other construction activities could cause minor erosion and runoff of topsoil into the drainage systems along the project corridor during construction, which could temporarily affect water quality in local waterways. The standards of the Construction General Permit, Caltrans, the County of Santa Cruz, and the City of Capitola require the project's contractor to implement a Stormwater Pollution Prevention Plan to comply with the conditions of the Construction General Permit (Standard Measure WQ-1), which would include soil stabilization and other controls to reduce erosion. The impact would be less than significant.

The project would not substantially alter the existing drainage pattern in the area. As discussed in Section 2.2.1, Hydrology and Floodplain, the project would maintain the existing drainage pattern. Additional impervious surfaces would be added, and a Rapid Stability Assessment would be required to determine whether the project requires hydromodification management measures. The impact would be less than significant.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less Than Significant Impact—The potential release of pollutants as a result of project inundation could occur during construction involving sediment or contaminated runoff from disturbed work areas or potential spills that could result in temporary impacts on water resources. However, standard measures, including stabilizing construction areas, and sediment controls and filtration, would be implemented before a flood event to minimize impacts on water resources. (Standard Measure WQ-1) Further, the Stormwater Pollution Prevention Plan, which includes provisions to reduce and control discharges other than stormwater, would be implemented.

The release of pollutants due to project inundation during project operation may result from an increased impervious surface area, operation and maintenance activities—including automobile use—and discharges of sediments and other pollutants collected in stormwater and floodwater runoff. A Rapid Stability Assessment would be required to determine whether the project requires hydromodification management measures. As described in Standard Measure HY-1, coordination with local, state, and federal water resources and floodplain management agencies would be conducted as necessary during all aspects of the project to discuss these potential impacts on the floodplain. This impact would be less than significant.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less Than Significant Impact—The project area is within the jurisdiction of the Central Coast Regional Water Quality Control Board and subject to the Water Quality Control Plan for the Central Coast Region. The project would include hydrology and water quality standard measures, and implementation of the project's Stormwater Pollution Prevention Plan would also regulate discharges to ensure compliance with the water quality standards. The project is not expected to have long-term impacts on the beneficial uses of surface water or groundwater. Local aquifer and groundwater recharge could occur during construction, but because the project would comply with the Caltrans MS4 permit, Best Management Practices would reduce this effect. The project would not conflict with or obstruct the implementation of a water quality control plan or sustainable groundwater management plan. The impact would be less than significant.

3.2.11 Land Use and Planning

CEQA Significance Determinations for Land Use and Planning

Would the project:

a) Physically divide an established community?

No Impact—The project includes the widening of auxiliary lanes along State Route 1 from State Park Drive to the Bay Avenue/Porter Street interchanges. Therefore, the project would not physically divide an established community. No impact would occur.

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—The project is included in the Santa Cruz County Regional Transportation Commission's 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy and the Santa Cruz County Regional Transportation Plan. Additionally, the project would not conflict with the County of Santa Cruz General Plan.

The project would potentially be inconsistent with policies from the County of Santa Cruz and City of Capitola Local Coastal Programs. Avoidance, minimization, and mitigation measures, as well as standard measures listed in Chapter 1, would reduce but would not eliminate these potential inconsistencies. The project would be consistent with other policies from the Local Coastal Program because it would preserve the park and recreational land uses as stated in the Local Coastal Program and improve access to these resources by decreasing congestion and delay along State Route 1. Because the project traverses the Coastal Zone, a Coastal Development Permit from the County of Santa Cruz and the City of Capitola would be required. Additionally, consultation with the California Coastal Commission regarding discharges into Critical Coastal Areas and a federal consistency determination would be needed.

3.2.12 Mineral Resources

CEQA Significance Determinations for Mineral Resources

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact (a, b)—There are no designated mineral resource areas in the project area or vicinity, and the project would not impede the extraction of any known mineral resources. There would be no impacts.

3.2.13 Noise

CEQA Significance Determinations for Noise

Would the project result in:

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?

Less Than Significant Impact—The City of Capitola's Municipal Code regulates noise through its Noise Ordinance. Chapter 9.12 Section 10 (B) of the Noise Ordinance states that construction noise shall be prohibited between the hours of 9:00 p.m. and 7:30 a.m. on weekdays and shall be prohibited on weekends except for Saturday work between 9:00 a.m. and 4:00 p.m. The County of Santa Cruz Municipal Code establishes noise regulations in Chapter 8.30 of its Noise Ordinance, which restricts offensive noise, defined in Chapter 8.30, Section 10, as "any noise which is loud, boisterous, irritating, penetrating, or unusual, or that is unreasonably distracting in any other manner such that it is likely to disturb people of ordinary sensitivities in the vicinity of such noise", between the hours of 10:00 p.m. and 8:00 a.m. The project is not subject to these ordinances, which are not part of the Local Coastal Programs. However, Caltrans would coordinate with local agencies and the public before construction can be performed in noise-sensitive areas during nighttime hours.

Land uses along the State Route 1 project corridor are predominantly residential with pockets of commercial and recreational parcels. Traffic on State Route 1 is the dominant source of noise in the area. As discussed in Section 2.2.6, Noise and Vibration, the traffic noise modeling documented in the noise study report indicates that traffic noise levels would approach or exceed Caltrans' Noise Abatement Criteria at 53 receptor sites. Noise abatement was considered for affected receptor sites and would meet the criteria of abating noise by at least 5 A-weighted decibels at some sites, but not all. An increase of 12 A-weighted decibels is considered a substantial increase. None of the 80 receptor sites would experience an increase in noise that exceeds 12 A-weighted decibels or more over its corresponding modeled existing noise level. Therefore, this impact would be less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact—During certain construction phases, processes—such as earthmoving with bulldozers, the use of vibratory compaction rollers, impact pile driving, demolition, or pavement breaking—may cause construction-related vibration impacts such as human annoyance or, in some cases, building damage. There are cases where it may be necessary to use vibration-producing equipment close to residential buildings. Noise abatement would be considered for the project. Additionally, AMM-NOI-1 through AMM-NOI-10 would reduce construction noise and vibration by reducing equipment noise, using mufflers, restricting hauling, and minimizing nighttime construction.

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 2 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 closest public airport is the Watsonville Municipal Airport, which is about 10 miles southeast of the project area. There are no private airstrips in the project vicinity. No impacts would occur.

3.2.14 Population and Housing

CEQA Significance Determinations for Population and Housing

Would the project:

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); or

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Less Than Significant Impact (a, b)—Improvements to State Route 1 and increased alternative modes of travel are expected to reduce congestion in the State Route 1 corridor. As stated in Section 2.1.2, Growth, the project is not expected to cause direct impacts related to growth. However, the project could make areas where developable land is still available more appealing for future development if peak travel congestion and commute times are reduced. The project could indirectly contribute to growth pressure in the cities of Watsonville and Marina and the unincorporated communities of Live Oak, Aptos, and Freedom, where future growth could occur. If future growth does occur within those areas and is indirectly influenced by the project, the project would require independent environmental review.

No displacements of homes or businesses would occur as a result of the project, necessitating the construction of replacement housing elsewhere. Impacts would be less than significant. No mitigation would be required.

3.2.15 Public Services

CEQA Significance Determinations for 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:

Fire and Police Protection

Less Than Significant Impact—The Aptos-La Selva Fire Protection District and Central Fire Protection District provide fire protection and emergency rescue services to the project area. There are three fire stations within the project area. Police protection and traffic enforcement in the project area are provided by the Santa Cruz County Sheriff's Office, California Highway Patrol, and the Capitola Police Department.

The project would not result in direct impacts on fire or police stations and is not expected to adversely affect response times for emergency services associated with the fire station or police/sheriff department personnel. The changes to lane configuration in the project corridor may improve response times of emergency services, allowing emergency service personnel to bypass other vehicles safely and quickly.

During construction, there may be temporary disruptions along State Route 1 from shifting traffic or construction equipment. Traffic would be shifted to allow continued two-way operation of State Route 1, as described in the Transportation Management Plan. Any required closures would be coordinated with emergency service providers, so their response times are not affected. Delays in access, although temporary, could disrupt normal operations and may result in impacts on emergency services.

Schools and Other Public Facilities

The project would not result in permanent impacts on any community facilities; however, short-term indirect impacts on these facilities could occur as a result of partial lane closures, detours, and delays during construction. In particular, the temporary closure of Capitola Avenue during construction activities could affect access to nearby schools. The long-term effect of the project would be to reduce congestion and thereby enhance accessibility to the greater State Route 1 project area, which would benefit the community facilities.

Parks

The project would occur entirely within the existing right-of-way. However, implementation of the project could result in temporary impacts on parks and

recreational facilities during construction in the form of temporary lane closures that could affect certain access routes to these facilities. Additionally, implementation of the Transportation Management Plan would minimize short-term impacts on access resulting from construction activities and would ensure access to parks and recreational facilities is maintained throughout construction.

3.2.16 Recreation

Significance Determinations for Recreation

a, b) 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; or

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 (a, b)—While there are recreational facilities near the project area, the only impact on these facilities would be temporary and involve accessing nearby parks and facilities during the construction phase. The project would not increase the use of existing recreational facilities, and there would be no impacts.

The project would occur within the existing right-of-way of State Route 1. The project would not result in the construction or expansion of recreational facilities and would have no impact.

3.2.17 Transportation

CEQA Significance Determinations for Transportation

Would the project:

a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

No Impact—The project is included in the Santa Cruz County Regional Transportation Commission's 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy and the Santa Cruz County Regional Transportation Plan. The project would not conflict with any applicable plan or policy addressing circulation. There would be no impacts.

b) Conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

Significant and Unavoidable Impact—The traffic study and vehicle miles traveled memo prepared for the project indicate that project construction would cause up to a 1.2 percent increase in vehicle miles traveled on State Route 1 compared to conditions under the No-Build (No-Action) Alternative. During the southbound evening peak period, project construction could cause up to a 6 percent increase due to the removal of a bottleneck in the project limits. However, the induced demand on the freeway is expected to be mostly a result of a shift in traffic from arterials (local roads like Soquel Drive) to the freeway. The reduction in vehicle miles traveled on arterials due to the added auxiliary lanes is expected to be the same or better than it would be under the No-Build (No-Action) Alternative (due to a higher mileage for parallel routes on arterials compared to the freeway). The net vehicle miles traveled change due to the auxiliary lanes is expected to be around zero.

The bus-on-shoulder element of the project is expected to reduce vehicle miles traveled due to an increase in bus ridership, with an expected reduction of 310 cars per day. However, the results of the Traffic Operations Analysis Report indicate that there would be a small increase in freeway vehicle miles traveled compared to conditions under the No-Build (No-Action) Alternative (up to 0.5 percent) due to the backfilling of traffic during periods of congestion.

Overall, although the project would reduce vehicle miles traveled for some scenarios, the operational impacts would be considered significant. Certain project elements would support the use of alternative forms of transportation and help offset the expected increase in vehicle miles traveled from the project. The bus-on-shoulder element would improve bus services through the project corridor and increase bus ridership. Construction of the Mar Vista Drive pedestrian and bicycle overcrossing would improve pedestrian and bicycle facilities and increase the connectivity of existing facilities in the region. Still, these project elements may not fully offset the expected increase in vehicle miles traveled as a result of project construction, and it is expected that impacts would remain significant.

The same number of travel lanes would be maintained throughout construction, so a measurable change in vehicle miles traveled is not expected. Vehicle trips used for construction purposes would be temporary, and any generated vehicle miles traveled would generally be minor and limited to construction equipment and personnel and would not result in a long-term trip generation.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact—No incompatible uses or hazardous design features are associated with the operation of the project. The project would

widen 2.7 miles of State Route 1 and improve traffic operations and safety along this segment of the freeway. The impact would be less than significant.

During construction activities, a short-term increase in the potential for accidents involving motor vehicles and bicycles could occur. Because of the temporary disruption to traffic flow, the presence of construction equipment in the public right-of-way, and the localized increase in traffic congestion, drivers would be presented with unexpected driving conditions and obstacles, potentially increasing automobile accidents. These potential impacts would not substantially increase hazards because people are used to driving through construction areas, and one lane of travel in both directions would be open at all times during construction. Impacts would be less than significant, and no mitigation would be required. A traffic control plan would be prepared as part of the project to provide controlled access through the work site during construction.

d) Result in inadequate emergency access?

Less Than Significant Impact—The traffic control plan to be prepared and implemented would provide controlled access through the work site during construction. Although traffic would be slowed during construction, continuous access would be provided. This would avoid significant effects that could result from traffic stoppages, such as interruption of emergency access or access to homes and commercial businesses. The impact would be less than significant.

References

CDM Smith. 2020. Memorandum to Lara Bertaina – Caltrans and Shilpa Trisal – ICF. State Route 1 Bay Avenue/Porter Street to State Park Drive Auxiliary Lanes and Bus-on-Shoulder (BOS) Improvements Project – vehicle miles traveled Calculations.

3.2.18 Tribal Cultural Resources

CEQA Significance Determinations for 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:

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

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

No Impact (a, b) —The cultural resources studies and Native American consultation conducted for the project did not identify any tribal cultural resources within the project area.

3.2.19 Utilities and Service Systems

CEQA Significance Determinations for Utilities and Service Systems

"No Impact" and "Less Than Significant Impact" determinations in this section are based on the project scope and the Community Impact Assessment. (Caltrans 2020) There may be temporary disruptions to the existing freeway during the construction period, but detour routes would be available, and any required closures would be coordinated with emergency service providers.

Would the project:

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater 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 not require water or wastewater treatment because no potable water and/or toilets would be provided as part of the project. The project would require the overhead electric line and the waterline that run parallel to the Capitola Avenue overcrossing to be relocated, which could result in a temporary interruption of service, and all utilities would be notified in advance. This temporary impact would be less than significant.

The project design includes improved storm drainage facilities, which would minimize the potential for discharges of pollutants to nearby storm drains. Additionally, vegetative areas would allow for infiltration and water quality treatment. The project would be designed per the objectives of Caltrans' National Pollutant Discharge Elimination System Permit requirements and related stormwater requirements to reduce runoff and the volume of entrained sediment. Caltrans' stormwater quality manuals also include Best Management Practices to be implemented for erosion and sediment control and material management. The implementation of Best Management Practices would minimize impacts on drainage and water quality during long-

term operations at the site. The impact would be less than significant, and no mitigation would be required.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less Than Significant Impact—During operation, the project would require nominal amounts of water for the maintenance of plants and landscaping along the project corridor. During construction, water would only be used for dust control along the project corridor. Due to the minimal amount of water that would be required for dust control, the impact on the existing water supply would be less than significant.

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?

Less Than Significant Impact—The project would not generate wastewater. If dewatering is necessary for areas where groundwater is encountered, depending on surface and groundwater levels at the time of construction, a permit for the discharge of extracted groundwater would be obtained from the Regional Water Quality Control Board. This discharge would be consistent with Regional Water Quality Control Board requirements and, as such, would not result in a violation of water quality standards or waste discharge requirements. The impact would be less than significant.

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?

Less Than Significant Impact—Project construction would generate solid waste. However, the amount of solid waste generated by construction would not be substantial, would be limited to the construction time period, and would not result in a substantial reduction in the capacity of a landfill. Therefore, this impact would be less than significant.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact—No impacts on local solid waste facilities are expected. The project would comply with all federal, state, and local statutes and regulations

related to solid waste. Additionally, generated solid waste would be recycled when possible. No impacts would occur.

3.2.20 Wildfire

CEQA Significance Determinations for Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a–d) Substantially impair an adopted emergency response plan or emergency evacuation plan; or 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; or 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; or 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?

Less Than Significant Impact (a–d)—There is the potential for wildland fires in the region, given the moderate Mediterranean climate and wind. However, the project site is not in a fire hazard severity zone, according to the California Department of Forestry and Fire Protection's Fire Hazard Severity Zone Map for the County of Santa Cruz. (California Department of Forestry and Fire Protection January 2020) The project would implement a traffic control plan that would keep lanes open for emergency access at all times. The impact would be less than significant.

3.2.21 Mandatory Findings of Significance

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 with Mitigation Incorporated—The project is in a primarily coastal environment along an existing portion of State Route 1. Implementation of Caltrans' standard measures, which are described in Chapter 2, would ensure that the construction and operation of the project

would not reduce the habitat, population, or range of a plant or animal species; or eliminate important examples of California history or prehistory. Impacts would be less than significant with mitigation.

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).

Significant and Unavoidable Impact—The development has the potential to further reduce the visual quality in the State Route 1 corridor. Visual impacts of the project include the loss of mature trees along the project corridor, the length of time required for replacement trees to reach maturity, and the inability to fully mitigate the visual impacts of the project. These factors suggest that the incremental contribution of the project to the cumulative visual impact may be considerable.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Significant and Unavoidable Impact—The implementation of the project could impact aesthetics. However, the implementation of Caltrans' standard measures and avoidance, minimization, and mitigation measures described in Section 2.1.4, Visual/Aesthetics, would reduce these adverse effects. As discussed in the Aesthetics section in Chapter 2 and Section 3.2.1, Aesthetics, impacts related to visual resources would be significant and unavoidable. Additionally, the project would result in an increase in vehicle miles traveled due to the removal of a bottleneck within the project limits.

Because vehicle miles traveled would be increased, this impact would be considered significant and unavoidable.

3.3 Climate Change

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

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change by the United Nations and World Meteorological Organization in 1988 led to increased efforts devoted to greenhouse gas emissions reduction and climate change research and policy. These efforts are primarily concerned with the

emissions of greenhouse gases generated by human activity, including carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, and various hydrofluorocarbons. Carbon dioxide is the most abundant greenhouse gas; while it is a naturally occurring component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated carbon dioxide.

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 greenhouse gas emissions to limit or "mitigate" the impacts of climate change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels). This analysis will include a discussion of both.

3.3.1 Regulatory Setting

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

Federal

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

NEPA (42 U.S. Code 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration 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. The Federal Highway Administration therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices. (Federal Highway Administration 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." (Federal Highway Administration 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 U.S. Code 6201) and Corporate Average Fuel Economy Standards. This act establishes fuel economy standards for on-road motor vehicles sold in the U.S. Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy program based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the U.S.

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. Environmental Protection Agency in conjunction with the National Highway Traffic Safety Administration is responsible for setting greenhouse gas 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 U.S. Fuel efficiency standards directly influence greenhouse gas emissions.

State

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

Executive Order S-3-05 (June 1, 2005): The goal of this Executive Order is to reduce California's greenhouse gas 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 Assembly Bill 32 in 2006 and Senate Bill 32 in 2016.

Assembly Bill 32, Chapter 488, 2006, Núñez and Pavley, The Global Warming Solutions Act of 2006: Assembly Bill 32 codified the 2020 greenhouse gas emissions reduction goals outlined in Executive Order S-3-05, while further mandating that the California Air Resources Board create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The legislature also intended that the statewide greenhouse gas emissions limit continue in existence and be used to maintain and continue reductions in emissions of greenhouse gases beyond 2020. (Health and Safety Code Section 38551(b)) The law requires the California Air Resources Board to adopt rules and regulations in an open

public process to achieve the maximum technologically feasible and cost-effective greenhouse gas reductions.

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

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

Senate Bill 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 Assembly Bill 32.

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

EO B-30-15 (April 2015) establishes an interim statewide greenhouse gas emission reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of greenhouse gas emissions to implement measures, pursuant to statutory authority, to achieve reductions of greenhouse gas emissions to meet the 2030 and 2050 greenhouse gas emissions reductions targets. It also directs the California Air Resources Board to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent. Greenhouse gases differ in how much heat each trap in the atmosphere (global warming potential). Carbon dioxide is the most important greenhouse gas, so amounts of other gases are expressed relative to carbon dioxide, using a metric called "carbon dioxide equivalent." The global warming potential of carbon dioxide is assigned a value of 1, and the global warming potential of other gases is assessed as multiples of carbon dioxide. 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.

Senate Bill 32, Chapter 249, 2016, codifies the greenhouse gas reduction targets established in Executive Order B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

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

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

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

Senate Bill 150**,** Chapter 150, 2017, Regional Transportation Plans: This bill requires the California Air Resources Board to prepare a report that assesses progress made by each metropolitan planning organization in meeting their established regional greenhouse gas emission reduction targets.

Executive Order 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 greenhouse gas emissions.

Executive Order 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 greenhouse gas emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This Executive Order also directs the California Air Resources Board to encourage automakers to produce more clean vehicles, formulate ways to help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

3.3.2 Environmental Setting

The project is in an urban area along State Route 1 in the County of Santa Cruz. This portion of State Route 1 provides connectivity between the cities of Santa Cruz/Half Moon Bay in the west and north and cities of Watsonville/Monterey in the east and south. This portion of State Route 1 provides access to populated areas of Capitola, Soquel, and Aptos, Cabrillo College, and Capitola, and Seacliff and New Brighton State Beaches. A park-and-ride facility is also near the State Park Drive interchange.

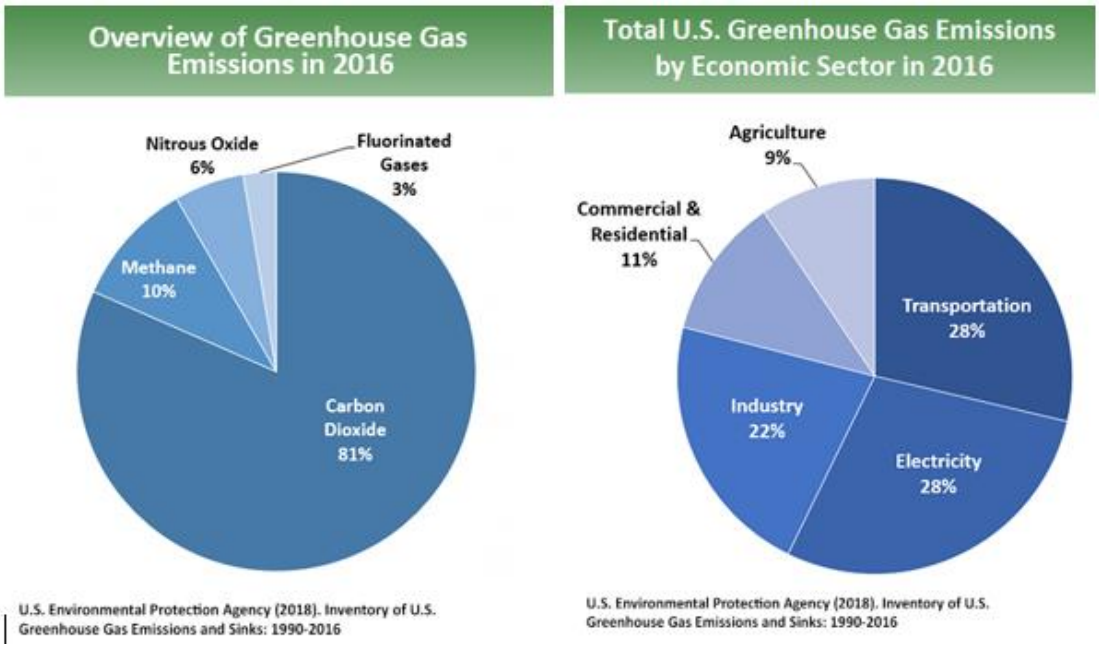
The surrounding land uses are primarily suburban/residential. Existing traffic volumes on State Route 1 northbound during the morning peak period and State Route 1 southbound during the evening peak period are approaching or equal to the capacity of the freeway. Existing peak hour speeds indicate that traffic congestion in the peak directions is growing in both severity and duration. Traffic incidents compound the effect on an already congested roadway, and 10-year historical collisions data on State Route 1 mainline and ramps indicate that most mainline segments and several ramps in the project corridor experience overall collision rates higher than the statewide average. The 2040 Regional Transportation Plan by the Santa Cruz County Regional Transportation Commission guides transportation and housing development in the project area. The County of Santa Cruz Climate Action Strategy and City of Capitola General Plan Open Space and Conservation Element address greenhouse gases in the project area. A greenhouse gas emissions inventory estimates the amount of greenhouse gases discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual greenhouse gas emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. The U.S. Environmental Protection Agency is responsible for documenting greenhouse gas emissions nationwide, and the California Air Resources Board does so for the state, as required by Health and Safety Code Section 39607.4.

National Greenhouse Gas Inventory

The U.S. Environmental Protection Agency prepares a national greenhouse gas 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 greenhouse gases in the U.S., reporting emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. It also accounts for emissions of carbon dioxide that are removed from the atmosphere by “sinks” such as forests, vegetation, and soils that uptake and store carbon dioxide (carbon sequestration). The 1990-2016 inventory found that of 6,511 MMTCO2e greenhouse gas emissions in 2016, 81 percent consist of carbon dioxide, 10 percent are methane, and 6 percent are nitrous oxide; the balance consists of fluorinated gases. (U.S. Environmental Protection Agency 2018a) In 2016, greenhouse gas emissions

from the transportation sector accounted for nearly 28.5 percent of U.S. greenhouse gas emissions.

Figure 3-1 U.S. 2016 Greenhouse Gas Emissions



State Greenhouse Gas Inventory

The California Air Resources Board collects greenhouse gas 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 greenhouse gas reduction goals. The 2019 edition of the greenhouse gas emissions inventory found total California emissions of 424.1 million metric tons of carbon dioxide equivalent for 2017, with the transportation sector responsible for 41 percent of total greenhouse gases. It also found that overall statewide greenhouse gas emissions declined from 2000 to 2017 despite growth in population and state economic output. (California Air Resources Board 2019a) See Figures 3-2 and 3-3.

Figure 3-2 California 2016 Greenhouse Gas Emissions

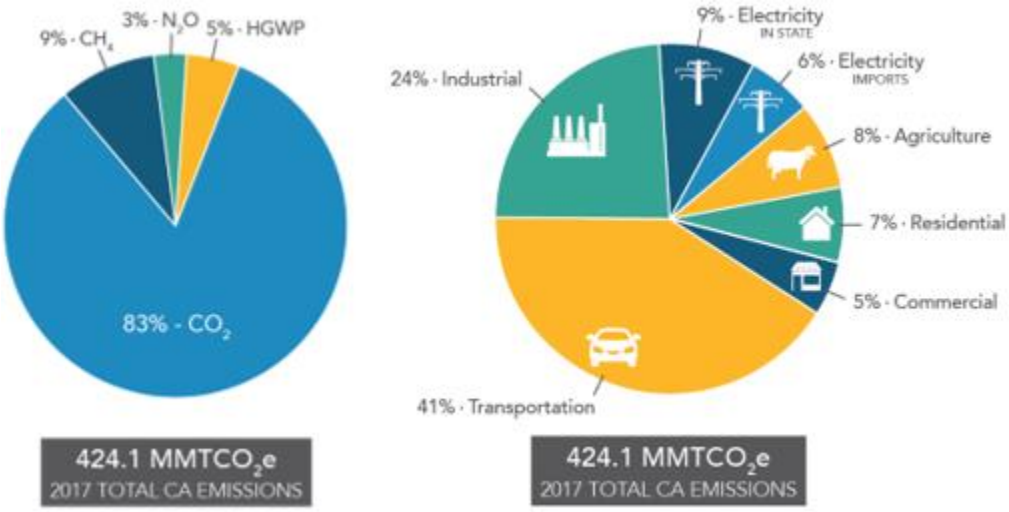
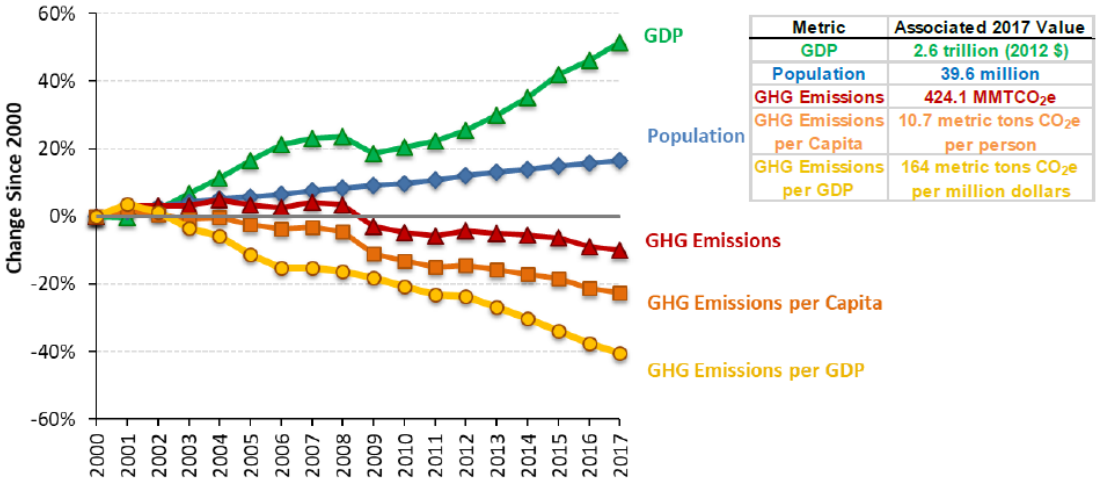


Figure 3-3 Change in California Gross Domestic Product, Population, and Greenhouse Gas Emissions Since 2000



Assembly Bill 32 required the California Air Resources Board to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing greenhouse gas emissions to 1990 levels by 2020, and to update it every 5 years. The California Air Resources Board 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 Executive Order B-30-15 and Senate Bill 32. The Assembly Bill 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce greenhouse gas emissions.

Regional Plans

The California Air Resources Board sets regional targets for California's 18 Metropolitan Planning Organizations to use in their Metropolitan

Transportation Plan/Sustainable Communities Strategy to plan future projects that will cumulatively achieve greenhouse gas reduction goals. Targets are set at a percent reduction of passenger vehicle greenhouse gas emissions per person from 2005 levels. The Association of Monterey Bay Area Governments is the Metropolitan Planning Organization for the project area. The regional reduction target for Association of Monterey Bay Area Governments is 3 percent by 2020 and 5 percent by 2035. (California Air Resources Board 2019c)

The project is within the jurisdiction of the Santa Cruz County Regional Transportation Commission and is included in the 2040 Regional Transportation Plan for Santa Cruz County. The 2040 Regional Transportation Plan identifies goals to work toward a sustainable transportation system that addresses the current and future transportation challenges in the county, including congestion, safety, and maintenance. Additional relevant plans are shown below in Table 3.1.

Table 3.1 Regional and Local Greenhouse Gas Reduction Plans

Title	Greenhouse Gas Reduction Policies or Strategies
Association of Monterey Bay Area Governments 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy and Regional Transportation Plans for Monterey, San Benito and Santa Cruz Counties (adopted June 2018)	Integrated multi-modal network; expand the public transit network; strategic capacity and technology; enhancements to existing highways; identify a list of projects that will add and enhance walking and biking facilities; Transportation Systems Management measures; Transportation Demand Management
Santa Cruz County 2040 Regional Transportation Plan (Adopted June 2018)	Implement transportation system management programs and projects on major roadways to increase efficiency; decrease vehicle miles traveled; improve multi-modal access; ensure network connectivity and reduce conflict by improving bicycle, pedestrian, and transit networks; locate new facilities close to existing services
County of Santa Cruz Climate Action Strategy (Adopted February 2013)	Public education about climate change and the impacts of individual actions; reduce vehicle miles traveled through Santa Cruz County and regional long range planning efforts; increase bicycle ridership and walking through incentive programs and investment in bicycle and pedestrian infrastructure and safety programs; increase employee use of alternative commute modes.
City of Capitola Climate Action Plan (adopted October 2015)	Sets reduction targets of 42.9 percent from 2010 levels by 2035 and 81 percent by 2050.
City of Capitola General Plan (Updated March 2019)	Open Space and Conservation Element: Promote sustainability and ensure city policies, programs, and actions are consistent with the Capitola Climate Action Plan.

3.3.3 Project Analysis

greenhouse gas emissions from transportation projects can be divided into those produced during operation of the state highway system and those produced during construction. The primary greenhouse gases produced by the transportation sector are carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons. Carbon dioxide emissions are a product of the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of methane and nitrous oxide are emitted during fuel combustion. In addition, a small amount of hydrofluorocarbon emissions is included in the transportation sector.

The State CEQA Guidelines generally address greenhouse gas emissions as a cumulative impact due to the global nature of climate change. (Public Resources Code Section 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.” (State CEQA Guidelines Sections 15064(h)(1) and 15130)

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits greenhouse gases must necessarily be found to contribute to a significant cumulative impact on the environment.

Operational Emissions

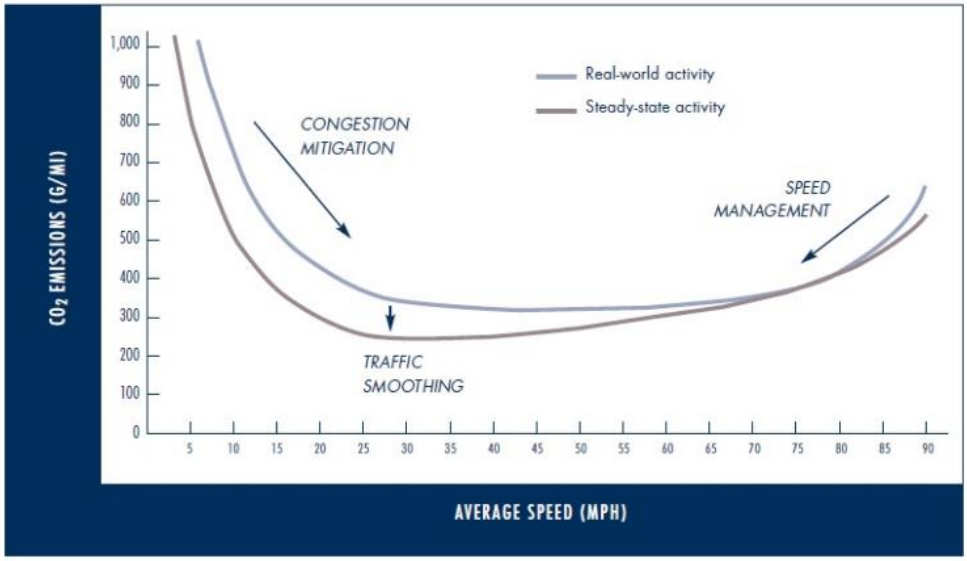
Carbon dioxide accounts for 95 percent of transportation greenhouse gas emissions in the U.S. The largest sources of transportation-related greenhouse gas emissions are passenger cars and light-duty trucks, including sport utility vehicles, pickup trucks, and minivans. These sources account for over half of the emissions from the sector. The remainder of greenhouse gas emissions comes from other modes of transportation, including freight trucks, commercial aircraft, ships, boats, and trains, as well as pipelines and lubricants. Because carbon dioxide emissions represent the greatest percentage of greenhouse gas 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 carbon dioxide from mobile sources such as automobiles occur at stop-and-go speeds (0 to 25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0 to 25 miles per hour (see Figure 3-4). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel

corridors, greenhouse gas emissions, particularly carbon dioxide, may be reduced.

Four primary strategies can reduce greenhouse gas emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning to lower greenhouse gas-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued concurrently.

Figure 3-4 Possible Use of Traffic Operation Strategies in Reducing On-Road Carbon Dioxide Emissions



The project is listed in the Santa Cruz County Regional Transportation Commission's 2040 Regional Transportation Plan. (Project ID RTC 24e) Projects included in the Regional Transportation Plan are required to be consistent with the planning goals of the State Implementation Plans adopted by local air quality management agencies. The Association of Monterey Bay Area Governments' 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy, adopted in June 2018, projects reductions in per capita greenhouse gas emissions from passenger vehicles. The reduction in emissions is attributed to the focus of the Metropolitan Transportation Plan/Sustainable Communities Strategy, which is to create a more sustainable transportation system and land use development pattern. The 2040 Metropolitan Transportation Plan/Sustainable Community Strategy targets expansion around multi-modal transportation systems, improving safety, expanding the transportation system to support the growing population, and improving highways and local arterials, including State Route 1. Altogether, the transportation improvements included in the Santa Cruz County Regional Transportation Commission Regional Transportation Plan and the Association of Monterey Bay Area Governments Metropolitan

Transportation Plan/Sustainable Communities Strategy would result in a more efficient transit system, greater availability of public transit and other alternative modes of transportation, and a more efficient land use scenario relative to business-as-usual conditions. The project would support this outcome by providing congestion and efficiency improvements on State Route 1 throughout the project area, by improving bicycle and pedestrian facilities, and by increasing transit efficiency through the implementation of bus-on-shoulder operations.

Quantitative Analysis

Regional operational emissions associated with project implementation were calculated using EMFAC2017. EMFAC2017 contains a comprehensive emissions inventory of motor vehicles that provides estimated emission rates for air pollutants. The long-term operational analysis focused on changes in vehicle miles traveled and average speed during the weekday peak hours, peak period, and off-peak hours to characterize the effects that implementation of the project would have on regional roadway circulation patterns and associated pollutant emissions. Speed based vehicle miles traveled was used to demonstrate the effectiveness of congestion relief. The emission rates provided by EMFAC2017 in grams of air pollutant emitted per hour were used in conjunction with traffic data presented in the Traffic Study prepared for the project.

Table 3.2 shows annual emissions produced by vehicle miles traveled and average speed for all scenarios. Annual vehicle miles traveled values in Table 3. 2 are derived from Daily vehicle miles traveled values multiplied by 347, per California Air Resources Board methodology. (California Air Resources Board 2008) By increasing capacity on State Route 1, the Build Alternative would increase average speed and daily vehicle miles traveled throughout the project area compared to the No-Build (No-Action) Alternative. Overall, however, carbon dioxide emissions would increase in future years relative to the 2019 Baseline/Existing Condition, despite increases in traffic volume and vehicle miles traveled. This can be attributed to a combination of congestion relief and expected changes in the fleet mix (e.g., more electric vehicles) and fuel efficiency.

Table 3.2 Modeled Total Annual Carbon Dioxide Emissions By Alternative, Based On Vehicle Miles Traveled and Average Speeds

Scenario/Analysis Year	Carbon Dioxide Emissions (Metric Tons Per Year)	Annual Vehicle Miles Traveled	Average Speed (Miles/Hour)
Baseline/Existing Conditions (2019)	80,925	229,393,827	56.3
Opening Year (2025) No-Build (No-Action) Alternative	72,152	239,188,160	54.3
Opening Year (2025) Build Alternative	74,179	242,399,164	56.0
Horizon/Design Year (2045) No-Build (No-Action) Alternative	62,126	258,278,901	51.7
Horizon/Design Year (2045) Build Alternative	67,265	266,108,349	52.0

Source: EMFAC2017.

While EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its greenhouse gas emission rates are based on tailpipe emission test data. [This analysis accounts for the effects of the U.S. National Highway Traffic Safety Administration and Environmental Protection Agency Safer Affordable Fuel-Efficient Vehicles Rule. Part One revoking California's authority to set its own greenhouse gas emissions standards was published on September 27, 2019, and effective November 26, 2019. The Safer Affordable Fuel-Efficient Vehicles Rule Part Two became effective June 30, 2020. It amends existing Corporate Average Fuel Economy and tailpipe carbon dioxide emissions standards for passenger cars and light trucks and establishes new standards covering model years 2021 through 2026. The proposal would retain the model year 2020 standards for both programs through model year 2026. Per the California Air Resources Board's guidance, the off-model adjustment factors were only applied to emissions from gasoline light duty vehicles (Passenger Cars, LDT1, LDT2 and Medium-Duty Trucks) to calculate the adjusted emissions]. Moreover, 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. Greenhouse gas emissions quantified using EMFAC are therefore estimates and may not reflect actual physical emissions. Though EMFAC is currently the best available tool for calculating greenhouse gas emissions from mobile sources, it is important to note that the greenhouse gas results are only useful for a comparison among alternatives.

Construction Emissions

Construction greenhouse gas emissions would result from material processing, onsite construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced

through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the greenhouse gas emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

Table 3. 3 shows the daily greenhouse gas construction emissions for each of the project phases. Emissions were estimated using the latest Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model. As shown below, the total amount of greenhouse gas emissions during construction would be 16,653 pounds per day. This converts to about 3,079 tons of carbon dioxide over the 24-month construction period.

Table 3.3 Daily Greenhouse Gas Construction Emissions

Project Phases	Carbon Dioxide
Land Clearing/Grubbing	14,444 pounds per day
Grading/Excavation	16,643 pounds per day
Drainage/Utilities	5,059 pounds per day
Paving	11,925 pounds per day
Maximum Daily	16,643 pounds per day
Project Total (tons)	3,079 tons

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 will comply with all the California Air Resources Board 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 greenhouse gas emissions.

The project would also implement standard measures AQ-4, AQ-5, AQ-8, and AQ-12 to reduce construction equipment emissions; and TR-1, Transportation Management Plan, to minimize emissions from delays and idling traffic, as described in Chapter 1 of this Environmental Impact Report/Environmental Assessment.

CEQA Conclusion

Implementation of the Build Alternative would increase average vehicle speeds during the peak hours and peak periods, which would also increase vehicle miles traveled and traffic volume compared to the No-Build (No-Action) Alternative. Annual carbon dioxide emissions, however, would decrease in 2025 and 2045 compared to existing conditions. This decrease can be attributed to a combination of congestion relief and expected changes

in the fleet mix (e.g., more electric vehicles) and fuel efficiency. In this way, the project would contribute to achieving statewide greenhouse gas-reduction goals. The Build Alternative is also listed in the 2040 Metropolitan Transportation Plan/Sustainable Communities Strategy related to regional management of greenhouse gas emissions and is consistent with regional greenhouse gas reduction goals. With the implementation of greenhouse gas-reduction measures during construction, the impact would be less than significant.

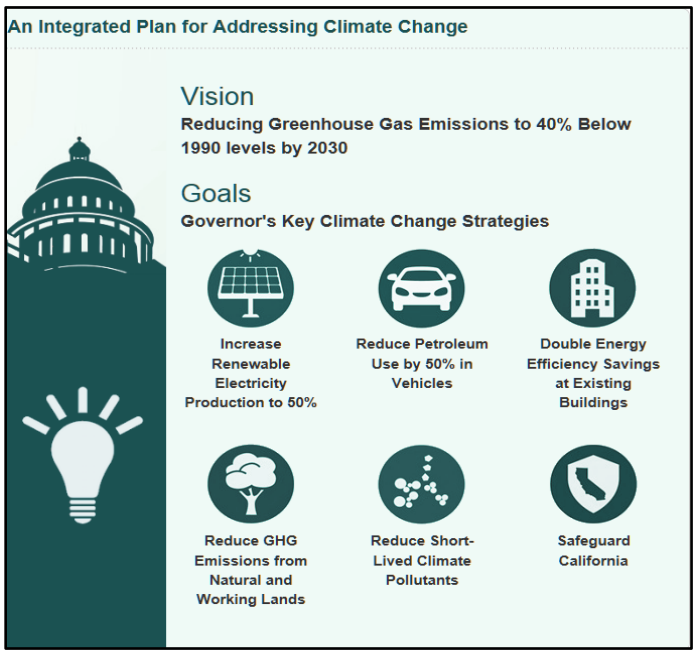
Caltrans is firmly committed to implementing measures to help reduce greenhouse gas emissions. These measures are outlined in the following section.

3.3.4 Greenhouse Gas Reduction Strategies

Statewide Efforts

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

Figure 3-5 California Climate Strategy



The transportation sector is integral to the people and economy of California. To achieve greenhouse gas 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. Greenhouse gas emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled. A key state goal for reducing greenhouse gas emissions is to reduce today's petroleum use in cars and trucks by up to 50 percent by 2030. (State of California 2019)

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

Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the California Air Resources Board works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in Assembly Bill 32. Executive Order B-30-15, issued in April 2015, and Senate Bill 32 (2016), set an interim target to cut greenhouse gas emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

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

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

Caltrans Strategic Management Plan

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

- Increasing percentage of non-auto mode share.
- Reducing vehicle miles traveled.
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) greenhouse gas emissions.

Funding and Technical Assistance Programs

In addition to developing plans and performance targets to reduce greenhouse gas 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 Regional Transportation Plan/Sustainable Communities Strategy; contribute to the state's greenhouse gas reduction targets and advance transportation-related greenhouse gas emission reduction project types/strategies; and support other climate adaptation goals (e.g., *Safeguarding California*).

Caltrans Policy Directives and Other Initiatives

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

Project-Level Greenhouse Gas Reduction Strategies

Project features include new and expanded bicycle and pedestrian facilities and improve bike lane connectivity, which would support non-motorized modes of transportation.

Bus-on-Shoulder facilities would enable buses to use the shoulder lane, avoiding traffic and congestion and shortening travel time. Improved transit service, along with increased service frequency, would reduce emissions by removing 310 vehicles from the road per day in each direction.

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

- **Standard Measure AQ-4:** The construction contractor shall properly tune and maintain construction equipment and vehicles.
- **Standard Measure AQ-5:** The construction contractor shall use low-sulfur fuel in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.
- **Standard Measure AQ-8:** All on-road and off-road diesel equipment shall not idle for more than 5 minutes. The contractor shall post signs in the designated queuing areas and/or job sites to remind drivers and operators of the 5-minute idling limit. For non-diesel equipment, idling time for lane closure during construction shall be restricted to 10 minutes in each direction.
- **Standard Measure AQ-12:** The construction contractor shall route and schedule construction traffic to avoid peak travel times as much as possible to reduce congestion and related air quality impacts caused by idling vehicles along local roads.
- **AMM-VA-11 Landscaping and Revegetation**. During design and construction, landscape and revegetate disturbed areas to the greatest extent feasible (given Caltrans' setback and maintenance requirements). Vegetation absorbs carbon dioxide.

3.3.5 Adaptation

Reducing greenhouse gas 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, and rising sea levels; variability in storm surges and their intensity; and variability in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

Federal Efforts

Under NEPA assignment, Caltrans is obligated to comply with all applicable federal environmental laws and Federal Highway Administration NEPA regulations, policies, and guidance.

The U.S. Global Change Research Program delivers a report to Congress and the president every 4 years, in accordance with the Global Change Research Act of 1990. (15 U.S. Code Chapter 56A Section 2921 et seq) The *Fourth National Climate Assessment*, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways." Chapter 12, *Transportation*, presents a key discussion of vulnerability assessments. It notes that "asset owners and operators have increasingly conducted more focused studies of particular assets that consider multiple climate hazards and scenarios in the context of asset-specific information, such as design lifetime." (USGCRP 2018)

The U.S. Department of Transportation 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 the U.S. Department of Transportation in order to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions." (U.S. DOT 2011)

Federal Highway Administration order 5520 (*Transportation System Preparedness and Resilience to Climate Change and Extreme Weather*

Events, December 15, 2014) established Federal Highway Administration policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. The Federal Highway Administration has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels. (Federal Highway Administration 2019)

State Efforts

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

- *Adaptation* to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- *Adaptive capacity* is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."
- *Exposure* is the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.
- *Resilience* is the "capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience." Adaptation actions contribute to increasing resilience, which is a desired outcome or state of being.
- *Sensitivity* is the level to which a species, natural system, or community, government, etc., would be affected by changing climate conditions.
- *Vulnerability* is the "susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt." Vulnerability can increase because of physical (built and environmental), social, political, and/or economic factor(s). These factors include, but are not limited to: ethnicity, class, sexual orientation and identification, national origin, and income inequality. 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.

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

Executive Order S-13-08 also led to the publication of a series of sea-level rise assessment reports and associated guidance and policies. These reports formed the foundation of an interim *State of California Sea-Level Rise Interim Guidance Document* (Sea Level Rise Guidance) in 2010, with instructions for how state agencies could incorporate "sea-level rise projections into planning and decision making for projects in California" in a consistent way across agencies. The guidance was revised and augmented in 2013. *Rising Seas in California—An Update on Sea-Level Rise Science* was published in 2017 and its updated projections of sea-level rise and new understanding of processes and potential impacts in California were incorporated into the *State of California Sea-Level Rise Guidance Update* in 2018.

Executive Order B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This Executive Order recognizes that effects of climate change other than sea-level rise also threaten California's infrastructure. At the direction of Executive Order 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.

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

Caltrans Adaptation Efforts

Caltrans Vulnerability Assessments

Caltrans is conducting climate change vulnerability assessments to identify segments of the state highway system vulnerable to climate change effects including precipitation, temperature, wildfire, storm surge, and sea-level rise.

The approach to the vulnerability assessments was tailored to the practices of a transportation agency, and involves the following concepts and actions:

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

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

Project Adaptation Analysis

The Governor's Office of Planning and Research prepared Planning and Investing for a Resilient California, a guidebook for state agencies performing climate risk analyses to determine how to integrate climate considerations into planning or investment decisions. The first step is to identify how climate change could affect a project or plan by identifying impacts of concern and assessing the scale, scope, and context of climate disruption. Next, a climate risk analysis can be conducted by selecting climate change scenarios for analysis and selecting an analytical approach. Following that, a climate-informed decision can be made by evaluating the alternatives and design and applying resilient decision principles. Finally, the agency can track and monitor progress by evaluating determined metrics, adjusting as needed. The adaptation analysis evaluates the first two steps to inform a decision for the project.

Assessing the scale, scope, and context of climate disruption for the project means considering the timeframe/lifetime, adaptive capacity, and risk tolerance of the project areas. The guidebook states, "If the expected lifetime of a project is less than 5 years, it may not be necessary to integrate longer-term climate change into the design and analysis." The project (i.e., roadway improvements along State Route 1) is expected to last far longer than 5 years, so the impacts of extreme events are considered to ensure that planning and investment decisions reflect the current and future climate conditions. In the following sections, the extreme impacts of climate change-based sea-level rise, flooding, and wildfire are addressed. Other extreme weather impacts, such as drought and extreme heat, are also expected as

changing climate conditions, but this analysis focuses on conditions that could potentially affect the project and its proposed structures.

Sea Level Rise

The project is partially within and next to the Coastal Zone from about 0.5 mile east of Porter Street (about post mile 13) to the eastern end of the project corridor at post mile 10.34. Therefore, a Sea Level Rise analysis is required in accordance with the California Coastal Commission, California Ocean Protection Council, and Caltrans planning guidance. The California Ocean Protection Council published the *State of California Sea-Level Rise Guidance 2018 Update* to assist in the preparation of Sea Level Rise analyses in planning documents. The analysis is informed by consultation of the 2019 *Caltrans* Climate Change *Vulnerability Assessment Summary Report—District 5* and Sea Level Rise visualizations for the project area available on the Cal-Adapt website, which provides a range of Sea Level Rise scenarios and resulting coastal inundation. The discussion of potential Sea Level Rise impacts also relies on the 2018 California Coastal Commission *Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development permits* and the 2011 Caltrans *Guidance on Incorporating Sea Level Rise.*

The 2011 Caltrans guidance presents three questions to be answered in an Sea Level Rise analysis:

1. Is the project on the coast or in an area vulnerable to Sea Level Rise?
2. Will the project be impacted by the stated Sea Level Rise?
3. Is the design life of the project beyond year 2030?

After determining whether the project is in the Coastal Zone, the 2018 California Ocean Protection Council Sea Level Rise guidance states that the analysis should identify the appropriate Sea Level Rise projections for the project area to address the second question. The decision framework used to determine the Sea Level Rise projections evaluates the consequences and risk tolerance of various planning decisions and is broken down into five steps:

- **Step 1: Identify the nearest tide gauge.**

The nearest tide gauge to the project area is in Monterey, about 25.5 miles south of the project corridor.

- **Step 2: Evaluate project lifespan.**

The project opening year is 2025 and the design/horizon year is 2045. As a comprehensive approach, Sea Level Rise projections are considered in 2030, 2040, 2050, and 2100. The 2018 California Ocean Protection Council Sea Level Rise guidance acknowledges that most of the available climate model

experiments do not extend beyond 2100, and therefore projections beyond 2100 are subject to a higher degree of uncertainty.

- **Step 3: For the nearest tide gauge and project lifespan, identify range of sea-level rise projections.**

Table 3.4 presents the range of Sea Level Rise projections for the Monterey tide gauge in 2030, 2040, 2050, and 2100 for both low emissions scenario (IPCC RCP 2.6) and high emissions scenario (IPCC RPC 8.5) with low, medium/high, and extreme risk aversion approaches. Low-Risk Aversion corresponds to a 66 percent probability that Sea Level Rise is up to the specified height by the associated year, Medium/High-Risk Aversion corresponds to a 0.5 percent probability that Sea Level Rise meets or exceeds the specified height (i.e., 99.5 percent change Sea Level Rise will be at or below this height), and the Extreme Risk Aversion is based on a single, maximally conservative estimate of Sea Level Rise by the associated year with no associated probability of occurrence.

Table 3.4 Monterey Sea Level Rise Projections

Year	Emissions Scenario	Low-Risk Aversion Sea Level Rise Projection (Feet)	Medium/High-Risk Aversion Sea Level Rise Projection (Feet)	Extreme Risk Aversion Sea Level Rise Projection (Feet)
2030	High	0.5	0.8	1.0
2040	High	0.8	1.2	1.7
2050	High	1.1	1.9	2.7
2100	High	3.3	6.9	10.1
2100	Low	2.3	5.5	Not Applicable

The data in Table 3. 4 demonstrate that the range of sea level rise projections is from 0.5 feet to 1.0 feet in 2030, from 0.8 feet to 1.7 feet in 2040, from 1.1 feet to 2.7 feet in 2050, and from 2.3 feet to 10.1 feet in 2100.

- **Step 4: Evaluate potential impacts and adaptive capacity across a range of sea-level rise projections and emissions scenarios.**

The Caltrans Climate Change Vulnerability Assessment District 5 Technical Report evaluated the roadways at risk of permanent inundation or exposure from higher sea levels within Caltrans District 5, which includes the County of Santa Cruz and the project area. The Technical Report used OPC projections in combination with National Oceanic and Atmospheric Administration data and identified no roadway segments in the County of Santa Cruz that would be impacted by up to 6 feet of Sea Level Rise. The project area was not identified as a location that would be impacted by Sea Level Rise in the District 5 Technical Report. Furthermore, the Technical Report did not identify any locations in the project area that would be impacted by a combination of Sea Level Rise and storm surge effects.

The Cal-Adapt web tool did not identify any segments of the project corridor that would be affected by up to 4.6 feet of sea level rise.

The National Oceanic and Atmospheric Administration Sea Level Rise Viewer identifies the project area as a medium vulnerability to the effects of climate change. The Sea Level Rise Viewer shows that with about 7 feet of Sea Level Rise (RPC 2.6 in 2100), project facilities would not be impacted by Sea Level Rise. The Sea Level Rise Viewer also demonstrates that with about 10 feet of Sea Level Rise (Extreme Risk Aversion in 2100), project facilities would remain unaffected by Sea Level Rise.

- **Step 5: Select Sea Level Rise projections based on risk tolerance and, if necessary, develop adaptation pathways that increase resiliency to Sea Level Rise and include contingency plans if projections are exceeded.**

Taking a conservative approach, the analysis for the project considers the Extreme Risk Aversion Sea Level Rise in 2030 (1.0 feet), 2040 (1.7 feet), and 2050 (2.7 feet), and the Medium/High-Risk Aversion—Low Emissions Sea Level Rise (6.9 feet) and the Extreme Risk Aversion (10.1 feet) Sea Level Rise projections for 2100. The Extreme Risk Aversion Sea Level Rise projection represents the worst-case scenario.

Based on the range of Sea Level Rise projections and the analytical resources available (Cal-Adapt, National Oceanic and Atmospheric Administration Sea Level Rise Viewer, 2019 Caltrans Vulnerability Assessment, and the 2018 Sea Level Rise Guidance), maximum Sea Level Rise projections in 2030 (1.0 feet), 2040 (1.7 feet), 2050 (2.7 feet), and 2100 (10.1 feet) would not have the potential to impact the project area. The Technical Report did not identify any locations in the project area that would be impacted by a combination of Sea Level Rise and storm surge effects, and this was confirmed using the Cal-Adapt tool. Therefore, no further consideration of adaptation strategies is warranted, and no adverse effects related to Sea Level Rise would occur at any location within the project area.

Floodplains Analysis

The project area transects five floodplains associated with creek crossings. Table 4 in the Location Hydraulic Study Report for the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact demonstrated that—for four out of the five floodplains associated with the project—the roadway elevations are higher than the 100-year base floodplain water surface elevations by a range of 13.1 feet (at Nobel Gulch) to 36.1 feet (at Soquel Creek). At Arana Gulch, the 100-year water surface elevation already overtops the roadway in the existing conditions. However, the water surface elevation at the State Route 1 crossing of Arana Gulch (water surface elevation of about 70 feet under existing conditions) is controlled by

watershed runoff, not by backwater from the ocean. Therefore, an increase in Sea Level Rise would not affect the project at the floodplains associated with creek crossings. There would be no adverse impacts related to Sea Level Rise and floodplains analysis.

Portions of the project limits fall within two Federal Emergency Management Agency Zone AE floodplains in the Soquel Creek and Nobel Creek watersheds (described in more detail in Section 2.2.1, Hydrology and Floodplain. Zone AE regions are areas subject to inundation during the base flood event where base flood elevations are provided). The project would increase impervious surface areas in these two watersheds by a total of 0.015 square mile, a small fraction of their respective 41-square mile and 1.2-square mile areas.

The Caltrans District 5 Climate Change Vulnerability Assessment (Caltrans 2019) evaluated potential changes in 100-year storm precipitation depth for three time periods—2025 through 2100. A return period storm event is the historical intensity of storms based on how often such levels of storms have occurred in the past. A 100-year design standard is often used in the design of transportation facilities and is cited as a consideration in the Caltrans Highway Design Manual.

The average annual precipitation in the Soquel Creek watershed is 42 inches, and in the Nobel Creek watershed is 29.5 inches. (Caltrans 2020) Mapping in the Vulnerability Assessment indicates a less than 5 percent increase in storm intensity by 2025 and an increase of between 5 percent and 9.9 percent through 2085. Several variables affect how a change in precipitation affects streamflows, making it difficult to assess how flows or water surface elevation would change in any given location. A qualitative assessment of potential floodplain impacts in the project's Location Hydraulic Study found that the soundwalls proposed next to Nobel Creek would be higher than the base floodplain and not subject to the effects of higher flows.

In the Soquel Creek floodplain near the eastern limits of the proposed Bay Avenue/Porter Street northbound on-ramp, the elevation at the ramp entrance from Porter Street and a portion of the pervious area between Porter Street and the on-ramp just north of State Route 1 would be inundated by the base flood elevation. At the eastern limit of the proposed Bay Avenue/Porter Street southbound off-ramp, the elevation is about the same or above the base flood elevation. At the current stage of design, these characteristics would mean adding several feet of fill depth to the Soquel Creek base floodplain. However, changes in base flood elevations throughout the project limits would be determined during a later design phase upon completion of a detailed hydraulic analysis. (Caltrans 2020) That analysis would consider the potential effects of future increases in storm precipitation depth on flood risk to the project and guide appropriate measures to be incorporated into the final design.

Wildfire

According to the 2019 Caltrans Vulnerability Assessment, the project area is generally classified as having a high level of concern that pertains to wildfires, and the project corridor is identified as a roadway exposed to wildfire impacts. Through consulting the CalFire Fire Hazard Severity Zone web mapping tool, it was determined that the project area is within a Local Responsibility Area and has not been designated as a Very High Fire Hazard Severity Zone at the local authority level. During construction, Caltrans' 2018 revised Standard Specification 7-1.02M(2) mandates fire prevention procedures, including a fire prevention plan, to avoid accidental fire starts. Furthermore, the project is in an urban area and is not expected to exacerbate the impacts of wildfires intensified by climate change.

References

California Air Resources Board (ARB). 2019a. California Greenhouse Gas Emissions Inventory–2019 Edition. https://ww3.arb.ca.gov/cc/inventory/data/data.htm. Accessed: August 21, 2019.

California Air Resources Board (ARB). 2019b. California Greenhouse Gas Emissions for 2000 to 2017. Trends of Emissions and Other Indicators. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf. Accessed: August 21, 2019.

California Air Resources Board (ARB). 2019c. SB 375 Regional Plan Climate Targets. https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets. Accessed: August 21, 2019.

California Department of Transportation. 2018. Caltrans Climate Change Vulnerability Assessments. District # Technical Report. December. Prepared by WSP. [Revise publication year and month and District number as needed. Only include if you have referenced this report. Modify as necessary for your District.]

Federal Highway Administration (FHWA). 2019. Sustainability. https://www.fhwa.dot.gov/environment/sustainability/resilience/. Last updated February 7, 2019. Accessed: August 21, 2019.

Federal Highway Administration (FHWA). No date. Sustainable Highways Initiative. https://www.sustainablehighways.dot.gov/overview.aspx. Accessed: August 21, 2019.

State of California. 2018. California's Fourth Climate Change Assessment. http://www.climateassessment.ca.gov/. Accessed: August 21, 2019.

State of California. 2019. California Climate Strategy. https://www.climatechange.ca.gov/. Accessed: August 21, 2019.

U.S. Department of Transportation (U.S. DOT). 2011. Policy Statement on Climate Change Adaptation. June. https://www.fhwa.dot.gov/environment/sustainability/resilience/policy_and_guidance/usdot.cfm. Accessed: August 21, 2019.

U.S. Environmental Protection Agency (U.S. EPA). 2009. Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Section 202(a) of the Clean Air Act. https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-clean. Accessed: August 21, 2019.

U.S. Environmental Protection Agency (U.S. EPA). 2018. Inventory of U.S. Greenhouse Gas Emissions and Sinks. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks. Accessed: August 21, 2019.

U.S. Global Change Research Program (USGCRP). 2018. Fourth National Climate Assessment. https://nca2018.globalchange.gov/. Accessed: August 21, 2019.

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 consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings, outreach, and a public scoping meeting. This chapter summarizes the results of these efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

Scoping Process for the EIR/EA

Public Outreach

Public outreach has been ongoing since 2004 for the larger Santa Cruz Route 1 Tier 1 and Tier 2 project, and most recently, through the scoping meeting held on October 23, 2019, for the project. The scoping meeting was held at the Community Foundation Santa Cruz County at 7807 Soquel Drive in Aptos, California.

Following the release of the draft environmental document for the project—State Route 1 Auxiliary Lanes—a public hearing would be conducted to receive public comments and answer questions about the project alternatives and environmental impacts. During this public review period, members of the public would be able to submit comments regarding the project.

Notice of Preparation and Public Scoping Meetings

A Notice of Preparation was issued for the project on October 7, 2019, and a 30-day comment period lasted from October 7, 2019, to November 8, 2019. The Notice of Preparation requested comments from the public regarding environmental issues, reasonable alternatives, and reasonable mitigation measures that should be discussed in the draft Environmental Impact Report/Environmental Assessment to address each agency's specific concerns in their areas of responsibility. Comments received from the public on the Notice of Preparation include:

- The suggestion to follow the appropriate process for tribal resources consultation and associated surveys.
- Acknowledgement that the improvements proposed by the project are necessary to alleviate traffic in this area.

- Comment encouraging consideration of noise impacts from the project, given existing noise levels.
- Suggestions to prioritize pedestrian and bicycle mobility and public transportation over vehicle mobility.
- Suggestions to coordinate with other planned transportation projects.
- Suggestions to extend the proposed improvements farther along State Route 1.
- Questions about the efficacy of bus-only lanes.
- Suggestions for additional or alternate ways to facilitate traffic improvements.
- Questions about data on previous, similar projects and their efficacy.
- Concerns about securing the appropriate project budget.

Consultation and Coordination with Public Agencies

During the preparation of the technical studies for the project, formal and informal coordination was conducted with the federal, state, and local agencies and entities listed below.

California Department of Fish and Wildlife

A query of the California Department of Fish and Wildlife California Natural Diversity Database was conducted using the RareFind 5 Internet application tool on February 14, 2020, for the search area encompassing the Soquel, California U.S. Geological Survey 7.5-minute topographic quadrangle and the surrounding quadrangles—Santa Cruz, Felton, Laurel, Loma Prieta, and Watsonville West. (California Natural Diversity Database 2020)

National Oceanic and Atmospheric Administration

A request for an official species list from the National Oceanic and Atmospheric Administration NMFS was made most recently on September 16, 2020, using the California Species List Tool—Google KMZ of NMFS Resources in California. (NMFS 2020)

U.S. Fish and Wildlife Service

An online request for an official species list from the Ventura U.S. Fish and Wildlife Service Office via the Information for Planning and Consultation website was conducted on September 16, 2020. (U.S. Fish and Wildlife Service 2020) The U.S. Fish and Wildlife Service led the Federal Endangered Species Act Section 7 consultation for the project.

U.S. Department of Agriculture

The U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey database (NRCS 2019) was accessed to identify soil map units in the vicinity of the project site.

Department of Toxic Substances Control

A search of the Department of Toxic Substances Control's EnviroStor Database was conducted to identify environmental regulatory records associated with the project corridor and nearby properties that would indicate environmental conditions (e.g., reported releases of hazardous substances and/or petroleum products), which may have the potential to adversely impact the project corridor and surrounding vicinity.

Native American Heritage Commission and Coordination with Local Native American Tribes

Caltrans has initiated the tribal consultation and outreach process per NHPA Section 106 and AB 52. Tribal consultation responses are forthcoming.

SWCA Consultants facilitated a record search for cultural resources that included the California Historical Resources Information System NWIC. In addition to official maps and records on file at the NWIC, the following inventories, publications, and technical studies were consulted as part of the cultural resources record search:

- National Register of Historic Places—Listed Properties
- California Register of Historical Resources
- California Inventory of Historical Resources
- California State Historical Landmarks
- California Points of Historical Interest
- California Office of Historic Preservation—Historic Property Directory and Determinations of Eligibility

Paleontological Record Search

A paleontological record search was conducted for the project using the institutional databases at the University of California Museum of Paleontology and the Santa Cruz Museum of Natural History. The Paleobiology Database was also consulted as part of the paleontological record search for the project.

Chapter 5 List of Preparers

Caltrans

This document was prepared by the following Caltrans Oversight staff:

Myles Barker, Editorial Specialist. B.A., Mass Communication and Journalism, California State University, Fresno; 5 years of writing and editing experience. Contribution: Technical Editor.

Lara Bertaina, Senior Environmental Planner. B.A., Environmental Studies and Planning, Sonoma State University; 3 years of urban planning and over 20 years of environmental planning experience. Contribution: environmental coordination oversight and oversight of preparation of the Draft Environmental Impact Report/Environmental Assessment.

Robert Carr, Landscape Architect and Scenic Resources Coordinator. B.S., Landscape Architecture, California Polytechnic State University, San Luis Obispo; 30 years of experience preparing Visual Impact Assessments. Contribution: oversight of the Visual Impact Assessment.

Larissa Clarke, Environmental Planner (Natural Sciences). M.S., Marine Resource Management, Oregon State University; B.S., Environmental and Natural Resources, Clemson University; 7 years of experience in watershed conservation and restoration, ecology, and environmental planning. Contribution: oversight of Natural Environment Study and Jurisdictional Delineation.

Shelly Donohue, Associate Environmental Planner. M.S., Earth and Environmental Sciences, Vanderbilt University; B.S., Biology, B.S. Earth and Space Sciences, University of Washington; 6 years of environmental planning experience. Contribution: environmental coordination oversight and oversight of preparation of the Draft Environmental Impact Report/Environmental Assessment.

Luis Duazo, Senior Transportation Engineer. B.S., Civil Engineering, California Polytechnic State University, San Luis Obispo; 20 years of experience in Project Management. Contribution: Project Management oversight.

Claudia Espino, Senior Transportation Engineer, B.S., Civil Engineering, California State University Fresno, 32 years of experience in Transportation Design. Contribution: design oversight.

Tom Fisher, Senior Transportation Engineer, B.S. Civil Engineering. San Jose State University; 30 years of experience in hydrology and hydraulics. Contribution: oversite of hydraulic studies.

Damon Haydu, Associate Environmental Planner (Archaeology). M.A., Cultural Resource Management, Sonoma State University; B.A., Anthropology, University of California at Santa Cruz; more than 20 years of experience in California and Great Basin archaeology. Contribution: Professionally Qualified Staff—Principal Investigator, Prehistoric and Historical Archaeology. Contribution: oversight of archaeological studies.

Krista Kiaha, Senior Environmental Planner. M.S., Anthropology, Idaho State University; B.A., Anthropology, University of California, Santa Cruz; more than 20 years of cultural resources experience. Contribution: oversight of cultural resource studies.

Joel Kloth, Engineering Geologist. B.S., Geology, California Lutheran University; more than 30 years of experience in petroleum geology, geotechnical geology, and environmental engineering/geology-hazardous waste. Contribution: oversight of the Initial Site Assessment.

Rajvi Koradia, Environmental Engineer. M.S., Civil and Environmental Engineering, San Jose State University; B.S., Environmental Engineering, L.D. College of Engineering, Ahmedabad, India; 2 years of environmental engineering experience. Contribution: oversight of water quality, air quality, and energy studies.

Daniel Leckie, Associate Environmental Planner (Architectural History). M.S., Historic Preservation, The University of Vermont; B.A., American History and Sociology, State University of New York at Stony Brook; over 6 years of experience in the fields of Architectural History and Historic Preservation Planning. Contribution: oversight of architectural history studies.

Isaac Leyva, Engineering Geologist. B.S., Geology; 30 years of experience in petroleum geology, environmental geology, geotechnical engineering. Contribution: oversight of the Paleontological Evaluation Report.

Karl Mikel, Senior Environmental Engineer. M.S., Civil and Environmental Engineering, California Polytechnic University, San Luis Obispo; B.S., Environmental Engineering; California Polytechnic University, San Luis Obispo; 12 years of experience in environmental engineering. Contribution: oversight of water quality, air quality, noise, energy, hazardous waste, and paleontology studies.

Don Nishikawa, Associate Transportation Engineer, B.S., Civil Engineering, California Polytechnic State University, San Luis Obispo; 20 years of experience in Central Region Hydraulics Branch. Contribution: oversight of hydraulic studies.

Margaret “Meg” Perry, Associate Environmental Planner (Natural Sciences). B.S. Soil Science, California Polytechnic State University, San Luis Obispo; 15 years of experience in California biology and habitat studies, emphasizing botany, wetland science, permitting, and environmental compliance. Contribution: oversight of the Natural Environment Study and Jurisdictional Delineation.

Pete Riegelhuth, Certified Professional in Erosion and Sediment Control Number 5336, National Pollutant Discharge Elimination System/Stormwater Coordinator, Landscape Associate. B.S. Landscape Architecture, California Polytechnic State University, San Luis Obispo; 5 years of experience as District Construction Stormwater Coordinator and 15 years as National Pollutant Discharge Elimination System/Stormwater Coordinator. Contribution: oversight of Stormwater Data Report and Water Quality Report.

Morgan Robertson, Senior Environmental Planner (Natural Sciences). M.S., Wildlife Biology, University of Alaska, Fairbanks; B.S., Biology, University of California, Davis; more than 20 years of biology experience. Contribution: oversight of the Natural Environment Study and Jurisdictional Delineation.

Sam Toh, Professional Engineer, Traffic Engineer, C62727/TR2300,Traffic Operation Analyst, Capital Outlay Support. M.S. in Civil and Environmental Engineering, California Polytechnic State University, San Luis Obispo, B.S., Engineering Science, California Polytechnic State University, San Luis Obispo; Over 20 years of experience in traffic analysis (Macro and Microsimulation), inter-government review, and 6 years of experience in structural engineering and construction management. Contribution: oversight of traffic studies.

Santa Cruz County Regional Transportation Commission

Sarah Christensen, Professional Engineer, Santa Cruz County Regional Transportation Commission Engineering and Construction Manager. M.S. in Transportation Management, Mineta Transportation Institute; B.S., Civil and Environmental Engineering, San Jose State University; 14 years of experience in transportation project delivery. Contribution: the Santa Cruz County Regional Transportation Commission Highway Program Manager involved with the project development and review of project components.

Martha Dadala Professional Engineer, Project Manager, MNS Engineers, Inc. B.S., Civil Engineering; M.S., Geotechnical Engineering, National Institute of Technology, Warangal. 28 years of project management, design of highway, interchange and local road projects. Project Manager on behalf of the Project Sponsor, the Santa Cruz County Regional Transportation Commission.

Guy Preston, Professional Engineer, Santa Cruz County Regional Transportation Commission Executive Director. Civil Engineering, University of California, Berkeley. 30 years of experience in project delivery and construction management. Contribution: Involved in the project development and review of project components for Santa Cruz County Regional Transportation Commission.

Other Agency Participants

Kailash Mozumder, Public Works Project Manager, City of Capitola. B.S., Ecology, Behavior, Evolution Minor, Environmental Studies, University of California, San Diego; 18 years of planning, management, and permitting experience throughout the state of California. For the City of Capitola Kailash works to plan and oversee the implementation of projects in their Capital Improvement Program. Represented the City in project development.

Kimberly Finley, Chief Real Property Agent, County of Santa Cruz, J.D., Southwestern Law School and B.A., Political Science, Loyola Marymount University; 9 years of real property and contract experience. Contribution: real property acquisition, appraisal oversight, quality and compliance control.

Matt Machado Professional Engineer, Deputy County Administrative Officer and Public Works Director, County of Santa Cruz. B.S. Civil Engineering, Cal State University, Fresno, M.B.A., CSU Stanislaus, Professional Engineer 58093, Land Surveyor 9055, 26 years of experience, Stakeholder and Owner Representative.

Robert Tidmore, Project Manager. M.LA., Landscape Architecture, University of CA, Berkeley; B.S., Environmental Geology, Bucknell University. 8 years of landscape architecture and project management experience. Contribution: document review and quality control.

Mark Thomas

Contribution: Engineering and Design

Zach Siviglia, Project Manager. B.S. in Civil Engineering, California State University, Sacramento. 15 years of experience managing freeway improvements, bridges, highway interchanges, local roadway

improvements, bicycle facilities, civil related transit improvements, streetscape designs, and downtown infrastructure improvements. Contribution: Engineering and Design.

Kira Davis, Project Engineer. B.S. in Civil Engineering, California State University, Sacramento. 9 years of experience in municipal and transportation engineering. Numerous projects, including freeway improvements, local roadway, bridge replacement, and bike facility projects. Contribution: Engineering and Design.

Erik Smith, Project Manager Landscape Architecture. B.S. in Landscape Architecture, California Polytechnic State University, San Luis Obispo. 22 years of experience in landscape architecture and planning and professional services from feasibility studies, master planning, streetscape design and community outreach to construction management. Contribution: Engineering and Design.

Eric Fredrickson, Project Manager Structures. B.S. in Civil Engineering, University of California, Davis. 32 years of experience in structural design and design oversight with Caltrans. Contribution: Engineering and Design.

CDM Smith

Contribution: Traffic Study

Chiranjivi S Bhamidipati, Transportation Planner, B.Tech and M.Tech (Dual Degree), Civil and Infrastructural Civil Engineering, IIT Madras, India, MS in Transportation Systems Engineering, University of Virginia. 16 years of experience in Transportation Planning/ Engineering and Research. Contribution: Traffic Study

William Hurrell, Vice President, M.S., Civil Engineering, University of California, Berkeley, B.S., Mechanical Engineering, University of California, San Diego; 45 years of experience in Transportation Planning/Engineering. Contribution: Traffic Study

Szu-han Chen, Transportation Planner, M.S. – Transportation, Massachusetts Institute of Technology, B.S., Urban Planning, National Cheng Kung University, Taiwan. 7 years of experience including traffic engineering, transportation planning, land use planning, public transportation, operations research, and transportation-related economics. Contribution: Traffic Study.

ICF

Contribution: Lead CEQA/NEPA consultant, Visual Impact Assessment, Cumulative Impact Assessment

Jennifer Andersen, Senior Environmental Planner. B.A., International Relations, University of Southern California; 7 years of CEQA/NEPA experience. Contribution: Community Impacts, Consistency with Plans and Programs, Visuals/Aesthetics, Transportation/Traffic, Cumulative Impact Assessment.

Jennifer Ban, Landscape Architect. B.S., Landscape Architecture, Pennsylvania State University; 21 years of experience in visual resource analysis and assessment. Contributions: Visual Impact Assessment.

Ken Cherry, Publications Specialist. M.A., Rhetoric, San Diego State University; B.A., English, San Diego State University; 40 years of experience in writing and editing. Contribution: Editor.

Lindsay Christensen, Senior Environmental Planner. B.S., Community and Regional Development, University of California, Davis; 15 years of experience in project management and coordination, technical writing, and environmental impact analysis. Contribution: Project Coordination.

Lydia Dadd, Environmental Planner. B.S., Environmental Studies, Santa Clara University. 1 year of environmental planning experience. Contribution: Noise, Distribution List, List of Preparers.

Pauline Fadakaran, Senior Data Entry Specialist. B.S., Environmental Science, University of California, Davis; 2 years of experience in data analysis and ADA compliance. Contributions: Land Use, Parks and Recreation, Community Character, Environmental Justice, Utilities and Emergency Services, Summary.

Jody Job, Publications Specialist. 40 years of experience in word processing and document coordination. Contribution: Document formatting.

Sandy Lin, Air Quality and Climate Change Specialist, NEPA/CEQA Generalist. M.C.P., Urban and Regional Planning, University of Pennsylvania; B.A., Economics, University of California, San Diego; B.A. Urban Studies and Planning, University of California, San Diego; 8 years of environmental planning experience. Contribution: Air Quality.

Donna McCormick, Environmental Planning Principal/Project Landscape Architect. B.S., Landscape Architecture, California State Polytechnic University, Pomona; 33 years of experience in project management,

environmental planning and analysis, and visual resource assessment. Contribution: Visual Impact Assessment.

Bill Parker, Senior Geographic Information Systems Analyst. B.A., Anthropology, University of California, Berkeley; 11 years of experience in Geographic Information Systems analysis. Contribution: Geographic Information Systems analysis.

Dan Schiff, Geographic Information Systems. Analyst. B.A., Geography, California State University, Sacramento; 16 years of environmental consulting and GIS experience. Contribution: Geographic Information Systems coordination and analysis, figure preparation.

Shilpa Trisal, Environmental Lead. M.C.P., Community Planning, University of Cincinnati, Ohio; B.A., Planning, School of Planning and Architecture, New Delhi, India; 16 years of planning and environmental planning experience. Contribution: Project management, document review, and quality control.

LSA Associates, Inc.

Contribution: Noise Study Report and Noise Abatement Decision Report

Amy Fischer, Principal. B.S., Environmental Policy Analysis, University of Nevada, Reno. 21 years of experience in Environmental Analysis. Contribution: Noise Study Report and Noise Abatement Decision Report

J.T. Stephens, Associate / Senior Noise Specialist. B.S. in Acoustical Engineering, Purdue University. 15 years of experience in Noise and Vibration Analyses. Contribution: Noise Study Report and Noise Abatement Decision Report.

Paleo Solutions, Inc.

Contribution: Paleontological Evaluation Report

Courtney Richards, Principal Paleontologist. M.S., Biological Sciences (Paleontology), Marshall University; 13 years of experience in in paleontological research and mitigation. Contribution: Paleontological Evaluation Report.

Barbara Webster, GIS Specialist. M.S., Geographic Information Systems, University of Redlands; 8 years of experience in GIS and Cultural Resources Management. Contribution: Paleontological Evaluation Report.

Vincent Zhao, Paleontologist. M.S., Geology, California State University, Northridge; 3 years of experience in paleontological mitigation. Contribution: Paleontological Evaluation Report.

Parikh Consultants, Inc.

Contribution: Preliminary Geotechnical Design Report

Craig Langbein, PG-9447, Registered Geologist. B.S., Geology (Honors); James Cook University, Townsville, Queensland. Registered geologist specializing in structural interpretation; field and pit mapping; remote sensing and GIS; geotechnical monitoring and assessment; mine geology exploration; 3D unmanned aerial aircraft photogrammetry; geochemistry; geophysics; research, assessment, reporting and sampling. Contribution: Preliminary Geotechnical Design Report.

Gary Parikh, Professional Engineer, Geotechnical Engineer, C-24227/GE 666, Principal In-Charge. B.S., Civil Engineering, M.S. University, India; M.S., Geotechnical Engineering, University of California, Berkeley, California; 48 years of experience in managing, supervising, and conducting geotechnical investigations and materials engineering services. Contribution: Project Manager

Kandeep Saravanapavan, Professional Engineer, Geotechnical Engineer, C-71739/GE 3040, Project Engineer. B.S. Civil Engineering, University of Peradeniya, M.S. Geotechnical Engineering, New Mexico State University, Las Cruces, NM. 14 years of experience in conducting geotechnical investigations and materials engineering services for a wide spectrum of transportation projects. Contribution: Preliminary Geotechnical Design Report.

Y David Wang, Professional Engineer. C-52911, Senior Project Engineer/Project Manager. Ph.D., Geotechnical Engineering, U.C. Berkeley, California; M.S., Geotechnical Engineering, U.C. Berkeley, California; B.S., Civil Engineering, National Cheng-Kung University, Taiwan; 35 years of experience in transportation projects, prepares reports in accordance with Caltrans standards for counties, cities, and self-help agencies (measure programs) throughout California. Contribution: QA/QC of the Preliminary Geotechnical Design Report.

SWCA Consultants

Contribution: Natural Environment Study, Jurisdictional Delineation Report, Archaeological Survey Report, Community Impact Assessment

Geoff Hoetker, Senior Biologist, M.S., Biological Sciences, California Polytechnic State University, San Luis Obispo; B.S., Biology, California State University, Bakersfield; 22 years of experience in biological sciences. Contribution: Natural Environment Study, Jurisdictional Delineation Report.

Kevin Howen, Geographic Information Systems Specialist, B.S., Earth Science, Cal Poly San Luis Obispo; 9 years of experience in Geographic Information Systems. Contribution: Geographic Information Systems analysis.

Leroy Laurie, Cultural Resources Team Lead. B.S. Social Sciences Cal Poly San Luis Obispo; 19 years of experience in archaeology, cultural resources, and project and client management. Contribution: Archaeological Survey Report

Jacqueline Markley, Environmental Planner. M.S., Environmental Management, University of San Francisco; 10 years of experience in environmental planning. Contribution: Community Impact Assessment.

Joseph Tomberlin, Senior Architectural Historian. M.H.P., Historic Preservation, Georgia State University; 24 years of experience in architectural historical resources. Contribution: Supplemental Historic Resources Evaluation Report.

Thomas Wheeler, Principal Investigator, M.A., Anthropology, Sacramento State University, B.A., Anthropology Sacramento State University, 45 years of experience in archaeology. Contribution: Archaeological Survey Report.

Terry A. Hayes Associates, Inc.

Contribution: Air Quality Report, Energy Technical Report

Sam Silverman, Senior Environmental Scientist. M.S., Environmental Health, University of California, Los Angeles; 19 years of experience in managing the preparation of Air Quality, Greenhouse Gas, and Energy Technical Reports with a focus on transportation projects. Contribution: Air Quality Report; Energy Analysis Report.

Anders Sutherland, Environmental Scientist. B.S., Atmospheric, Oceanic, & Environmental Sciences, University of California, Los Angeles; 10 years of experience preparing Air Quality, Greenhouse Gas, and

Energy Technical Reports with a focus on transportation projects. Contribution: Air Quality Report; Energy Analysis Report.

WRECO

Contribution: Location Hydraulic Study, Water Quality Assessment Report, and Initial Site Assessment

Christine Boschen, Senior Environmental Scientist. M.S., Soil and Water Science, University of California, Riverside; 20 years of experience in the fields of stormwater management and regulatory compliance. Contribution: Water Quality Assessment Report.

Wana Chiu, E.I.T. B.S., Civil Engineering, University of the Pacific, Stockton; 14 years of experience in the fields of hydrologic and hydraulic analysis and design. Contribution: Floodplain Evaluation Report.

Jada Golland, B.S., Natural Resource Management—Watershed Management, California Polytechnic State University, San Luis Obispo; 4 years of experience in GIS, water quality studies, stormwater data reports, Initial Site Assessments, and field investigations. Contribution: Water Quality Assessment Report, Initial Site Assessment.

Haimet Kassaye, E.I.T. M.S., Civil and Environmental Engineering, Georgia Institute of Technology. 6 years of experience in hydraulics and hydrology studies. Contribution: Floodplain Evaluation Report.

Melissa McAssey, Senior Geologist, P.G., QSD/P. M.S., Geology, California State University, Northridge. 31 years of experience in hydrogeology and geologic studies. Contribution: Initial Site Assessment.

Alec McConnell, M.S. Geology, California State University, East Bay. 2 years of experience in field work and initial site assessments. Contribution: Initial Site Assessment.

Analette Ochoa, Vice President, P.E., QSD/P, ToR. B.S., Civil Engineering, University of California, Davis. 26 years of experience in the fields of water quality, stormwater management, and hydraulics. Contribution: Floodplain Evaluation Report; Water Quality Assessment Report.

Kazuya Tsurushita, P.E. B.S. Civil and Environmental Engineering, University of California, Davis. 13 years of experience in hydrology, hydraulics, and floodplain studies. Contribution: Floodplain Evaluation Report.

Andrew Smith, P.G. B.S. Geology, San Francisco State University, San Francisco. 20 years of experience in environmental remediation, field sampling, Environmental Site Assessments, and Preliminary Site Assessments. Contribution: Initial Site Assessment.

Chapter 6 Distribution List

The State Clearinghouse distributed copies of this document to reviewing agencies. In addition, copies were sent to the agencies and stakeholders listed below.

- Aptos Chamber of Commerce
- Richard Corey, Executive Officer, California Air Resources Board
- Dan Carl, District Deputy Director, California Coastal Commission, Central Coast District Office
- Scott Wilson, Regional Manager, California Department of Fish and Wildlife, Bay Delta Region
- Ben Metcalf, Director, California Department of Housing and Community Development
- Lisa Mangat, Director, California Department of Parks and Recreation
- Scott Smithline, Director, California Department of Resources Recycling and Recovery
- Dean Messer, Chief, California Department of Water Resources, Environmental Services Office
- California Highway Patrol, Santa Cruz Division
- Daniel Gluesenkamp, Executive Director, California Native Plant Society
- Tim Sullivan, Executive Director, California Public Utilities Commission
- Lisa Lien-Mager, Deputy Secretary of Communication, California Resources Agency
- Jennifer Lucchesi, Executive Officer, California State Lands Commission
- David Kim, Secretary, California State Transportation Agency
- Ed Bottorff, Capitola City Council
- Vice Mayor Kristen Peterson, Capitola City Council
- Sam Story, Capitola City Council
- Yvette Brooks, Capitola City Council
- Mayor Jacques Bertrand, Capitola City Council
- Toni Castro, Chief Executive Officer, Capitola-Soquel Chamber of Commerce
- John M. Robertson, Executive Officer, Central Coast Regional Water Quality Control Board

- Richard Grunow, Community Development Director, City of Capitola Community Development
- Steve Jesberg, Director, City of Capitola Department of Public Works
- Mark Dettle, Director, City of Santa Cruz Department of Public Works
- Lee Butler, Director, City of Santa Cruz Planning and Community Development
- Steve Palmisano, Director of Public Works and Utilities, City of Watsonville
- Coastal Watershed Council
- Theresia Rogerson, Health Educator, Community Traffic Safety Coalition of Santa Cruz County
- California Department of Conservation, Division of Land Resource Protection
- David Tedrick, Federal Highway Administration
- University of California, Santa Cruz, Office of Planning and Budget
- Stephen Slade, Executive Director, Land Trust of Santa Cruz County
- Dr. Lorie Chamberland, Superintendent, Live Oak School District
- David Murillo, Regional Director, Mid Pacific Regional Office Bureau of Reclamation
- Debbie Bulger, Mission Pedestrian
- Cesar Lara, Executive Director, Monterey Bay Central Labor Council
- Richard Stedman, Air Pollution Control Officer, Monterey Bay Unified Air Pollution Control District
- Amanda Morrison, Central Coast Branch Supervisor, National Marine Fisheries Service Santa Rosa, California Office
- Laura Joss, Regional Director, National Park Service Pacific West Region
- Cynthia Gomez, Executive Secretary, Native American Heritage Commission
- Pacific Gas and Electric Company
- Shaz Roth, CEO, Pajaro Valley Chamber of Commerce
- Michelle Rodriguez, Superintendent, Pajaro Valley Unified School District
- Casey Beyer, Chief Executive Officer, Santa Cruz Chamber of Commerce
- Chris Krohn, Santa Cruz City Council
- Vice Mayor Justin Cummings, Santa Cruz City Council
- Drew Glover, Santa Cruz City Council

- Cynthia Mathews, Santa Cruz City Council
- Sandy Brown, Santa Cruz City Council
- Mayor Martine Watkins, Santa Cruz City Council
- Donna Meyers, Santa Cruz City Council
- Kris Munro, Superintendent, Santa Cruz City School District
- John Leopold, District 1, Santa Cruz County Board of Supervisors
- Zach Friend, District 2, Santa Cruz County Board of Supervisors
- Ryan Coonerty, District 3, Santa Cruz County Board of Supervisors
- Greg Caput, District 4, Santa Cruz County Board of Supervisors
- Bruce McPherson, District 5, Santa Cruz County Board of Supervisors
- Robert Singleton, Executive Director, Santa Cruz County Business Council
- Matt Machado, Director, Santa Cruz County Department of Public Works
- Jess Brown, Executive Director, Santa Cruz County Farm Bureau
- Dr. Faris Sabbah, Superintendent, Santa Cruz County Office of Education
- Kathy Previsich, Planning Director, Santa Cruz County Planning Department
- Chris Coburn, Executive Director, Santa Cruz County Resource Conservation District
- Jim Hart, Sheriff-Coroner, Santa Cruz County Sheriff
- Alex Clifford, Chief Executive Officer, Santa Cruz Metropolitan Transit District Administrative Offices
- Rick Longinotti, Bruce Van Allen, and Peter Scott, The Campaign for Sustainable Transportation
- Sierra Club, Santa Cruz County Group
- Joel Weinstein, Chair, Sierra Club, Ventana Chapter
- Scott Turnbull, Superintendent, Soquel Union Elementary School District
- California Office of Planning and Research State Clearinghouse
- Eileen Sobeck, Executive Director, State Water Resources Control Board
- Maura F. Twomey, Executive Director, The Association of Monterey Bay Area Governments
- Richard Bottoms, Division Chief, U.S. Army Corps of Engineers
- Janet Whitlock, Regional Environmental Officer, U.S. Department of the Interior Office of Environmental Policy and Compliance San Francisco Region

- Carol Sachs, U.S. Environmental Protection Agency, Region IX
- Rick Farris, U.S. Fish and Wildlife Service
- Carol Sachs, U.S. Environmental Protection Agency, Region IX
- Rick Farris, U.S. Fish and Wildlife Service
- Suzi Merriam, Director, Watsonville Community Development Department
- California Transportation Commission
- The Honorable Anna G. Eshoo, U.S. Representative, 18th District
- The Honorable Kamala Harris, U.S. Senator, State of California
- The Honorable Dianne Feinstein, U.S. Senator, State of California
- The Honorable Bill Monning, Member of the Senate, 17th District
- The Honorable Mark Stone, Member of the Assembly, 29th District
- The Honorable Robert Rivas, Member of the Assembly, 30th District
- The Honorable Jimmy Panetta, U.S. Representative, 20th District
- Lowell Hurst, Watsonville City Council
- Felipe Hernandez, Watsonville City Council
- Ari Parker, Watsonville City Council
- Aurelio Gonzalez, Watsonville City Council
- Francisco Estrada, Watsonville City Council
- Rebecca Garcia, Watsonville City Council
- Trina Coffman-Gomez, Watsonville City Council
- Jim Reed, Scotts Valley City Council
- Mayor Jack Dilles, Scotts Valley City Council
- Vice Mayor Randy Johnson, Scotts Valley City Council
- Donna Lind, Scotts Valley City Council
- Derek Timm, Scotts Valley City Council
- Matthew Wetstein, Superintendent, Cabrillo College
- Jim Murphy, Executive Director, Ecology Action
- Ray Cancino, CEO, Community Bridges Lift Line

Appendix A Title VI Policy Statement

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

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

Making Conservation a California Way of Life.

November 2019

NON-DISCRIMINATION POLICY STATEMENT

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

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

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

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

Toks Omishakin
Director

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

Appendix B Avoidance, Minimization and/or Mitigation Summary

- **AMM-VA-1 Aesthetic Guidelines.** Work with the community during preliminary design to develop aesthetic guidelines for the project improvements through a formalized structure that allows community input. Aesthetic guidelines should take into account and build upon the corridor aesthetic guidelines developed for the Santa Cruz Route 1 Tier 1/Tier 2 High-Occupancy Vehicle Lane project (Appendix N of the Santa Cruz Route 1 Tier I and Tier II Final Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact), which includes measures to develop a cohesive design approach for aesthetic treatments with community input. It also includes measures related to vegetation, noise barriers, retaining walls, bridge aesthetics, fencing and barriers, landscape plantings, and stormwater treatment facilities.
- **AMM-VA-2 Existing Vegetation Preservation**. During design and construction, save and protect as much existing vegetation in the corridor as feasible, especially eucalyptus and other skyline trees.
- **AMM-VA-3 Tree Survey**. Survey exact locations for the species and sizes of trees (by arborist) and include in the plan set.
- **AMM-VA-4 Drip Zone Protection**. Protect the drip zone of isolated trees and provide temporary fencing.
- **AMM-VA-5 Existing Plantings Protection.** Protect large areas of existing plantings and preserve them with temporary fencing.
- **Mitigation Measure-VA-6 Soundwall and Retaining Wall Treatments**. During design and construction, develop construction plans that apply aesthetic treatments to the soundwalls and retaining walls.
- **Mitigation Measure-VA-7 Soundwall Vine Plantings**. Include vine plantings on one or both sides of soundwalls where feasible (given Caltrans' setback and maintenance requirements). If vines are only planted on one side of the soundwall, include vine portals in the design of the soundwall to accommodate vine access to both sides of the soundwall.
- **Mitigation Measure-VA-8 Bridge Aesthetics**. During design and construction, develop construction plans that apply aesthetic treatments to the proposed Capitola Avenue overcrossing.
- **Mitigation Measure-VA-9 Median Barrier Aesthetics**. Include aesthetic treatments on concrete median barriers consistent with the visual character of the corridor and the nearby community.

- **Mitigation Measure-VA-10 Fence Replacement**. Replace existing chain-link fencing between State Route 1 and nearby frontage roads with ornamental fencing (applies where there is no soundwall).
- **AMM-VA-11 Landscaping and Revegetation**. During design and construction, landscape and revegetate disturbed areas to the greatest extent feasible (given Caltrans' setback and maintenance requirements).
- **AMM-VA-12 Skyline Trees**. Include skyline trees in the planting pallet to reduce the scale of the new highway elements.
- **AMM-VA-13 Frontage Road Planting**. Include infill shrub planting between State Route 1 and nearby frontage roads to the maximum extent possible.
- **Mitigation Measure-VA-14 Fence Vine Planting**. Include vines on a minimum of 20 percent of the fencing between State Route 1 and nearby frontage roads.
- **Mitigation Measure-VA-15 Irrigation**. Where horticulturally appropriate, provide a permanent irrigation system for all plantings.
- **Mitigation Measure-VA-16 Maintenance Period**. Include an extended 3-year maintenance period as part of the construction period to provide a single source of maintenance during construction and through the establishment of vegetation.
- **AMM-HY-1:** Cut and fill within the Soquel Creek floodplain would be balanced to the extent possible. Openings (or scuppers, which could be used in retaining walls, bridge rails, deck drainage, or concrete barriers) could be provided to maintain flood flows where applicable.
- **AMM-HAZ-1: Prepare a Preliminary Site Investigation for the Project Corridor.**
    - Conduct soil sampling near former agricultural fields next to State Route 1 and analyze samples for organophosphorus, organochlorine pesticides, and metals.
    - Conduct soil sampling along exposed soil next to the roadway for aerially deposited lead.
    - Conduct soil sampling along the project corridor in areas designated for soil disturbance and analyze soil for gasoline, diesel, waste oil, and volatile organic compounds.
    - Conduct soil sampling near utility poles that would be removed/relocated and analyze samples for polychlorinated biphenyls, metals, creosote, and pentachlorophenol.
    - If utility poles are moved or replaced, abate transformers before construction in coordination with Pacific Gas and Electric Company.

  - Sample the concrete within the Capitola Avenue Overpass for asbestos-containing materials during the Preliminary Site Investigation.
  - Reclaim and recycle concrete waste as appropriate.
- **AMM-NOI-1:** All equipment shall have sound-control devices no less effective than those provided on the original equipment. Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the job site without an appropriate muffler.
- **AMM-NOI-2:** Construction methods or equipment that would provide the lowest level of noise impact should be used (e.g., avoid impact pile driving near homes and consider alternative methods that are also suitable for the soil condition).
- **AMM-NOI-3:** Idling equipment shall be turned off.
- **AMM-NOI-4:** Truck loading, unloading, and hauling operations shall be restricted so that noise and vibration are kept to a minimum through residential neighborhoods to the greatest extent possible.
- **AMM-NOI-5:** Construction activities shall be coordinated to build recommended permanent soundwalls during the first phase of construction to protect sensitive receptors from subsequent construction noise, dust, light, glare, and other impacts, to the extent feasible.
- **AMM-NOI-6:** Noise barriers can be made of heavy plywood, moveable insulated sound blankets, or other best available control techniques.
- **AMM-NOI-7:** Newer equipment with improved noise muffling shall be used, and all equipment shall have the manufacturers' recommended noise-abatement measures (e.g., mufflers, engine covers, and engine vibration isolators) intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment shall be inspected at periodic intervals to ensure proper maintenance and presence of noise-control devices (e.g., mufflers and shrouding).
- **AMM-NOI-8:** Construction activities shall be minimized in residential areas during the evening, nighttime, weekend, and holiday periods. Noise impacts are typically minimized when construction activities are performed during daytime hours. However, nighttime construction may be desirable (e.g., in commercial areas where businesses may be disrupted during daytime hours) or necessary to avoid major traffic disruption. Coordination with the city or county shall occur before construction can be performed in noise-sensitive areas between 9:00 p.m. and 6:00 a.m.
- **AMM-NOI-9:** Construction laydown or staging areas shall be selected in industrially zoned areas. If industrially zoned areas are not available, commercially zoned areas may be used, or locations that are at least 100 feet from any noise-sensitive land use (e.g., homes, hotels, and motels).

- **AMM-NOI-10:** The contractor shall use a qualified acoustical engineer to prepare a Noise and Vibration Monitoring and Mitigation Plan and the contractor shall submit it for approval. The plan must outline noise and vibration monitoring procedures at predetermined noise and vibration sensitive sites. The plan also must include calculated noise and vibration levels for various construction phases and avoidance, minimization, and/or mitigation measures that meet the project specifications. The contractor shall not start any construction work or operate any noise-generating equipment at the construction site before approval of the plan. The plan must be updated every three months or sooner if there are any changes to the construction activities.
- **AMM-NOI-11:** Once details of the construction activities become available, the contractor shall work with local authorities to develop an acceptable approach to minimize interference with business and residential communities and traffic disruptions for the total duration of the construction.
- **AMM-NOI-12:** Good public relations shall be maintained with the community to minimize objections to unavoidable construction impacts. Frequent updates of all construction activities shall be provided. A construction noise monitoring program to track sound levels and limit the impacts shall be implemented.
- **AMM-NOI-13:** In case of construction noise complaints by the public, the resident engineer shall coordinate with the construction manager, and the specific noise-producing activity may be changed, altered, or temporarily suspended, if necessary.
- **AMM-NOI-14:** Restrict the hours of vibration-intensive equipment or activities such as vibratory rollers (e.g., weekdays during daytime hours only) so that impacts on residents are minimal.
- **AMM-NOI-15:** Ensure that owners of buildings close to a construction vibration source that could damage nearby structures are entitled to a pre-construction building inspection to document the pre-construction condition of that structure.
- **AMM-NOI-16:** Conduct vibration monitoring during vibration-intensive activities.
- **AMM-EN-1:** The final design plans shall provide landscaping where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting. Landscaping reduces surface warming and, through photosynthesis, decreases carbon dioxide.
- **AMM-EN-2:** The final design plans shall incorporate the use of energy-efficient lightings, such as light-emitting diode traffic signals and solar-powered flashing beacons during construction.

- **AMM-EN-3:** The Build Alternative shall incorporate the following Best Available Control Technologies related to energy use:
    - Use cement blended with the maximum feasible amount of fly ash or other materials (i.e., limestone).
    - Recycle construction materials. Recycled products typically have lower manufacturing and transport energy costs because they do not use raw materials, which must be mined and transported to a processing facility.
    - Use lighter-colored pavement where feasible to increase albedo.
    - Use recycled water or grey water for fugitive dust control.
    - Employ energy-efficient and fuel-efficient vehicles and equipment and zero- and/or near-zero emission technologies.
    - Encourage ride-sharing and carpooling for construction crews.
- **AMM-NC-1:** Before construction, Caltrans shall prepare a Mitigation and Monitoring Plan to mitigate impacts on vegetation and natural habitats. The Mitigation and Monitoring Plan shall be consistent with federal and state regulatory requirements and will be amended with any regulatory permit conditions, as required. Caltrans shall implement the Mitigation and Monitoring Plan as necessary during construction and immediately following project completion.
- **AMM-NC-2:** Before starting any ground-disturbing activities, environmentally sensitive area fencing shall be installed around jurisdictional waters and the dripline of trees to be protected within project limits. Caltrans-defined environmentally sensitive areas shall be noted on design plans and delineated in the field before the start of construction activities.
- **AMM-NC-3:** A qualified biological monitor(s) will ensure compliance with mitigation measures within the project's environmental documents. Monitoring shall occur throughout the length of construction or as directed by the regulatory agencies. Full-time monitoring shall occur during vegetation removal, water diversion, and temporary erosion control installation. Monitoring may be reduced to part-time once construction activities are underway, and the potential for additional impacts are reduced.
- **AMM-NC-4:** During project activities, the biological monitor(s) shall coordinate with federal, state, and local agencies and the construction contractor to ensure construction schedules comply with biological mitigation requirements.
- **AMM-NC-5:** Before project implementation, the project site shall be clearly flagged or fenced so that the contractor is aware of the limits of allowable site access and disturbance. Areas within the designated project site that

do not require regular access shall be clearly flagged as off-limit areas to avoid unnecessary damage to sensitive habitats or existing vegetation within the project site.

- **AMM-NC-6:** During project activities, work occurring within stream channels shall be conducted during the dry season, if possible (April 15 to October 15). If in-stream work will be necessary, a Diversion and Dewatering Plan shall be prepared and implemented.
- **AMM-NC-7:** The biological monitor(s) shall ensure that the spread or introduction of invasive exotic plant species will be avoided to the maximum extent possible. When practicable, invasive exotic plants in the project site shall be removed and properly disposed of offsite where appropriate and away from sensitive habitats.
- **Mitigation Measure-NC-8:** Affected jurisdictional waters (including federal, state, and/or Coastal Zone wetlands, other waters, and riparian areas) have typically been mitigated at a 1 to 1 ratio for temporary impacts and a 3 to 1 ratio for permanent impacts. The actual mitigation ratio required by the relevant agencies would be negotiated during the permitting process. Compensatory mitigation options shall include creation, restoration, enhancement, and preservation implemented either onsite (preferred) or offsite. Any removal of riparian trees would be offset by a replacement ratio as determined by the California Department of Fish and Wildlife in Section 1602 Lake or Streambed Alteration Agreement requirements. At a minimum, restoration and mitigation plantings shall achieve 75 percent survivability at the end of a 5-year period and require no further maintenance for survival. Onsite mitigation, if implemented, shall be conducted within the watershed that is being impacted, if feasible. Compensatory mitigation shall be implemented immediately following project completion. Compensatory mitigation plantings shall be monitored quarterly, and any required maintenance shall also occur quarterly. Maintenance activities would include weeding, debris removal, replanting (if necessary), repair of any vandalism, fertilizing, and/or pest control. The results of the quarterly monitoring effort would dictate maintenance activities. Quarterly reports and annual monitoring reports shall be submitted to Caltrans, the Santa Cruz County Regional Transportation Commission, and the affected regulatory agencies. The annual monitoring report submitted at year five shall serve as a final completion report should the mitigation be successful.
- **AMM-NC-9:** Coast live oak woodland trees that are not planned for removal shall be delineated on the project plans and provided protective fencing at a distance no less than the dripline of the affected tree canopy. Project equipment shall not be permitted to enter the coast live oak dripline canopy at any time during the length of the project.
- **AMM-NC-10:** Erosion control measures shall be implemented during project activities. Silt fencing, fiber rolls, and barriers (e.g., hay bales) shall

be installed between the project site and nearby coast live oak woodlands. At a minimum, silt fencing shall be checked and maintained daily throughout the construction period. The contractor shall also apply adequate dust control techniques, such as site watering, during construction.

- **AMM-NC-11:** During project activities, the cleaning and refueling of equipment and vehicles shall occur only within a designated staging area and at least 66 feet from coast live oak woodland habitat area. This staging area shall conform to Best Management Practices applicable to attaining zero discharge of stormwater runoff. At a minimum, all equipment and vehicles shall be checked and maintained daily to ensure proper operation and avoid potential leaks or spills.
- **AMM-AS-1:** If feasible, avoid eucalyptus tree removal or other disturbance of eucalyptus habitat from November 1 to March 1 to avoid potential impacts on winter roosting monarch butterflies.
- **AMM-AS-2:** If construction activities would impact suitable monarch butterfly overwintering habitat between November 1 and March 1, a qualified biologist shall conduct pre-construction surveys for overwintering monarch butterflies. Overwintering monarch butterfly surveys shall consist of a pre-construction survey before eucalyptus tree removal, with weekly surveys continuing until March 1. If no roosts are seen within the project site, then construction would be allowed to continue. If active roosts are seen, tree removal activities shall be delayed, and an appropriate setback for other construction-related activities shall be maintained until monarch butterflies have migrated from the site. All tree removal shall be monitored and documented by the biological monitor(s) regardless of the time of year.
- **Mitigation Measure-AS-3:** The removal of trees identified as active monarch butterfly winter roost sites shall be offset with the planting of native tree species, such as Monterey pine *(Pinus radiata)* or Monterey cypress *(Cupressus macrocarpa),* which monarch butterflies use for overwintering. Replacement of any lost overwintering habitat would occur at a 1 to 1 ratio. Replacement efforts shall achieve 75 percent success at the end of 5 years and require no further maintenance for survival. The compensatory mitigation shall be implemented immediately following project completion. Compensatory mitigation plantings shall be monitored quarterly, and any required maintenance shall also occur quarterly. Maintenance activities shall include weeding, debris removal, replanting (if necessary), repair of any vandalism, fertilizing, and/or pest control. The results of the quarterly monitoring effort would dictate maintenance activities. Quarterly reports, annual monitoring reports, and a final completion report shall be submitted to Caltrans, the Santa Cruz County Regional Transportation Commission, and the affected regulatory agencies. The annual monitoring report submitted at Year 5 shall serve as a final completion report should the mitigation be successful.

- **AMM-AS-4:** Qualified biologists shall conduct a pre-construction survey for Santa Cruz black salamanders, California giant salamanders, and western pond turtles in areas of suitable habitat where construction would occur. If regulatory agency approval allows, the qualified biologists shall capture and relocate any Santa Cruz black salamanders, California giant salamanders, and western pond turtles (if present) or other sensitive species to suitable habitat outside of the area of impact.
- **AMM-AS-5:** If feasible, removal of trees shall be scheduled to occur in the fall and winter (between October 1 and January 31), outside of the typical nesting season.
- **AMM-AS-6:** If construction activities are proposed to occur during the typical nesting season (February 1 to August 31), qualified biologists shall conduct a nesting bird survey of the area of disturbance no more than two weeks before construction to determine the presence/absence of nesting birds within the project area.
- **AMM-AS-7:** If evidence of migratory birds nesting that may be impacted by construction activities is discovered, or when birds are injured or killed as a result of construction activities, the contractor shall immediately notify an engineer or biological monitor. At a minimum, a 500-foot radius of the nest shall be designated an Environmentally Sensitive Area for nesting raptors, and a 250-foot radius shall be designated an Environmentally Sensitive Area for other nesting avian species unless otherwise directed by the U.S. Fish and Wildlife Service or California Department of Fish and Wildlife. Nests, eggs, or young of birds covered by the Migratory Bird Treaty Act and California Department of Fish and Wildlife would not be moved or disturbed until the end of the nesting season or until young fledge, whichever is later. Adult birds would not be killed, injured, or harassed at any time. The Environmentally Sensitive Area shall remain in place until such time that the nest is no longer considered active by the qualified biologist. The qualified biologist shall provide written notification to Caltrans, the Santa Cruz County Regional Transportation Commission, and the resource agencies.
- **AMM-AS-8:** If white-tailed kites are identified within the Biological Study Area at any time during the project, the biological monitor shall thoroughly document the species' activity and ensure that immediate project activities avoid any impacts on the species. If there is a potential for take, California Department of Fish and Wildlife shall be contacted immediately to ensure that avoidance of take is maintained throughout project activities.
- **AMM-AS-9:** Vegetation removal in potential nesting habitats shall be monitored and documented by the biological monitor(s) regardless of the time of year.
- **AMM-AS-10:** To prevent potential nesting bird conflicts and construction delays, it is recommended that bird nests be excluded from the existing Capitola Avenue overcrossing. Nesting bird exclusion methods may

include installing thick plastic sheeting, installing one-way exclusion devices over drain holes, removing/knocking down nests before they contain eggs or nestlings, or other methods approved by the California Department of Fish and Wildlife. The required time for the installation of bird exclusion devices is outside of the nesting season (i.e., implement exclusion methods from October 1 to January 31).

- **AMM-AS-11:** A qualified biologist shall conduct pre-construction surveys the year before construction for bat species that could use existing structures or trees for roosting habitat. If bats are identified as using areas within the Biological Study Area for day or night roosting, the qualified biologist shall identify the species of bat present. The biologist(s) conducting the pre-construction surveys shall also identify how the bat is using the bridge (i.e., maternity roost, day roost, or night roost).
- **AMM-AS-12:** If bat species are identified as roosting in areas that would be impacted, a plan to exclude bat species from impact areas shall be prepared before construction starts. This plan shall discuss methods of eliminating bat access to the identified roosting habitat before construction starts so that bats are not able to return to and occupy the roost. The appropriate timing for exclusion implementation shall be determined by the species identified as occurring within the project site. A qualified biologist shall survey roost areas before implementing exclusion methods to ensure that no bats are trapped within. This plan shall be submitted to the appropriate regulatory agency for approval.
- **AMM-AS-13:** Demolition of existing structures and vegetation removal shall occur outside of the bat maternity roosting season, typically during the spring and summer months.
- **AMM-AS-14:** If bats cannot be excluded from bat roosts, work activities shall be avoided within 100 feet of active maternity roosts until bat pups have been weaned and are deemed independent by a qualified biologist. Regulatory agencies shall be contacted for additional guidance if roosting bats are seen within the Biological Study Area during construction.
- **AMM-AS-15:** A qualified biologist shall be present periodically during construction activities to monitor the bat populations to ensure that all practicable measures are employed to avoid incidental disturbance to special-status bat species. Monitoring would be timed to occur during key construction events (e.g., removal of existing structures or trees with roosting habitat).
- **Mitigation Measure-AS-16:** If the project permanently affects a major roost location, compensatory mitigation would be required. Compensatory mitigation shall include replacement of suitable habitat that follows the guidance included within Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions. (H.T. Harvey and Associates 2019)

- **AMM-AS-17:** No more than 14 days before construction activities start, a qualified biologist shall conduct a pre-construction survey within the Biological Study Area in suitable habitat to determine the presence or absence of San Francisco dusky-footed woodrat middens.
- **AMM-AS-18:** If San Francisco dusky-footed woodrat middens are present during the pre-construction survey, the qualified biologist shall establish a minimum 25-foot buffer around each midden that can feasibly be avoided by project activities.
- **AMM-AS-19:** If project activities cannot avoid impacting the middens, a qualified biologist shall dismantle the middens by hand before the start of grading or vegetation removal activities. The midden dismantling shall be conducted such that the midden material is slowly removed, looking for young San Francisco dusky-footed woodrats. The material shall be placed in a pile at the closest undisturbed habitat and more than 50 feet from construction activities.
- **AMM-AS-20:** If young San Francisco dusky-footed woodrats are encountered during midden dismantling, the qualified biologist shall stop the dismantling activity and replace the material on the nest. The nest shall be left alone and rechecked weekly to see if the young San Francisco dusky-footed woodrats are out of the nest or capable of being independent without relying on adult care, as determined by a qualified biologist). Once the young San Francisco dusky-footed woodrats are determined to be independent, the nest dismantling can continue.

- **AMM-TE-1:** Biologists shall conduct a pre-construction survey for foothill yellow-legged frogs in areas of suitable habitat where construction would occur. Surveys for the foothill yellow-legged frog shall follow the recommendations (considered non-protocol) of the California Department of Fish and Wildlife Considerations for Conserving the Foothill Yellow-Legged Frog. (California Department of Fish and Wildlife 2018) In the unlikely event that foothill yellow-legged frogs are seen during pre-construction surveys, Caltrans shall coordinate with the California Department of Fish and Wildlife to determine if a Section 2081 Incidental Take Permit would be required before the start of construction. After negative pre-construction survey findings, in the unlikely event that foothill yellow-legged frogs are seen during monitoring of construction, all construction activities shall stop within 500 feet of the location, and Caltrans shall coordinate with the California Department of Fish and Wildlife to determine if a Section 2081 Incidental Take Permit would be required.
- **AMM-TE-2:** Implement measures provided by the Programmatic Biological Opinion for Projects Funded or Approved under the Federal Aid Program, 8-8-10-F-58 (U.S. Fish and Wildlife Service 2011), to avoid and minimize potential impacts on California red-legged frogs. Such measures include but are not limited to obtaining a U.S. Fish and Wildlife Service-

approved biologist to conduct training and participate in activities associated with surveys and the capture, handling, and monitoring of California red-legged frogs. Measures also include returning habitat contours to their original configuration, limiting access routes and staging areas, and scheduling work activities to avoid California red-legged frogs.

- **AMM-IS-1:** To avoid the spread of invasive species, the contractor shall stockpile topsoil and redeposit the stockpiled soil on slopes after construction is complete or transport all topsoil to a certified landfill for disposal.
- **AMM-IS-2:** During construction, the contractor shall make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing onsite should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free of invasive plant species, or the material must consist of purchased clean material such as crushed aggregate, sorted rock, or similar.
- **AMM-IS-3:** The landscape and restoration planting plans shall emphasize the use of native species expected to occur in the area. Project plans shall avoid the use of plant species that the Cal-IPC, California Department of Fish and Wildlife, or other resource organizations consider to be invasive or potentially invasive. Before issuance of grading permits, all project landscape and restoration plans shall be verified to ensure that the plans do not include the use of any species considered invasive by the Cal-IPC or California Department of Fish and Wildlife.

Appendix C Notice of Preparation

Notice of Preparation of a
Draft Environmental Impact Report/Environmental Assessment
and Notice of Scoping Meeting

**Highway 1 Auxiliary Lanes—
State Park Drive to Bay Avenue/Porter Street**

Santa Cruz County, CA

The California Department of Transportation (Caltrans), in association with the Santa Cruz County Regional Transportation Commission (SCCRTC), proposes improvements along State Route 1 (referred to as SR 1) in the City of Capitola and Santa Cruz County. Improvements under consideration include the construction of auxiliary lanes, implementation of bus-on-shoulder (known as BOS) operations, replacement of the Capitola Avenue overcrossing in the City of Capitola, and the installation of sound walls.

Caltrans plans to prepare a joint environmental document – an Environmental Impact Report/Environmental Assessment (known as an EIR/EA) – pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under CEQA and is assuming responsibilities of lead agency for the Federal Highway Administration under NEPA assignment.

Caltrans is distributing this Notice of Preparation to request comments from responsible and trustee agencies and interested members of the public regarding the significant environmental issues, reasonable project alternatives, and reasonable mitigation measures to be discussed in the draft EIR/EA.

Project Location

The proposed project would extend approximately 2.7 miles along SR 1 in Santa Cruz County between the State Park Drive interchange and the Bay Avenue/Porter Street interchange in the City of Capitola and unincorporated county (known as Aptos). The proposed project extends from post mile (PM) 10.34 to PM 13.43. Figure 1 shows the project location and vicinity.

Project Purpose and Need

The purpose of the project is to:

- Reduce congestion along SR 1 through the project limits
- Enhance bicycle and pedestrian connectivity by providing improved bicycle and pedestrian facilities
- Promote the use of alternative transportation modes to increase transportation system capacity and reliability
- Widen the overcrossing at Capitola Avenue to current standards

This project is needed because:

- Several bottlenecks along SR 1 in the southbound and northbound directions cause congestion during peak hours, significantly delaying drivers. As a result, "cut-through" traffic—or traffic on local streets—is increasing because drivers are seeking to avoid congestion on the highway.
- There are limited opportunities for pedestrians and bicyclists to safely navigate SR 1 in the project corridor, even though portions of the project area are designated as regional bicycle routes.
- There are insufficient incentives to increase transit service in the SR 1 corridor because congestion threatens reliability and cost-effective transit service delivery.
- The existing length (i.e., span) of the Capitola Avenue overcrossing cannot accommodate a wider freeway. In addition, the existing overcrossing does not meet current standards for vertical clearance over the freeway, has substandard widths, and does not have bicycle lanes across the bridge. The bridge must be reconstructed to meet current standards.

Project Background

Improvements in the project area were addressed previously in a combined Tier I/Tier II EIR with a Finding of No Significant Impact (known as a FONSI), which was adopted in December 2018. The Tier I component, referred to as the corridor improvement project, proposed approximately 8.9 miles of new high-occupancy vehicle (known as HOV) lanes, HOV on-ramp bypass lanes, auxiliary lanes, pedestrian and bicycle overcrossings, and reconstructed interchanges. It was recognized that the Tier I project would likely be implemented in phases. The Tier II component therefore analyzed the first phase of the corridor improvement project, which included auxiliary lanes between 41st Avenue and Soquel Avenue/Drive among other improvements within the Tier II project limits.

The proposed project is the second phase of the improvements described in the Tier I EIR/FONSI. The SCCRTC developed an implementation plan for building out the Tier I corridor improvement project based on traffic operation criteria to ensure that each phase identified as a future construction-level project would have independent utility because it would individually provide a benefit to traffic operations on SR 1. The proposed project has independent utility and logical termini because it would resolve a congestion problem on SR 1 between the State Park Drive interchange and the Bay Avenue/Porter Street interchange.

Project Description

Reasonable project alternatives are currently in development for the project. Proposed improvements would include the construction of auxiliary lanes on both the northbound and southbound sides of SR 1 between the State Park Drive and Bay Avenue/Porter Street interchanges. In addition, the project would include constructing retaining walls near the Bay Avenue/Porter Street interchange, replacing the Capitola Avenue overcrossing, and placing sound walls along the corridor as needed. BOS operations

would be accommodated through the interchanges by reconstructing or widening shoulders where shoulders are not currently wide enough for bus operation.

The widening would extend for approximately 2.7 miles along SR 1. The auxiliary lanes proposed are transportation system management features that would help improve operations and facilitate the BOS operations along the corridor.

Potential Environmental Effects

The project is expected to result in temporary and permanent environmental effects. The draft EIR/EA will determine what resources would be affected, the level of significance of these impacts, and feasible avoidance, minimization and mitigation measures to lessen the impacts. Based on preliminary information, potential environmental effects of the proposed project are outlined below.

Air Quality and Greenhouse Gas Emissions
During project construction, there may be temporary increases in fugitive dust and emissions from construction equipment and vehicles. An air quality study will quantify construction emissions and assess the potential for exposure to asbestos, lead, mobile source air toxic emissions, and cumulative impacts. Project-related regional changes in long-term mobile source emissions will also be included in the study.

Biological Resources
Preliminary studies indicate that the project may result in potential impacts to federally listed animal species (tidewater goby, southern California steelhead, California red-legged frog, least Bell's vireo, and southwestern willow flycatcher), California Rare Plant Rank species, California Species of Special Concern, and nesting native birds. Impacts may also occur to waters of the United States and riparian habitats. A fish passage assessment will be completed to identify potential barriers to upstream and downstream migration of anadromous fish that may be present in the biological study area. Any project-related impacts to fish passage will be studied. A Natural Environment Study will be prepared (including a Jurisdictional Waters Assessment), and a Biological Assessment will be prepared as part of the Section 7 consultation process with the U.S. Fish and Wildlife Service and National Marine Fisheries Service. Coordination with the California Coastal Commission, California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and the Regional Water Quality Control Board is also anticipated.

Coastal Zone
The project has the potential to affect resources protected by the Coastal Zone Management Act (CZMA) of 1972. A Coastal Development Permit will be required to ensure that the design criteria and use standards are consistent with the requirements of the CZMA. Avoidance and minimization measures will be identified to reduce impacts on sensitive resources in the Coastal Zone (e.g., biological resources, water quality, parks and recreational resources).

Cultural Resources
There is potential for cultural resources (archaeological and built environment) to occur within the project area. Review of prior technical studies indicated elevated sensitivity for prehistoric archaeological resources. As needed and in accordance with Caltrans guidelines and the Section 106 Programmatic Agreement, research, fieldwork, and

technical reporting will be undertaken (as necessary) to identify cultural resources in the project's Area of Potential Effects. The draft EIR/EA will provide information on the potential to affect cultural resources and identify appropriate avoidance, minimization, and mitigation measures.

Geology and Soils
The project will be designed in accordance with the Caltrans Highway Manual. A preliminary geotechnical design report will be prepared. All of the sound walls, retaining walls, and bridges will be designed to current Caltrans Seismic Design criteria.

Hazardous Waste and Materials
A phase I Initial Site Assessment has been completed for the project. Potentially hazardous materials may exist within the project limits including aerially deposited lead, asbestos-containing materials, lead-containing paint, treated wood waste, and yellow thermoplastic traffic stripe. Surveys will be completed prior to construction to evaluate the presence of these potentially hazardous materials and develop proper protocols for their handling and reuse or disposal. Appropriate avoidance, minimization, and mitigation measures will be identified to ensure proper handling and treatment of hazardous materials.

Noise
The proposed project has the potential to create short-term noise impacts during construction. Additionally, traffic on auxiliary lanes and BOS operations have the potential to result in long-term noise impacts. The noise study will identify measures to minimize and mitigate noise exceedances.

Paleontological Resources
Prior technical studies including a Paleontological Investigation Report and a Paleontological Evaluation Report identified the potential for paleontological resources to occur in the project area. A revised study will provide information on the potential to affect paleontological resources and will identify appropriate avoidance, minimization, and mitigation measures.

Parks and Recreational Facilities
During construction, the proposed project has the potential to affect access to nearby public parks and recreational facilities such as the New Brighton State Beach Park and Seacliff State Beach due to lane closures along SR 1 and the Capitola Avenue overcrossing. No construction activities or staging would occur on park property.

Utilities and Emergency Services
Replacement of the overcrossing at Capitola Avenue could require temporary relocation of utilities. Additionally, any lane closures could affect emergency providers. The draft EIR/EA will identify feasible measures to avoid and minimize impacts on service providers and users.

Transportation and Traffic
The proposed project has the potential to result in temporary lane and/or partial roadway closures along SR 1 and Capitola Avenue during construction. A construction-period traffic management plan will be developed and implemented to provide information on closures and provide detours with consistent access for vehicles and

bicycles. Overall, it is anticipated that auxiliary lanes and BOS improvements would improve traffic congestion and enhance safety. Replacement of the Capitola Avenue overcrossing would provide standard shoulder widths, sidewalks, and bike paths on both sides of the road.

Visual and Aesthetic Resources
The proposed project has the potential to create short-term temporary impacts to visual and aesthetic resources during construction. The proposed project could degrade visual quality due to removal of trees. A Visual Impact Assessment will be prepared that will identify feasible measures to avoid, minimize, and mitigate adverse impacts.

Water Quality and Stormwater Runoff
Soquel and Borregas Creeks are within the project limits and could be affected by the construction and operation of the proposed project. Erosion, sedimentation, and pollution discharge resulting from rain events, material exposure, and stormwater runoff are the most common threats to water quality during construction. A stormwater pollution prevention plan will be completed for the project. The construction activities will comply with construction best management practices, and measures identified in the plan will be implemented.

Scoping Meeting

A Scoping Meeting is planned for October 23, 2019, from 6:00 pm to 8:00 pm at the Community Foundation at 7807 Soquel Drive in Aptos. Caltrans is accepting comments until November 8, 2019, via mail and email at the address below.

Lara Bertaina, Senior Environmental Planner
California Department of Transportation, District 5
50 Higuera Street
San Luis Obispo, CA 93401
Lara.Bertaina@dot.ca.gov

Figure 1
Project Limits

List of Technical Studies

Air Quality Report (TAHA, 2020)

Community Impact Assessment (SWCA, 2020)

Cumulative Impact Assessment (ICF, 2020)

Energy Analysis Report (TAHA, 2020)

Focused Noise Study Report (LSA Associates, 2020)

Noise Abatement Decision Report (LSA Associates, 2020)

Water Quality Assessment Report (WRECO, 2020)

Natural Environment Study (SWCA, 2020)

Location Hydraulic Study-Floodplain Evaluation Report (WRECO, 2020)

Historical Property Survey Report (SWCA, 2020)

- Historic Resource Evaluation Report
- Historic Architectural Survey Report
- Archaeological Survey Report

Hazardous Waste Reports (WRECO, 2020)

- Initial Site Assessment

Visual Impact Assessment (ICF, 2020)

Paleontological Evaluation Report (Paleo Solutions, Inc. 2020)

Traffic Study Report (CDM, 2019)

To obtain a copy of one or more of these technical studies/reports or the environmental impact report/environmental assessment, please send your request to the following email address: info-d5@dot.ca.gov.

Please indicate the project name and project identifying code (under the project name on the cover of this document) and specify the technical report or document you would like a copy of. Provide your name and email address or U.S. postal service mailing address (street address, city, state and zip code).