EUREKA SLOUGH BRIDGES REPLACEMENT PROJECT

HUMBOLDT COUNTY, CALIFORNIA
DISTRICT 1–HUM–101 (PM 79.5/80.2)
EA 01-0M760 / EFIS 01230000066

Draft Environmental Impact Report/ Environmental Assessment, Draft Section 4(f) *de Minimis* and Draft Programmatic Section 4(f) Evaluation



Prepared by the
State of California, Department of Transportation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated May 27, 2022, and executed by FHWA and Caltrans.

June 2025



General Information about This Document

What's in this document:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed Eureka Slough Bridges Replacement Project located in Humboldt County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA). Caltrans is also the lead agency under the California Environmental Quality Act (CEQA). This document tells you why the project is being proposed, what alternatives have been considered for the project, how the existing environment 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 this document.
- Additional copies of this document and the related technical studies are available for review at Caltrans District 1, 1656 Union Street, Eureka, CA 95501. A copy of the document is also available at the Eureka Public Library, 1313 3rd Street, Eureka, CA 95501. This document may be downloaded at the following website: https://dot.ca.gov/caltrans-near-me/district-1/d1-projects/eureka-slough-bridges.
- Attend the virtual public hearing. July 23, 2025, at 6:00 pm at https://dot.ca.gov/caltrans-near-me/district-1/d1-projects/eureka-slough-bridges
- We would like to hear what you think. If you have any comments about the proposed project, please attend the virtual meeting and/or send your written comments via postal mail or email to Caltrans by the deadline.
- Send comments via postal mail to:
  Steve Croteau, Branch Chief
  Caltrans North Region Environmental
  1656 Union Street
  Eureka, CA 95501
- Send comments via email to: eurekasloughbridges@dot.ca.gov.
- Be sure to send comments by the deadline: August 9, 2025.

What happens next:

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

Alternative Formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Myles Cochrane, P.O. Box 3700, Eureka, CA 95502-3700; (707) 498-4272 (Voice), or use the California Relay Service 1 (800) 735-2929 (TTY to Voice), 1 (800) 735-2922 (Voice to TTY), 1 (800) 855-3000 (Spanish TTY to Voice and Voice to TTY), 1-800-854-7784 (Spanish and English Speech-to-Speech) or 711.



SCH# 2023090430
01-HUM-101 PM 79.5/80.2
01-0M760/0123000066

Replace the Eureka Slough Bridges on U.S. Highway 101 in Humboldt County from Post Mile 79.5 to Post Mile 80.2.

Draft Environmental Impact Report/Environmental Assessment, Section 4(f) de Minimis and Programmatic Evaluation

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C), 49 USC 303, and 23 USC 138

THE STATE OF CALIFORNIA
Department of Transportation

Cooperating Agencies:
U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, U.S. Coast Guard

Responsible Agencies:
California Transportation Commission
California Coastal Commission
California Department of Fish and Wildlife
California North Coast Regional Water Quality Control Board

Brandon Larsen _____ 05/20/25

Matthew K. Brady
District 1 Director
California Department of Transportation
CEQA/NEPA Lead Agency

Date

Please submit comments on this draft document by August 9, 2025. For more information about this document, contact: Jeff Pimentel, Project Manager, P.O. Box 3700, Eureka, CA 95501-3700, (707) 834-9529.



Summary

S-1 NEPA ASSIGNMENT

California participated in the “Surface Transportation Project Delivery Pilot Program” (Pilot Program) pursuant to 23 USC 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, the California Department of Transportation (Caltrans) entered into a Memorandum of Understanding pursuant to 23 USC 327 (NEPA Assignment MOU) with the Federal Highway Administration (FHWA). The NEPA Assignment MOU became effective October 1, 2012, and was renewed on May 27, 2022, for a term of ten years. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned, and Caltrans assumed, all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to the Department under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

S-2 PROJECT OVERVIEW

The California Department of Transportation (Caltrans) proposes the Eureka Slough Bridges Replacement Project (project) to replace the existing northbound and southbound Eureka Slough bridges (Caltrans Bridge Nos. 04-0022L&R) in Humboldt County on U.S. Highway 101 (U.S. 101) from Post Miles (PMs) 79.5 to 80.2.

The purpose of the project is to replace the two existing bridges that cross over Eureka Slough with two new structures that meet geometric and seismic standards while providing safe multimodal access. This draft environmental document evaluates two Build Alternatives (Alternatives 2A and 2B) and a No Build Alternative. The Build Alternatives would either replace both bridges on the existing alignment or replace the northbound bridge on the existing alignment and the southbound bridge adjacent to the existing southbound bridge location. The No Build Alternative would result in no project; the bridges would not be replaced, and multimodal features would not be constructed.

S-2.1 Lead Agencies and NEPA/CEQA Documentation

The proposed project is a joint project by Caltrans and the Federal Highway Administration (FHWA), and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under NEPA. Caltrans is the lead agency under CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other actions required by applicable federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 United States Code Section 327 (23 USC 327) and the Memorandum of Understanding dated May 27, 2022, and executed by FHWA 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 (EIR/EA).

After receiving comments from the public and reviewing agencies, a Final EIR/EA will be prepared. The Department may prepare additional environmental and/or engineering studies to address comments. The Final EIR/EA will include responses to comments received on the Draft EIR/EA and will identify the preferred alternative. If the decision is made to approve the project, a Notice of Determination (NOD) will be published for compliance with CEQA, and the Department will decide whether to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement (EIS) for compliance with NEPA. A Notice of Availability (NOA) of the FONSI will be sent to the affected units of federal, state, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

S-2.2 Project Area

The project is located within the city of Eureka along U.S. 101 in Humboldt County, California. U.S. 101 is the primary north-south transportation route through Humboldt County. Eureka Slough bridges, located at the north end of the city of Eureka on U.S. 101, accommodate a relatively high traffic volume. Near the northern limits of the city of Eureka, Eureka Slough passes under the northbound and southbound U.S. 101 bridges as the slough flows north into Humboldt Bay. West of the project location, the southbound and northbound lanes of U.S. 101 continue through Eureka (as 4th and 5th streets), bordered primarily by commercial businesses, some residential buildings, the State Route 255 junction, and the Old Town commercial district to the northwest.

The Eureka Waterfront Trail, part of the regional trail system, passes under the bridges at the western bridge abutments. East of the project location, and going in a northerly direction toward the city of Arcata, U.S. 101 is bordered to the south by a primarily industrial and business area along Jacobs Avenue. A mobile home park is located farther to the east along Jacobs Avenue, near Airport Road. Continuing northbound along U.S. 101 from the Airport Road junction, Murry Field (a Humboldt County public airport), car dealerships, and Fay Slough Wildlife Area are to the south. Near the northeast abutment of the southbound bridge, U.S. 101 is bordered by the Humboldt Bay National Wildlife Refuge and the Humboldt Bay Trail South. Farther to the east, and adjacent to southbound U.S. 101, is the old mill site at Brainard.

S-2.3 Purpose and Need

The purpose of the project is to improve the function and geometrics of the northbound and southbound Eureka Slough bridges to ensure uninterrupted traffic movement in the event of a collision or emergency incident, a seismic event, or any other catastrophic event. The project would upgrade the structures to current standards with separated bicycle/pedestrian pathways to promote and enhance safe mobility for all modes of transportation.

The project is needed to address structural and geometric deficiencies in the southbound and northbound Eureka Slough bridge structures. The southbound structure, built in 1943, has seismic deficiencies, is fracture critical, and has a non-standard profile which contributes to a collision rate at the bridge departure that is double the statewide average for similar facilities. The northbound structure, built in 1956, also has seismic deficiencies and non-standard bridge rails built on raised concrete curbs within the shoulders. Both structures are approaching their design life and have narrow shoulders that impede multimodal transportation.

S-2.4 Proposed Action

The proposed project would replace the existing Eureka Slough bridges and make roadway improvements on U.S. 101 from PM 79.5 to PM 80.2. Caltrans proposes to address seismic deficiencies and inadequate sight distance, which has contributed to an above-average concentration of collisions within the project limits. Within the limits of the project, U.S. 101 is a four-lane divided highway with standard 12-foot-wide travel lanes. The existing southbound bridge is 849-feet 6-inches in length and approximately 37-feet wide with a non-standard 4-foot-wide shoulder adjacent to the right lane. The existing northbound bridge is 946-feet 10-inches in length and approximately 37-feet wide with a 5-foot-wide raised sidewalk shoulder adjacent to the right lane.

Both structures have non-standard bridge rails, narrow left shoulders, and do not provide safe access for pedestrians and bicyclists. The project proposes two Build Alternatives (Alternatives 2A and 2B) and a No-Build Alternative.

Build Alternative 2A would replace both bridges on the existing alignment utilizing a temporary bridge to facilitate vehicle traffic during construction. Bicycle/pedestrian lanes would be included in the final design and connections from the bridge structures to nearby trails would be included. Bridge construction and demolition would require two temporary trestles.

Build Alternative 2B would replace the northbound bridge on the existing alignment and the southbound bridge would be replaced immediately to the north of the existing southbound bridge location. Construction phasing utilizing the existing and replacement bridges would facilitate vehicle traffic during construction. Bicycle/pedestrian lanes would be included in the final design and connections from the bridge structures to nearby trails would be included. Bridge construction and demolition would require two temporary trestles.

Common design features of Build Alternatives 2A and 2B would include replacement of both the northbound and southbound bridge structures. The northbound and southbound replacement bridges would each be 56-feet wide with two 12-foot-wide travel lanes, one 12-foot-wide bicycle/pedestrian lane, a 10-foot-wide right shoulder, and a 5-foot-wide left shoulder. The remaining bridge width would consist of bicycle bridge rails and a barrier between vehicle traffic and the bicycle/pedestrian lanes. The southbound U.S. 101 bicycle/pedestrian lane would connect to the Eureka Waterfront Trail at the west bridge abutment and to the Humboldt Bay Trail South at the east end of the project limits. The northbound U.S. 101 bicycle/pedestrian lane would connect to the Eureka Waterfront Trail near the west bridge abutment and provide access to Jacobs Avenue near the east end of the bridge. Bicyclists would continue to have access to existing U.S. 101 shoulders to the west and east of the bridges. Additional features common to both build alternatives would include guardrail upgrades, cable barrier connection/continuation, paving, drainage, and utility relocation. Both build alternatives would maintain the existing exit locations and configurations within the project footprint.

Under the No-Build Alternative, the project would not occur. The existing structures would not meet current structural and geometric design standards, and multimodal improvements would not be made. The No-Build Alternative does not meet the project's purpose and need.

S-3 PROJECT IMPACTS

Some impacts determined to be significant under CEQA may not be determined significant under NEPA. This is because NEPA evaluates the project as a whole, while CEQA evaluates individual resources. CEQA requires identification of significant effects on individual resources and mitigation measures for each significant effect. NEPA does not require a determination of significant impacts be stated in the environmental document. For the Eureka Slough Bridges Replacement Project, CEQA impact conclusions are summarized below.

- The project is anticipated to have *no impact* on Agriculture and Forest Resources, Cultural Resources, Tribal Cultural Resources, Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Recreation, Wildfire, and the following Biological Resources: black brant, bats, migratory birds and Pacific eulachon–Southern Distinct Population Segment (DPS).
- The project would have *less than significant impacts* on Aesthetics, Air Quality, Climate Change, Energy, Greenhouse Gas Emissions, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, Utilities and Service Systems, and the following Biological Resources: Eel Grass Sensitive Natural Community (SNC), Pickle Weed Mat SNC, Salal-Berry Brambles SNC, Wetlands and waters (Alternative 2A), wetlands and other waters except estuarine marsh (Alternative 2B), Humboldt Bay owl's-clover, Point Reyes bird's-beak, bald eagle, black-capped chickadee, Bryant's savannah sparrow, Cooper's hawk, double-crested cormorant, long-billed curlew, marbled murrelet, merlin, northern harrier, olive-sided flycatcher, osprey, short-eared owl, white-tailed kite, and obscure bumble bee.
- The project would have *less than significant impacts with mitigation incorporated* on Biological Resources including estuarine marsh (Alternative 2B), Chinook salmon–California Coastal Evolutionarily Significant Unit (ESU) and coho salmon–Southern Oregon/Northern California Coast ESU; Coastal cutthroat trout; North American green sturgeon–Southern DPS; Pacific lamprey; steelhead–Northern California DPS-*winter run*; longfin smelt; tidewater goby; and marine mammals (California sea lion, harbor porpoise, and harbor seal).

Table S-1 summarizes the potential project impacts of each Build Alternative and the No Build Alternative and identifies standard specifications and avoidance, minimization, and mitigation (AMM) measures.

In addition to the standard specifications and AMMs identified for each resource, specific mitigation measures implemented for individual resources in order to make a CEQA "Less than Significant with Mitigation Incorporated" determination are identified in the Mitigation Measures Pursuant to CEQA column. For a complete description of potential effects and recommended measures, refer to the specific environmental topic sections within Chapter 2, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures and Chapter 3, California Environmental Quality Act (CEQA) Evaluation. Data presented in Table S-1 is preliminary and may undergo slight modifications as project design advances.

Table S-1. Summary of Potential Impacts

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Biological Resources Sensitive Natural Communities (SNC): Eelgrass	No Impact	Temp. Impacts = 0.211acre Perm. Impacts = 0.0002 acres	Temp. Impacts = 0.153 acres Perm. Impacts = 0.112 acres	BR-4B, BR-4C, WQ-1, WQ-2, Bio-2	N/A
Biological Resources Sensitive Natural Communities (SNC): Pickleweed Mats	No Impact	Temp. Impacts = 0.021 acres Perm. Impacts = 0.03 acres	Temp. Impacts = 0.145 acres Perm. Impacts = 0.2 acres	BR-4B, BR-4C, Bio-1	N/A
Biological Resources Sensitive Natural Communities (SNC): Salal-Berry Brambles	No Impact	Temp. Impacts = 0.0005 acres Perm. Impacts = 0.002 acres	Temp. Impacts = 0 acres Perm. Impacts = 0.06 acres	BR4B, BR-4C	N/A
Biological Resources: Wetlands and Other Waters except Estuarine Marsh	No Impact	Temp. Impacts = 0.27 acres Perm. Impacts = 0.12 acres	Temp. Impacts = 0.22 acres Perm. Impacts = 0.38 acres	BR-2E, BR-5A, BR-5B, BR-4B, Bio-4	N/A
Biological Resources: Estuarine Marsh	No Impact	Temp. Impacts = 0.029 acres Perm. Impacts = 0.039 acres	Temp. Impacts = 0.297 acres Perm. Impacts = 0.224 acres	BR-2E, BR-5A, BR-5B, BR-4B,	Bio-3

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Biological Resources: Rare Plant Species	No Impact	*Humboldt Bay owl's-clover:* Temp. Impacts= 165 SF Perm. Impacts= 0 SF *Point Reyes birds-beak:* Temp. Impacts = 157 SF Perm. Impacts= 0 SF	*Humboldt Bay owl's-clover:* Temp. Impacts= 174 SF Perm. Impacts= 218 SF *Point Reyes birds-beak:* Temp. Impacts= 218 SF Perm. Impacts= 1,089 SF	BR-4A, BR-4B. BR-4C, Bio-1	N/A
Biological Resources: Animal Species	*No Impact*	*Effects to:* • *Black-capped chickadee* • *Bryant's savannah sparrow* • *Cooper's hawk* • *Double-crested cormorant* • *Long-billed curlew* • *Merlin* • *Northern harrier* • *Olive-sided flycatcher* • *Osprey* • *Short-eared owl* • *White-tailed kite* • *Coastal cutthroat trout* • *Pacific lamprey* • *Marine mammals* • *Obscure bumble bee*	*Effects to:* • *Black-capped chickadee* • *Bryant's savannah sparrow* • *Cooper's hawk* • *Double-crested cormorant* • *Long-billed curlew* • *Merlin* • *Northern harrier* • *Olive-sided flycatcher* • *Osprey* • *Short-eared owl* • *White-tailed kite* • *Coastal cutthroat trout* • *Pacific lamprey* • *Marine mammals* • *Obscure bumble bee*	BR-1, BR-2A, BR-2B, BR-2C, BR-2D, BR-2E, BR-2H BR-4B WQ-1, WQ-2	Bio-5, Bio-6

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Biological Resources: Threatened and Endangered Species	No Impact	Effects to: • *Bald eagle* • *Marbled murrelet* • *Chinook salmon-CC ESU* • *Coho salmon-SONCC ESU* • *Longfin smelt* • *North American green sturgeon-Southern DPS* • *Steelhead–Northern California DPS-winter run* • *Tidewater goby*	Effects to: • *Bald eagle* • *Marbled murrelet* • *Chinook salmon-CC ESU* • *Coho salmon-SONCC ESU* • *Longfin smelt* • *North American green sturgeon-Southern DPS* • *Steelhead-Northern California DPS-winter run* • *Tidewater goby*	BR-1, BR-2B, BR-2C, BR-2D, BR-2E, BR-2H, WQ-1, WQ-2, Bio-7	Bio-6, Bio-8
Aesthetics	No Impact	Temporary Impacts: Construction-related impacts–effects to public views during construction due to construction equipment and activities. Permanent Impacts: The new bridges would incorporate aesthetically appropriate design.	Same as Alternative 2A	AR-1 through AR-3	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Air Quality	No Impact	Temporary Impacts: Construction related impacts–short-term degradation of air quality during construction. Permanent Impacts: There would be no increase in vehicle capacity or changes in traffic volumes or fleet mix that would contribute to long-term air quality impacts.	Same as Alternative 2A	CI-1, GHG-1 through GHG-6, and TT-1 and TT-2	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Bike and Pedestrian Facilities	No multi-modal improvements or trail connections would be made.	Temporary Impacts: Construction related impacts– the Eureka Waterfront Trail would be temporarily and intermittently closed to the public during some construction activities for public and worker safety. Permanent Impacts: The completed project would provide a separated bike and pedestrian lane on both the northbound (NB) and southbound (SB) bridges. Improved connections to the regional trail system with bridge connections to the Humboldt Bay Trail South, Eureka Waterfront Trail, and a new connection to Jacobs Avenue. The SB sidewalk would be extended from the SB bridge to the existing sidewalk at “Y” Street	Same as Alternative 2A.	CI-1, PR-1, TT-1 and TT2	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Climate Change and Greenhouse Gas Emissions	No Impact	Temporary Impacts: Construction related impacts–construction-related GHG emissions. Permanent Impacts: The new bridges would facilitate additional, non-vehicular transportation options.	Same as Alternative 2A	CI-1, GHG-1 through GHG-6, and TT-1, TT-2, EN-1, EN-2	N/A
Community Character and Cohesion	No multimodal improvements or trail connections would be made Safety improvements for the traveling public would not be made and the bridges would not be upgraded to current seismic standards.	Temporary Impacts: Construction related impacts–temporary degradation of air quality and public views. Construction noise and vibration within the project area and traffic delay. Permanent Impacts: Additional safe options for pedestrians and bicyclists within the project area and new bridge structures with safety and seismic improvements.	Same as Alternative 2A	AR-1 through AR-6, NV-1 through NV-3, TT-1, TT-2, UE-1, UE-2, CI-1, Noise-1, Noise-2, PR-1, Visual 1	N/A
Consistency with State, Regional, and Local Plans and Programs	No Impact	The project would be consistent with State Regional, and Local Plans and Programs.	Same as Alternative 2A	N/A	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Cultural and Tribal Cultural Resources	No Impact	No Cultural and Tribal Resources are present.	Same as Alternative 2A	CR-1 through CR-4	N/A
Energy	No Impact	Temporary Impact: Construction-related impacts–energy use from construction equipment. Permanent Impacts: No permanent impacts to energy use, supply or availability.	Same as Alternative 2A	EN-1 and EN-2	N/A
Geology and Soils	The bridges would not be replaced with structures built to current seismic design standards.	Temporary Impact: Construction related impacts–Exposed soil from construction activities would increase the potential for soil erosion. Permanent Impacts: Even when built to current seismic design standards, structures are susceptible to damage from very large seismic events.	Save Alternative 2A	GS-1 and GS-2	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Hazards and Hazardous Materials	No Impact	Temporary Impact: Construction related impacts–hazardous materials could be encountered in the soils and existing roadway materials during construction. No permanent impact.	Same as Alternative 2A	HW-1 through HW-4	N/A
Hydrology, Water Quality, and Stormwater	No Impact	Temporary Impact: Construction related impacts–Approximately 10.6 acres of disturbed surface area (DSA) during construction. Exposed soil from construction activities would increase the potential for soil erosion. Petroleum products: chemicals, and concrete may be spilled or leaked with the potential to be transported to receiving waters through stormwater runoff. Permanent Impacts: Approximately 4.8 acres of new impervious area would be added and/or replaced.	Temporary Impact: Construction related impacts–Approximately 13.3 acres of disturbed surface area (DSA) during construction. Exposed soil from construction activities would increase the potential for soil erosion. Petroleum products: chemicals, and concrete may be spilled or leaked with the potential to be transported to receiving waters through storm water runoff. Permanent Impacts: Approximately 5.5 acres of new impervious area would be added and/or replaced.	HF-1 and HF-2, and WQ-1 and WQ-2	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Noise and Vibration	No Impact	Temporary Impacts: Construction-related impacts–noise and vibration from construction activities. Permanent Impacts: No increase in operational noise.	Same as Alternative 2A	NV-1 through NV-3	N/A
Parks and Recreation Facilities	No Impact	Temporary Impacts: Construction related impacts–Eureka Slough boat launch would be closed to the public during some construction activities for public and worker safety. The Eureka Waterfront Trail would be temporarily and intermittently closed to the public during some construction activities for public and worker safety. Permanent Impacts: Access to recreation facilities within the project area would increase through a more connected trail system.	Same as Alternative 2A	CI-1, PR-1, TT-1, TT2	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Relocations and Real Property Acquisition	No Impact	Temporary Impact: Temporary easement– 9 temporary construction easements (TCEs) Permanent Impact: Permanent easement– 2 partial right of way (ROW) acquisitions and 1 trail easement To be determined: Humboldt Bay National Wildlife Refuge (HBNWR) parcels would require 2 TCEs or partial or full ROW acquisition	Temporary Impact: Temporary easement– 9 TCEs Permanent Impact: Permanent easement– 2 partial ROW acquisitions and 1 trail easement To be determined: HBNWR parcels would require 2 partial or full ROW acquisitions.	N/A	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Transportation	Safety improvements would not be made. Multi- modal transportation options would not be added to the bridges.	Temporary Impacts: During construction, traffic would be maintained with two lanes in both directions during peak periods by constructing a temporary detour bridge. Traffic delays could be experienced throughout construction. Construction is estimated to last up to 5 construction seasons. Permanent Impact: Standard shoulders, separated bike and pedestrian lane, and trail connections would be constructed.	Temporary Impacts: During construction, traffic would be maintained with two lanes in both directions during peak periods by shifting traffic between the existing and new bridges. The new SB bridge would be constructed adjacent and to the north of the existing SB bridge to facilitate traffic shifting during construction. Traffic delays could be experienced throughout construction. Construction is estimated to last up to 4 construction seasons. Beneficial Effects: Same as Alternative 2A	TT-1 and TT-2, and UE-1	N/A

Resource Category	No-Build Alternative	Alternative 2A Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Alternative 2B Temporary and Permanent Impacts in Acres/Square Feet (ac/SF)	Standard Measures and Avoidance, Minimization, and Mitigation Measures for Build Alternatives	Mitigation Measures Pursuant to CEQA
Utilities and Emergency Systems	Safety improvements would not be made. Roadway shoulders would not be widened to accommodate disabled or emergency vehicles.	Temporary Impacts: Construction related impacts–temporary delays during construction could occur due to traffic delays through work zone. Temporary disruption could occur to utilities during relocation. Permanent Impacts: Improved shoulder width to accommodate disabled and emergency vehicles.	Same as Alternative 2A.	UE-1 through UE-3	N/A

S-4 COORDINATION WITH PUBLIC AND OTHER AGENCIES

A Notice of Preparation (NOP) of an EIR was received and accepted by the State Clearinghouse on September 19, 2023. The NOP was mailed to federal, state, and local reviewing agencies and made available to the public.

Multi-agency coordination meetings, individual agency meetings, and a public information meeting were conducted prior to circulation of this draft environmental document. Additional details can be found in Chapter 4, Comments and Coordination.

The permits, licenses, agreements, and certifications (PLACs) required for project construction are listed below in Table S-2.

Table S-2. Permits and Approvals

Agency	PLAC	Status
United States Fish and Wildlife Service (USFWS)	Section 7 Consultation for Threatened and Endangered Species	Complete prior to Final Environmental Document (FED)
USFWS - Humboldt Bay National Wildlife Refuge (HBNWR)	Section 4(f) Consultation	Obtain prior to FED
National Oceanographic and Atmospheric Administration/ National Marine Fisheries Service (NOAA/NMFS)	Section 7 Consultation for Threatened and Endangered Species	Complete prior to FED
NOAA/NMFS	Essential Fish Habitat Consultation	Complete prior to FED
NOAA/NMFS	Marine Mammal Protection Act Consultation	Complete prior to FED
United States Army Corps of Engineers (USACE)	Clean Water Act Section 404 Permit	Obtain after FED approval
USACE	Rivers and Harbors Act Section 10 Permit	Obtain after FED approval
United States Coast Guard (USCG) and Federal Highways Administration (FHWA)	Rivers and Harbors Act Section 9; USCG Permit	Project determined exempt September 25, 2024
California Transportation Commission (CTC)	Vote to Approve Funds	CTC would be required to vote to approve project funding after FED approval
State Historic Preservation Office	No Historic Properties Affected	Determined on December 7, 2022

Agency	PLAC	Status
California Department of Fish and Wildlife (CDFW)	1602 Lake and Streambed Alteration Agreement (LSAA)	Obtain after FED approval
CDFW	Incidental Take Permit (ITP)	Obtain after FED approval
CDFW	Consistency Determination for Threatened and Endangered Species	Obtain after FED approval
California Coastal Commission (CCC)	Coastal Development Permit (CDP) and Coastal Act Federal Consistency	Obtain after FED approval
North Coast Regional Water Quality Control Board (NCRWQCB)	Clean Water Act Section 401 Water Quality Certification	Obtain after FED approval
Great Redwood Trail Agency	Encroachment Permit	Prior to construction
Humboldt Bay Harbor, Conservation, and Recreation District	Harbor Development Permit	Obtain after FED approval
City of Eureka	Consolidation with State Coastal Commission for CDP if project limits extend into Local Coastal Program (LCP) jurisdiction	Obtain after FED approval
City of Eureka	Section 4(f) Consultation: Eureka Waterfront Trail and Eureka Slough Boat Launch	Obtain prior to FED approval
North Coast Unified Air Quality Management District	Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Notification	Notification filed prior to construction

TABLE OF CONTENTS

Summary i
List of Tables xxv
List of Figures xxix

Chapter 1 Proposed Project 1
1.1 Introduction 1
1.1.1 Project Setting 1
1.1.2 Project History 6
1.2 Purpose and Need 7
1.2.1 Purpose 7
1.2.2 Need 7
1.2.3 Independent Utility and Logical Termini 8
1.3 Project Description 8
1.4 Project Alternatives 10
1.4.1 Common Design Features 10
1.4.2 Unique Design Features 20
1.4.3 Comparison of Alternatives 38
1.4.4 Environmentally Superior Alternative 40
1.5 Alternatives Considered but Removed from Further Discussion 42
1.5.1 Retrofit of Both Structures 42
1.5.2 Jacobs Avenue Connector 43
1.5.3 Northbound Detour Bridge 43
1.5.4 Shift Highway to the South 44
1.5.5 Build in the Median 44
1.6 Project Features, Standard Measures, and Best Management Practices Common to All Build Alternatives 44
1.7 Permits and Approvals Needed 56

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures 59
2.1 Topics Considered But Determined Not To Be Relevant 59
2.1.1 Farmlands and Timberlands 59
2.1.2 Wild and Scenic Rivers 60

2.1.3 Mineral Resources 60
2.1.4 Wildfire 60
2.2 Human Environment 60
2.2.1 Existing and Future Land Use 60
2.2.2 Consistency with State, Regional, and Local Plans and Programs 65
2.2.3 Coastal Zone 77
2.2.4 Parks and Recreational Facilities 87
2.2.5 Growth 93
2.2.6 Community Character and Cohesion 96
2.2.7 Relocations and Real Property Acquisition 114
2.2.8 Utilities/Emergency Services 129
2.2.9 Traffic and Transportation/Pedestrian and Bicycle Facilities 131
2.2.10 Visual/Aesthetics 135
2.2.11 Cultural Resources 145
2.3 Physical Environment 150
2.3.1 Hydrology and Floodplain 150
2.3.2 Water Quality and Stormwater Runoff 155
2.3.3 Geology/Soils/Seismic/Topography 165
2.3.4 Paleontology 169
2.3.5 Hazardous Waste/Materials 173
2.3.6 Air Quality 178
2.3.7 Noise and Vibration 195
2.3.8 Energy 227
2.4 Biological Environment 231
2.4.1 Natural Communities 235
2.4.2 Wetlands and Other Waters 250
2.4.3 Plant Species 268
2.4.4 Animal Species 272
2.4.5 Threatened and Endangered Species 300
2.4.6 Invasive Species 326
Chapter 3 California Environmental Quality Act (CEQA) Evaluation 329
3.1 Determining Significance Under CEQA 329
3.2 CEQA Environmental Checklist 330

3.2.1 Aesthetics 331
3.2.2 Air Quality 333
3.2.3 Biological Resources 334
3.2.4 Cultural Resources 346
3.2.5 Energy 347
3.2.6 Geology and Soils 348
3.2.7 Greenhouse Gas Emissions 351
3.2.8 Hazards and Hazardous Materials 352
3.2.9 Hydrology and Water Quality 355
3.2.10 Land Use and Planning 359
3.2.11 Noise 360
3.2.12 Population and Housing 362
3.2.13 Public Services 363
3.2.14 Recreation 364
3.2.15 Transportation 365
3.2.16 Tribal Cultural Resources 367
3.2.17 Utilities and Service Systems 368
3.2.18 Cumulative Impacts 369
3.2.19 Mandatory Findings of Significance 385
3.3 Senate Bill 743/Induced Demand Analysis 386
3.4 Climate Change 387
3.4.1 Regulatory Setting 387
3.4.2 Environmental Setting 389
3.4.3 Project Analysis 394
3.4.4 Greenhouse Gas Reduction Strategies 399
3.4.5 Adaptation 402
Chapter 4 Comments and Coordination 413
4.1 Notice of Preparation and Public Outreach 413
4.1.1 Notice of Preparation 413
4.1.2 Public and Agency Outreach 413
4.2 Comments and Response to Comments 417
4.2.1 Notice of Preparation 417
4.2.2 Draft Environmental Impact Report/Statement 439

Chapter 5 List of Preparers 441
Chapter 6 Distribution List 443
6.1 Federal Agencies 443
6.2 State Agencies 444
6.3 Regional/County/Local Agencies 445
6.4 Tribal Governments 446
6.5 Utilities 446
6.6 Interested Groups, Organizations, and Individuals 447
6.7 Businesses 447
6.8 Elected Officials 448
6.9 Emergency Responders 448
Chapter 7 References 449

Appendix A Section(f) 450
Appendix B Title VI/Non-Discrimination Policy Statement 420
Appendix C Draft Mitigation Summary and Environmental Commitments Record 421
Appendix D Notice of Preparation 430
Appendix E List of Acronyms and Abbreviations 438
Appendix F Species Lists 448
Appendix G Species Tables 477
Appendix H Pile Layouts 499

List of Tables

Table 1. Permits and Approvals 56
Table 2. Consistency with State, Regional, and Local Plans and Programs 67
Table 3. Coastal Act Consistency 82
Table 4. 2022 Population 97
Table 5. Racial Characteristics of Eureka and Arcata 99
Table 6. Age Statistics 101
Table 7. Selected Housing Characteristics 104
Table 8. Householder Tenure 105
Table 9. Physical Housing Characteristics 106
Table 10. Selected Income Characteristics 107
Table 11. Employment Characteristics 108
Table 12. Alternative 2A Right of Way Needs 116
Table 13. Alternative 2B Right of Way Needs 123
Table 14. Traffic Data 132
Table 15. Design Flood Discharges By Flood Event 153
Table 16. Sea Level Rise Projection for North Spit Tide Gauge 154
Table 17. Tsunami with Sea Level Rise over Eureka Slough Bridges 155
Table 18. DSA, NIS, and PCTA for the Build Alternatives 162
Table 19. Sensitive Receptors Located Within 500 Feet of the Project Site 181
Table 20. State and Federal Criteria Air Pollutant Effects and Sources 182
Table 21. Air Quality Concentrations Measured at Eureka-Jacobs Avenue Air Quality Monitoring Station. 186
Table 22. State and Federal Attainment Status 187
Table 23. Summary of Traffic Conditions for the Build and No Build Alternatives 188
Table 24. Summary of Comparative Emissions Analysis 189
Table 25. Modeled Annual $CO2_e$ Emissions and Vehicle Miles Traveled 191

Table 26. Average Daily Construction Emissions for Construction..... 192
Table 27. Alternative 2A Estimates of Total GHG Emissions During Construction..... 193
Table 28. Alternative 2B Estimates of Total GHG Emissions During Construction..... 194
Table 29. Noise Abatement Criteria..... 197
Table 30. Typical A-Weighted Noise Levels..... 200
Table 31. Construction Equipment by Phase..... 203
Table 32. Typical Noise from Impact Pile Driving Operation..... 205
Table 33. Potential Damage from Vibration to Structures..... 223
Table 34. Guideline for Potential Annoyance from Continuous or Frequent Intermittent and Transient Vibration Levels..... 224
Table 35. Vibration Levels from Construction Equipment..... 224
Table 36. Distance to Potential Structure Damage..... 225
Table 37. Distance to Potential Annoyance..... 226
Table 38. Annual Daily Traffic Volumes -Caltrans Traffic Volume Data..... 228
Table 39. Alternative 2A Construction Short-Term Fuel Consumption by Year 229
Table 40. Alternative 2B Construction Short-Term Fuel Consumption by Year 229
Table 41. Annual Fuel Consumption (Direct Energy Use) for all Build Alternatives..... 230
Table 42. Estimated Impacts on Sensitive Natural Communities within the BSA..... 243
Table 43. Potential Impacts to Jurisdictional Wetlands and Waters of the U.S. and State within the Coastal BSA..... 258
Table 44. Estimated Distances to Marine Mammal Behavioral Thresholds for Airborne Noise from Equipment..... 282
Table 45. Hydroacoustic Noise Thresholds for Level A and B Harassment of Marine Mammals..... 284
Table 46. Estimated Distance to Level A and Level B Thresholds for Non-Impulsive Noise Sources for Marine Mammals..... 285
Table 47. Estimated Distance to Thresholds for Impulsive Noise Source for Marine Mammals, with and without Attenuation..... 286

Table 48. Estimated Distance to Threshold for Impulsive Noise Source for Fish with Swim Bladders, with and without Attenuation, Using 2008 Criteria 295
Table 49. Hydroacoustic Impulsive Noise Thresholds for Marbled Murrelet..... 312
Table 50. Estimated Distance to Threshold for Hydroacoustic Impulsive Noise Source for Marbled Murrelet, with and without Attenuation..... 313
Table 51. FESA Preliminary Effects Findings..... 322
Table 52. Caltrans Projects Considered in the Cumulative Impacts Analysis .. 372
Table 53. Non-Caltrans Projects Considered in the Cumulative Impacts Analysis..... 373
Table 54. Modeled Annual CO2e Emissions..... 396
Table 55. Alternative 2A GHG Generated From On-Site Construction Equipment..... 397
Table 56. Alternative 2B GHG Generated From On-Site Construction Equipment..... 397
Table 57. Sea Level Rise Projection (in feet) for North Spit Tide Gauge..... 407
Table 58. Agency and Public Coordination 414
Table 59. NOP Comments and Responses 417



List of Figures

Figure 1. Project Vicinity 2
Figure 2. Project Location 3
Figure 3. Existing Conditions and Navigation Bumpers 5
Figure 4. Eureka Slough Boat Launch 6
Figure 5. Environmental Study Limits 9
Figure 6. Typical Bridge Cross-Sections 11
Figure 7. Alternative 2A Layout 1 21
Figure 8. Alternative 2A Layout 2 22
Figure 9. Alternative 2A Layout 3 23
Figure 10. Alternative 2A Layout 4 24
Figure 11. Alternative 2A Construction Stage 1 26
Figure 12. Alternative 2A Construction Stage 2 26
Figure 13. Alternative 2A Construction Stage 3 26
Figure 14. Alternative 2A Construction Stage 4 27
Figure 15. Alternative 2A Construction Stage 5 27
Figure 16. Alternative 2A Construction Stage 6 28
Figure 17. Alternative 2A Construction Stage 7 28
Figure 18. Alternative 2B Layout 1 30
Figure 19. Alternative 2B Layout 2 31
Figure 20. Alternative 2B Layout 3 32
Figure 21. Alternative 2B Layout 4 33
Figure 22. Alternative 2B Construction Stage 1 36
Figure 23. Alternative 2B Construction Stage 2 36
Figure 24. Alternative 2B Construction Stage 3 36
Figure 25. Alternative 2B Construction Stage 4 37
Figure 26. Alternative 2B Construction Stage 5 37
Figure 27. Alternative 2B Construction Stage 6 37

Figure 28. City of Eureka Land Use Designations 62
Figure 29. Land Use Study Area and ESL within the Coastal Zone..... 80
Figure 30. Coastal Zone Jurisdiction..... 81
Figure 31. Parks and Recreational Facilities..... 89
Figure 32. Aerial View of Eureka Waterfront Trail, Eureka Slough Boat Launch. 90
Figure 33. Community Places Within the Project Land Use Service Area 103
Figure 34. Land Use Designations in the LUSA..... 115
Figure 35. Alternative 2A Right of Way Layout 1 119
Figure 36. Alternative 2A Right of Way Layout 2 120
Figure 37. Alternative 2A Right of Way Layout 3 121
Figure 38. Alternative 2B Right of Way Layout 1 125
Figure 39. Alternative 2B Right of Way Layout 2 126
Figure 40. Alternative 2B Right of Way Layout 3 127
Figure 41. Visual Character Facing East 136
Figure 42. Visual Character Facing West 137
Figure 43. Existing Highway View from Vehicle..... 139
Figure 44. Post-Construction Highway View from Vehicle 139
Figure 45. Existing Highway Facing West..... 140
Figure 46. Post-Construction Simulation Alternative 2A Facing West..... 140
Figure 47. Post-Construction Simulation Alternative 2B Facing West..... 141
Figure 48. Existing Highway Facing East..... 141
Figure 49. Post-Construction Simulation Alternative 2A Facing East..... 142
Figure 50. Post-Construction Simulation Alternative 2B Facing East..... 142
Figure 51. Existing View from Eureka Slough Boat Ramp 143
Figure 52. Post-Construction Simulation Alternative 2A Eureka Slough Boat Ramp 143
Figure 53. Post-Construction Simulation Alternative 2B Eureka Slough Boat Ramp 144
Figure 54. Area of Potential Effect 148
Figure 55. USGS Eureka 7.5 Minute Topographical Map 151

Figure 56. FEMA Flood Insurance Rate Map 152
Figure 57. Geology and Paleontological Sensitivity Map 171
Figure 58. Sensitive Receptors Located Near the Proposed Project. 182
Figure 59. Map of Air Quality Monitoring Stations in the North Coast Air Basin 185
Figure 60. Noise Levels of Common Activities 198
Figure 61. Alternative 2A Nighttime Limit Map and Sensitive Noise Areas in Relation to Bridge Construction (Excluding Pile Driving) 207
Figure 62. Alternative 2A Nighttime Limit Map and Noise Sensitive Areas in Relation to Pile Driving Noise 208
Figure 63. Alternative 2A Maximum Noise Levels (Excluding Pile Driving) 209
Figure 64. Alternative 2A Average Noise Levels During Construction Activities (Excluding Pile Driving) 210
Figure 65. Alternative 2A Maximum Noise Levels During Pile Driving 213
Figure 66. Alternative 2B Nighttime Limit Map and Sensitive Noise Areas in Relation to Bridge Construction (Excluding Pile Driving) 217
Figure 67. Alternative 2B Nighttime Limit Map and Noise Sensitive Areas in Relation to Pile Driving Noise 218
Figure 68. Alternative 2B Maximum Noise Levels (Excluding Pile Driving) 219
Figure 69. Alternative 2B Average Noise Levels During Construction Activities (Excluding Pile Driving) 220
Figure 70. Alternative 2B Maximum Noise Levels During Pile Driving 221
Figure 71. Environmental Study Limits/Coastal BSA and Aquatic Species BSA 234
Figure 72. Sensitive Natural Communities within the project area. 239
Figure 73. Wetlands and Waters within the Coastal BSA 255
Figure 74. Alternative 2A Wetlands/Waters Impacts West Side 263
Figure 75. Alternative 2A Wetlands/Waters Impacts East Side 264
Figure 76. Alternative 2B Wetlands/Waters Impacts West Side 265
Figure 77. Alternative 2B Wetlands/Waters Impacts East Side 266
Figure 78. Humboldt Bay Owl's-Clover and Point Reyes Bird's-Beak Locations 270
Figure 79. U.S. 2022 Greenhouse Gas Emissions 391
Figure 80. California 2021 Greenhouse Gas Emissions by Economic Sector 392

Figure 81. Change in California GDP, Population, and GHG Emissions since 2000 392
Figure 82. Visualization of Current Sea Level (2025)..... 408
Figure 83. Visualization of Sea Level Rise at Project Design Year 2110 408
Figure 84. Fire Hazard Severity Zone 410

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) proposes to replace the existing southbound and northbound Eureka Slough bridges. Caltrans, as assigned by the Federal Highway Administration (FHWA), is the lead agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The lead agency is defined as the public agency that has the principle responsibility for approving a project subject to NEPA and CEQA. The lead agency is responsible for determining and preparing the appropriate environmental document. Caltrans has determined that a CEQA Environmental Impact Report/NEPA Environmental Assessment is the appropriate environmental document for the proposed project. This document describes the proposed project's purpose and need, alternatives being considered and eliminated from consideration, and potential impacts under NEPA and CEQA. The environmental document also provides a summary of the proposed project's avoidance, minimization, and mitigation measures.

The project is included in the 2022 State Highway Operation and Protection Program (SHOPP), and, at the year of start, construction is estimated to cost approximately $321 million for Alternative 2A and $293 million for Alternative 2B. The proposed project is programmed to start construction in 2029, and construction would last between four and five years depending on the alternative selected.

1.1.1 Project Setting

Caltrans proposes to replace the existing northbound and southbound Eureka Slough bridges (Bridge #04-0022L and #04-0022R) in Humboldt County on U.S. Highway 101 (U.S. 101) near the northern limits of the city of Eureka. Figure 1 below shows the project vicinity within Humboldt county and Figure 2 shows the project location within the city of Eureka. The total length of the proposed project is 0.7 mile, from Post Mile 79.5 to Post Mile 80.2. U.S. 101 is the primary north-south transportation route through Humboldt county, serving interregional and interstate traffic. Eureka Slough bridges accommodate a relatively high volume of traffic between the cities of Eureka and Arcata. City of Eureka zoning designations for properties surrounding the project area include Service Commercial, Natural Resource, and Water Conservation.

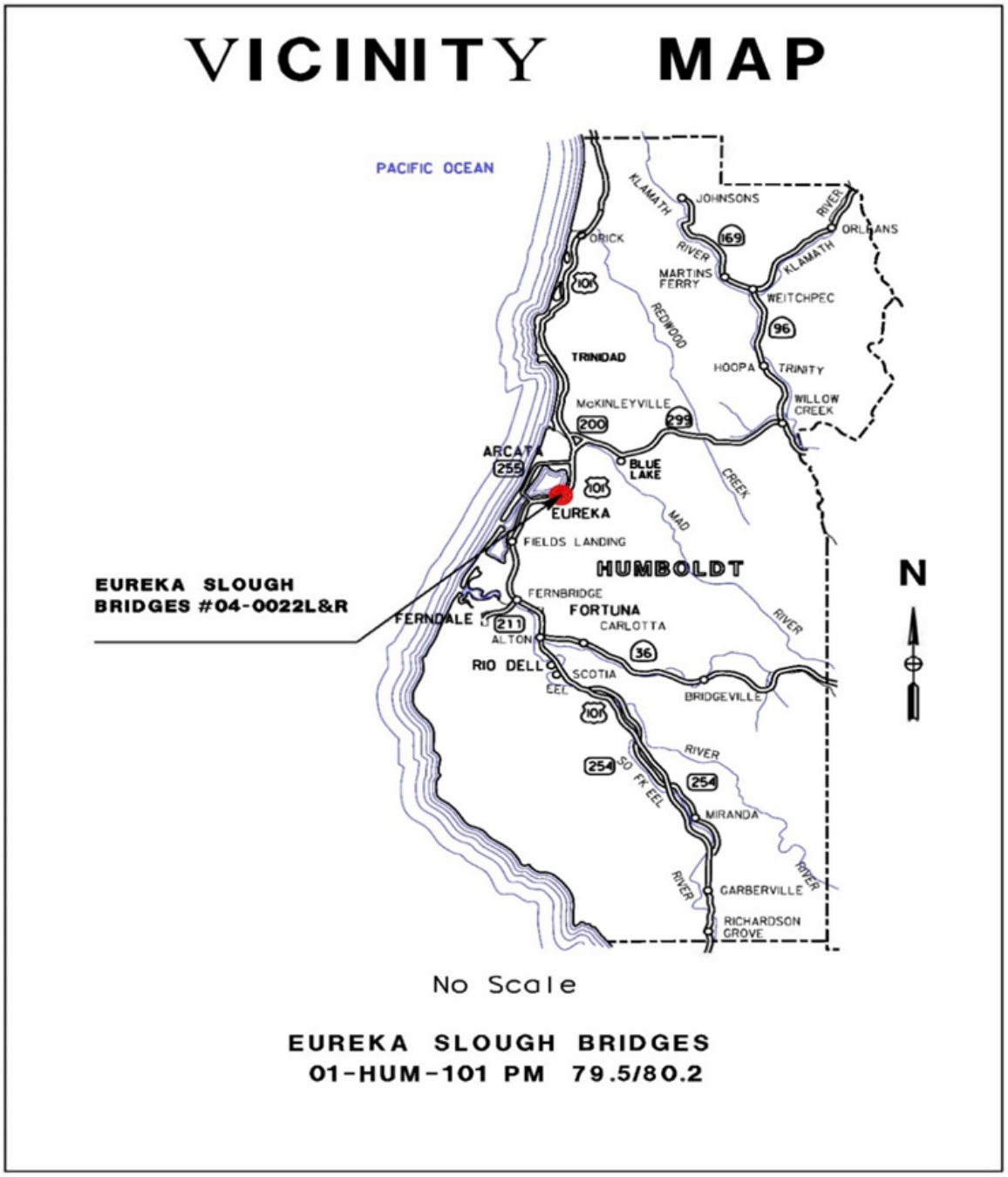


Figure 1. Project Vicinity



Figure 2. Project Location

The Eureka Slough bridges span the area where Eureka Slough flows north into Arcata Bay, which makes up the northern portion of Humboldt Bay. Approximately 1.5 miles southeast, and upstream of the U.S. 101 bridge crossing, Freshwater Slough drains into Eureka Slough. The Eureka Slough is a shallow tidal channel and contains intertidal mudflats, eelgrass beds, and salt marshes around the fringes. Upland areas within the project area consist of fill placed for highway construction and urban development, ruderal vegetation, and some low areas with wetlands. At the northeastern end of the project area, U.S. 101 borders the Humboldt Bay National Wildlife Refuge (HBNWR) and is adjacent to Humboldt Bay Trail South as the trail veers northward to cross the slough along an old railroad bridge, which is located approximately 675-feet north of the Eureka Slough bridges. The southeastern end of the project area parallels Jacobs Avenue. The northwestern end of the project is adjacent to a Target store and includes a highway exit that provides access to the store parking area and a return onto southbound U.S. 101. The Eureka Waterfront Trail passes under the bridges at the western bridge abutments. The trail continues through the southwestern portion of the project area, which is adjacent to an RV park, gas station, commercial buildings, and parking areas. This area can be accessed by vehicles from the northbound U.S.101 6th Street exit.

Existing Conditions

The existing southbound bridge is 849-feet 6-inches in length. The southbound bridge is approximately 37 feet wide with two 12-foot-wide travel lanes, a 4-foot 6-inch-wide right shoulder and a 1-foot 9-inch-wide left shoulder. The southbound bridge is a steel pony truss bridge with reinforced concrete deck. The approach span is a continuous reinforced concrete T-girder with a reinforced concrete deck. The southbound foundation is reinforced concrete solid wall piers on timber piles and reinforced concrete 3-column bents and reinforced concrete seat abutments.

The existing northbound bridge is 946-feet 10-inches in length. The northbound bridge is approximately 39-feet wide with two 12-foot-wide travel lanes, a 4-foot 5-inch-wide right shoulder which includes a 3-foot-wide elevated sidewalk, and a 3-foot 7.5-inch-wide left shoulder. The northbound bridge is a precast/prestress concrete T-beam with a precast/prestressed slab approach span. The northbound foundation is precast/prestressed concrete piles on reinforced concrete cap. The distance between the existing southbound and northbound bridges is approximately 40 feet.

The existing bridges do not have a lane separating pedestrian or bicycle traffic from vehicle traffic. The southbound bridge has a shoulder width that is less than standard and no pedestrian/bicycle facility. The northbound bridge has an unseparated, narrow elevated sidewalk, but no bicycle railing on the bridge railing. The existing roadway to the east and west of the bridges includes Class III bike lanes. At the west boundary of the project area, a section of sidewalk adjacent to southbound U.S. 101 at “Y” Street begins and continues west.

There are bumpers located within the slough channel under the bridges to designate the navigable portion of Eureka Slough (Figure 3). Along the west side of the slough, the Eureka Waterfront Trail is operated by the City of Eureka. There is a recreational boat launch (Eureka Slough Boat Launch) adjacent to and accessible from the Eureka Waterfront Trail, about 75 feet north and downstream of the bridges (Figure 4). This boat launch does not allow for vehicular access, and is used for smaller watercraft, such as kayaks, canoes, and paddle boards.



Figure 3. Existing Conditions and Navigation Bumpers



Figure 4. Eureka Slough Boat Launch

1.1.2 Project History

In 2015, Caltrans identified the need for a seismic retrofit of the southbound Eureka Slough bridge. Subsequent bridge inspections identified the need for additional retrofit items on the southbound bridge, as well as the need for a retrofit of the northbound bridge. In addition to identified structural deficiencies, the existing bridges have non-standard geometrics, which provide inadequate sight distance, and functional deficiencies including narrow shoulders and non-standard bridge rails.

The 2015 Project Scope Summary Report documents the Project Development Team's (PDT) recommendation to perform a Value Analysis Study (VA) to explore seismic retrofit and replacement/improvement options. In addition to retrofit, the PDT was directed to study replacement options for both the southbound and northbound structures due to the southbound structure having exceeded its design life (built in 1943) and the northbound structure nearing the end of its design life (built in 1956).

As a result of the VA, a seismic retrofit alternative and two replacement alternatives were developed. The VA recommended replacement of both structures. Replacing both structures would have less environmental and traffic impacts and would be more cost effective compared to performing a seismic retrofit and then returning to replace the structures under a different project in the near future. Additionally, it is not possible to widen the southbound structure to meet Caltrans' Complete Streets objectives, which aim to promote and enhance mobility for all modes of transportation.

In 2022, Caltrans submitted a project change request to officially rescope the project from a seismic retrofit of the southbound structure to a bridge replacement project of both the northbound and southbound structures. The project was approved for programming in the 2022 State Highway Operation and Protection Program (SHOPP).

1.2 Purpose and Need

1.2.1 Purpose

The purpose of the proposed project is to improve the function and geometrics of the northbound and southbound Eureka Slough Bridges to ensure uninterrupted traffic movement in the event of a collision or emergency incident, a seismic event, or any other catastrophic event, and provide improved access for pedestrians and bicyclists across the bridges.

1.2.2 Need

The project is needed to address structural and geometric deficiencies in the northbound and southbound Eureka Slough bridge structures. The southbound structure, built in 1943, has seismic deficiencies, is fracture critical, and has a non-standard profile which contributes to a collision rate at the bridge departure that is double the statewide average for similar facilities. The northbound structure, built in 1956, also has seismic deficiencies and has non-standard bridge rails built on raised concrete curbs within the shoulders. Both structures have exceeded or are approaching the end of their design life and have narrow shoulders that impede multimodal transportation.

1.2.3 Independent Utility and Logical Termini

Independent utility is a term used to describe a project that is both usable and a reasonable expenditure, even if no additional transportation improvements are made in the area. A logical terminus describes the logical beginning and end for an improvement project, including the beginning and end of its potential effects.

FHWA regulations (23 Code of Federal Regulations [CFR[771.111[f]) state that an action evaluated shall:

1. Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
2. Have independent utility or independent significance. It would be usable and require a reasonable expenditure even if no additional transportation improvements in the area were made;
3. Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Based on the proposed project scope, the project would have logical termini and independent utility. The project has logical termini as it extends from Post Miles 79.5 to 80.2 on U.S. Highway 101 to include both bridge structures, multimodal trail connections, locations where the bridges would need to conform to the existing roadway, and necessary adjacent roadway features including guardrail and drainage. The project has independent utility as it would be functionally independent and would not restrict consideration of, nor depend on, other reasonably foreseeable transportation improvements to meet the stated purpose and need. The project would provide seismic and geometric improvements and would enhance multimodal transportation whether or not any other project is developed.

1.3 Project Description

This section describes the proposed project and the design alternatives developed by a multidisciplinary team to meet the identified purpose and need while avoiding or minimizing environmental impacts. Figure 5 depicts the general footprint and Environmental Study Limits (ESL) for the project. The ESL is the anticipated boundary of potential impacts; it is larger than the project footprint to accommodate potential scope changes.

The proposed project is on U.S. 101 in Humboldt County from PMs 79.5 to 80.2, near the northern limits of the city of Eureka, where the highway crosses the Eureka Slough in a west-east direction. The section of U.S. 101 through the project area is a divided four-lane highway. The project proposes to replace the existing Eureka Slough bridges with two new, mirrored structures. The project is needed to address seismic deficiencies, improve geometrics for better sight distance, and promote and enhance mobility for all modes of transportation by providing designated bicycle/pedestrian lanes and trail connections. A No-Build Alternative is also included as part of the project analysis.

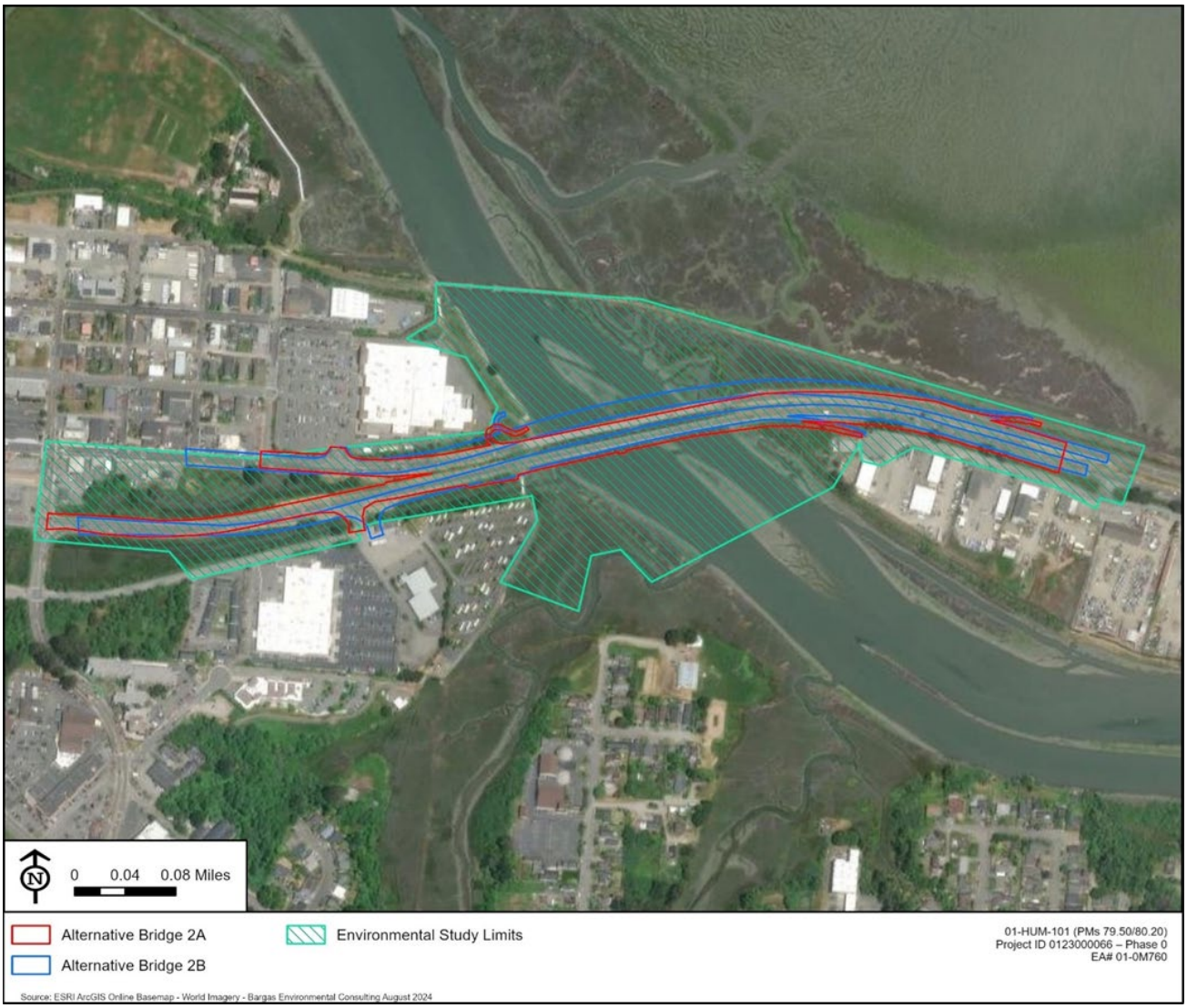


Figure 5. Environmental Study Limits

1.4 Project Alternatives

The project proposes two Build Alternatives (2A and 2B) and a No-Build Alternative. As described in Section 1.3, the Build Alternatives would replace the existing northbound and southbound bridges. The fundamental difference between the two Build Alternatives is the method that would be utilized to maintain two lanes of traffic in each direction during peak travel times. Build Alternative 2A would construct a temporary bridge to manage traffic during construction, whereas Build Alternative 2B would construct a new southbound bridge adjacent to the existing southbound bridge to manage traffic during construction. The use of a temporary bridge would allow the new bridges to be rebuilt on nearly the same location as the existing bridges, while constructing the new southbound bridge adjacent to the existing would allow traffic to use the existing bridges throughout most of the construction phases. The northbound bridge would have the same highway footprint under both Build Alternatives.

Under the No Build Alternative, the project would not be implemented, and the bridges would not be replaced.

1.4.1 Common Design Features

The two alternatives have many common design features and construction activities and methods. These common features and methods are described in the following sections. The project contains standardized project measures which are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. The standard measures and Best Management Practices are listed in Section 1.6 and are addressed in more detail in the Environmental Consequences sections found throughout Chapter 2.

Project design features and/or construction methods which differ between and are unique to each alternative are described in Section 1.4.2, *Unique Design Features*.

1.4.1.1 Bridge Structures

Both alternatives would include replacement of both the northbound and southbound bridge structures. The northbound and southbound replacement bridges would each be 56-feet wide with two 12-foot-wide travel lanes, one 12-foot-wide bicycle/pedestrian lane, a 10-foot-wide right shoulder, and a 5-foot-wide left shoulder. For both alternatives, the bridges would have an approximately 2-foot-wide barrier between vehicle traffic and the bicycle/pedestrian lanes. Bridge railings on each side of the bridges would range in width from 1 to 2 (one to two) feet. Figure 6 illustrates the typical cross-sections, including lane widths, bicycle/pedestrian lane locations, and the distances between the northbound and southbound bridges for each Build Alternative.

Bridge construction would include construction phases and activities common to both Build Alternatives, including temporary trestle construction and removal, use of cofferdams, construction of retaining walls, existing bridge demolition, and new bridge construction. Each construction phase would also include the shifting of traffic to existing, new, and/or temporary bridge structures to facilitate construction activities and traffic flow. Detail on traffic shifting strategies is discussed further in Section 1.4.2, *Unique Design Features*.

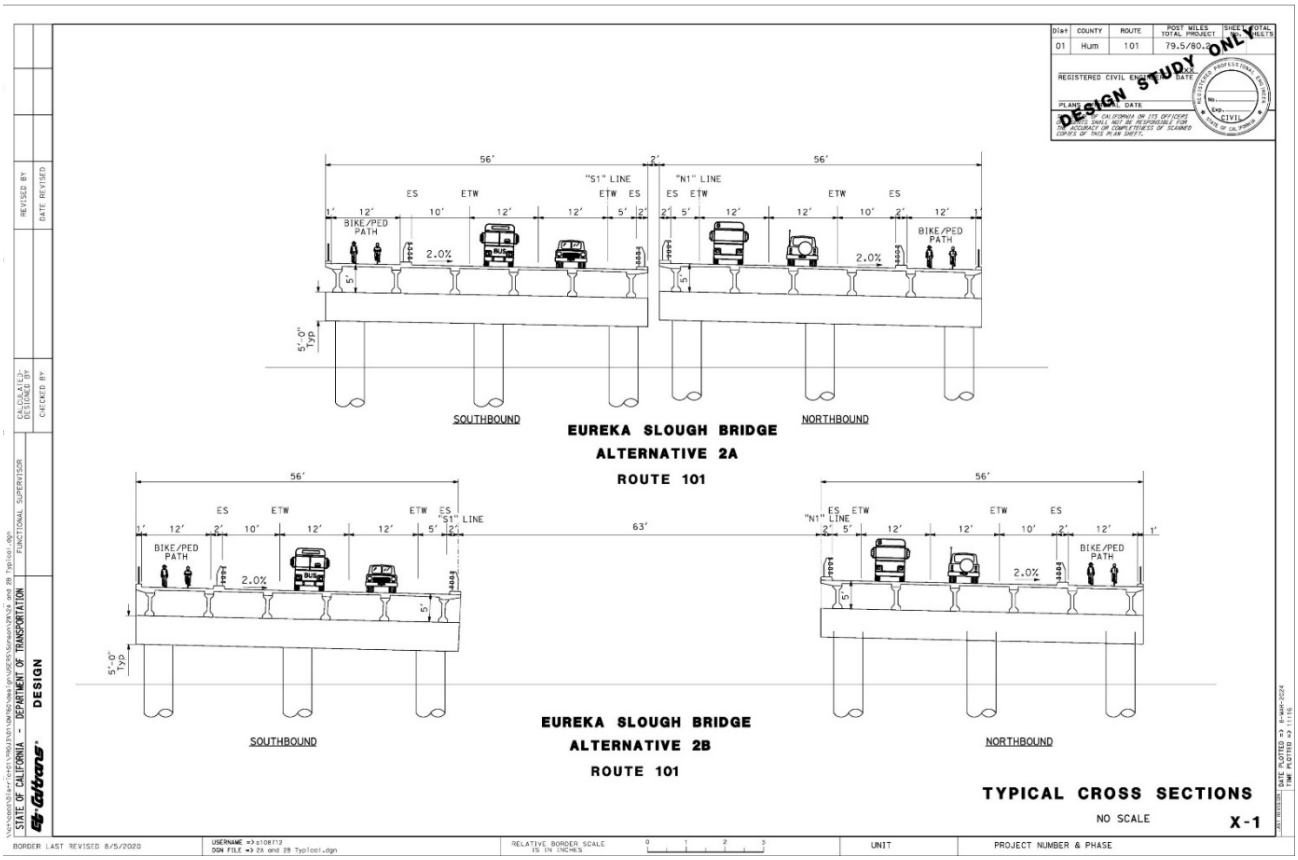


Figure 6. Typical Bridge Cross-Sections

Trestle Construction and Removal

Temporary trestles would be installed adjacent to the bridges to provide a work platform, access, and staging throughout construction. The trestles would consist of a main trestle with attached "finger" extensions to provide construction equipment the space needed to maneuver. The construction sequence is identical for all trestles. The trestles would consist of 30-foot-long spans supported on 24-inch diameter piers, with two steel pipe piles per pier. Two cranes would be used to construct the trestles, each starting from opposite sides of the slough and meeting in the middle. A crane placed on the trestle would support pile driving equipment, and haul trucks would transport the

piles from a staging area to the point of construction. The piles would be placed so that they are bearing on the bottom of the slough. To protect fish, temporary isolation casings would be used for piles driven in water. Once the piles are aligned, they would be driven using vibratory hammers followed by a diesel hammer to place the piles at the required depth. Upon project completion, the trestles would be removed. Trestle removal would be the same as trestle construction, but in the reverse order.

Cofferdam Construction and Removal

A cofferdam is a watertight enclosure where water is pumped out to allow construction work within a body of water. Cofferdams would be used to isolate some construction activities in areas with water. The type of cofferdam used for the project would consist of sheet piles driven into the channel bottom with standard pile driving equipment working from a trestle. The sheet piles would be placed to construct a continuous wall to encase the perimeter of the work area. When no longer needed, the sheet piles would be removed using a vibratory hammer and lifting with a crane or by cutting with a robotic torch and lifting with a crane.

Dewatering Cofferdams

Water removed from cofferdams would be disposed of at a location approved and permitted prior to construction. The depth of the water in the cofferdam is expected to be low enough that it could be pumped out using standard size pumps. The water would be pumped into a tanker truck at the point of construction for off-site disposal or to a Baker tank for storage and later removed to an off-site disposal site. Baker tanks, which are large, portable storge tanks used for storing liquid, would give flexibility with cofferdam removal scheduling but would require suitable staging areas and large diameter hoses. Any remaining material needing removal from the inside of the cofferdam would be removed by excavators working from the trestles. Material would be placed in haul trucks and disposed of at an approved disposal site.

Bridge Construction

Northbound and southbound bridge abutment footings would be excavated. For the abutment piles, work would be performed at grade. If possible, the excavated material would be used for temporary and/or permanent structures. If groundwater is encountered, dewatering would be required. Abutment piles would be 24-inch diameter cast-in-steel-shell (CISS) piles which would be constructed in the excavations with standard pile driving equipment. The footing concrete would be placed using a concrete pump truck.

For the bridge pier piles, the installation equipment would work from the trestles. Pier piles would be 72-inch diameter CISS piles. The steel shells would be driven with standard pile driving equipment. Once a pile is driven to its tip elevation, the material inside would be removed with a crane-mounted clean-out tool and placed in haul trucks

to be taken to an approved offsite disposal location. After the pile is cleaned out, a steel reinforcing cage would be installed. Any water in the steel shell after cleanout would be dewatered as the concrete is placed. Concrete placement would be done with a concrete pump truck located on the trestle with concrete haul trucks accessing the pump truck via the trestle.

The pier caps would be cast-in-place concrete members constructed on top and attached to the pier piles. Forms to hold the concrete and rebar would be constructed using equipment on the main trestle and finger trestles. Reinforcing steel would be placed in the forms, also using equipment on the trestles. After the forms are constructed and reinforcement placed in the forms, the concrete would be placed with pump trucks from the trestles or from portions of the existing bridge. Concrete delivery trucks would deliver the concrete to the pump trucks. Once the pier caps have been completed, the finger trestles could be removed.

Multiple cranes would lift girders from haul trucks and move them to their set-down location. The girders would be lowered to bearings and supported by the cranes as they are connected to the bearings. Steel stay-in-place deck forms would be used. The forms are placed on the girder flanges prior to reinforcement and would be abandoned in place once concrete is poured. The concrete for the deck would be placed in a manner similar as described for the pier caps.

Bridge Approaches and Retaining Wall Construction

For both Build Alternatives, retaining walls would be built in locations with limited right of way and to minimize the amount of roadway fill in sensitive locations. Soldier pile retaining walls are proposed near all four outside corners of the bridge abutments. Construction of the bridge approaches would require soldier pile retaining walls at the abutments and placement of backfill and roadway material to achieve the appropriate grade. Most of the existing bridge abutment demolition work would need to be completed during the night when traffic could be reduced to one lane in each direction. The lanes closest to the demolition would need to be closed to allow for crane movements. Near the west abutment of the southbound bridge an approximately 578-foot-long retaining wall ranging in height from 2-feet to 9-feet would be constructed. At the northeast side of the southbound bridge, an approximately 928-foot-long wall, ranging from 2-feet to 8-feet in height, would be constructed. Two retaining walls would be constructed at the west and east sides of the northbound bridge. The west side wall would be approximately 182-feet long and 6-feet high. The east side wall would be approximately 434-feet long and 10-feet high. The walls would likely have an aesthetic treatment in the form of color, texture, and/or patterning.

A flat, strong construction surface is needed at the point of pile installation to support the necessary equipment. Depending on the location conditions, the soldier pile walls

for the bridge abutments would be constructed at-grade from existing roadways, from roadway constructed on appropriate subbase material, or from the construction trestles. It is assumed the abutment walls would be constructed in a fill scenario, meaning bottom-up construction method. In a bottom-up construction method, the piles are installed, lagging placed between the piles, and backfill placed against the lagging. The piles could be installed by pile driving hammer or by drilling a hole and placing the pile in the drilled hole.

If the pile is driven, a crane would be used to support the pile installation equipment and the pile as it is being driven. If drilled holes are used, the material would be removed during the drilling operation and disposed of. If holes are drilled, it is assumed that water would infiltrate, and dewatering would be required. A crane would hoist and set the pile in place and concrete would be placed in the hole after the pile is placed. When dewatering is required, the water would likely be pumped out with a sump pump and placed into a tanker truck or Baker tank for offsite disposal.

The lagging to be placed between the soldier piles could consist of treated timber members, non-treated timber members, concrete members, or a combination. Final retaining wall design would be determined after additional geotechnical information is available. Heavier concrete lagging members may be placed with light-duty construction equipment and light timber members could be placed by hand. To retain the earth behind the wall, concrete facial walls are another means that may be used instead of lagging. If concrete facial walls are constructed, the equipment would use the same construction access used by the pile installation equipment. Concrete pump trucks would be used to place the concrete facial walls, and concrete delivery trucks would supply the concrete pump trucks.

Haul trucks would transport the retaining wall and bridge approach backfill material to the site. In some areas of wall construction, the haul trucks can dump the backfill near its final location; in other areas the material would need to be transported from the haul truck to the final location with an excavator. Small equipment, such as a bobcat earth-moving machine, would spread out the backfill material. Once spread out to the appropriate thickness, the backfill would be compacted.

Bridge Demolition

For demolition of the existing northbound and southbound bridges, debris containment would be provided under the bridge to prevent concrete rubble from falling into the slough. Standard measures and BMPs for reducing and managing dust would be employed.

The removal of the existing northbound bridge would begin with lifting out the concrete bridge slabs working from the construction trestle. This would involve cutting sections supported by a crane and then lifting the sections out and placing on haul trucks for disposal. Alternatively, excavators mounted with hoe-rams would break the deck into pieces, reinforcement would be cut, and then the pieces would be placed on haul trucks for disposal. Once the bridge superstructure is removed, the girders could be lifted out with cranes. Removal of existing concrete piles, pier walls, and pier wall footings would require constructing cofferdams at each support. The cofferdams would be dewatered and, for the piles, the top 4 to 5 feet of material in the cofferdam would be excavated to expose the pile tops. For the pier walls, the walls would be removed to the top of the footings and the cofferdam would be backfilled to original channel elevation. Excavators mounted with hoe-rams would break the exposed piles into small enough pieces to be lifted out and placed on haul trucks. Once the exposed portions of piles have been removed, the cofferdam would be removed.

The existing southbound bridge was built using a monolithic construction method, meaning that a large portion of the bridge was constructed as a continuous concrete pour. Demolition of the southbound bridge would begin at the center of the structure with equipment working from the bridge deck progressing towards both ends of the bridge. The majority of the existing structure is a concrete frame structure consisting of three girders and a deck supported by three column frames founded on pile caps. The remainder consists of steel truss structures supporting a concrete deck, supported on pier walls. Once the concrete deck is removed from the steel truss section, the steel truss elements would be torch cut and then removed using cranes. Once the steel pieces are free, they would be lifted out and placed on haul trucks for removal. Removal of the concrete frame structure would require extensive demolition since the deck is monolithic to the columns of the frames. Work would progress from the steel truss section toward the edge of the slough. Once the deck removal is complete, hoe-rams would be used to demolish the frame. Before the frame can be removed, a cofferdam would be constructed around the frame and frame foundation. The cofferdam would then be dewatered. The frame would be demolished with the concrete rubble being contained within the cofferdam. Once the frame has been removed, excavation within the cofferdam would be performed to expose the footing, which would then be demolished and removed. Once the footing is removed, the cofferdam would be removed.

1.4.1.2 Trail Connections

All Build Alternatives would include bicycle/pedestrian lanes on the bridges and connections to existing trails within the project area. Humboldt Bay Trail South, which would be completed when the proposed project goes to construction, would connect with the southbound U.S. 101 bicycle/pedestrian lane approximately 675-feet east of the

southbound bridge abutment. The southbound bicycle/pedestrian lane would connect to the Eureka Waterfront Trail at the west end of the bridge, and would also continue west, adjacent to the highway along the existing southbound Class III bicycle lane. The northbound bridge bicycle/pedestrian lane would connect to the Eureka Waterfront Trail at the west abutment, provide access from the west end of the bridge to Jacobs Avenue on the east side of Eureka Slough, and would maintain access to the existing northbound U.S. 101 Class III bicycle lane.

Bicycle and Pedestrian Path Construction

The bicycle/pedestrian lanes would utilize light steel bridges and at-grade paving to make connections from the bridges and U.S. 101 to the Eureka Waterfront Trail and Humboldt Bay Trail South. The existing U.S. 101 bike lane would be temporarily relocated during construction to allow for access to excavate the bridges' abutment footings and to install trail connections. The Eureka Waterfront Trail would need to be intermittently rerouted away from the western edge of the north trestle during some construction phases. When necessary, the trail could be relocated to the northern edge of the Target parking lot or routed on local surface streets.

1.4.1.3 Common Roadway Design Features

In addition to the replacement of the bridge structures, all Build Alternatives would include roadway work adjacent to the bridges and at the trail connections within the project limits. Common roadway design features in both alternatives include guardrail upgrades, cable barrier connection/continuation, sidewalk installation at the west abutment of the southbound bridge, drainage features, and paving work. All Build Alternatives would maintain the roadway conform at existing exits along U.S. 101 within the project limits.

1.4.1.4 Utilities

All Build Alternatives would require any overhead and underground utilities within the project footprint and any utilities attached to the bridge to be permanently or temporarily relocated. Utilities would be relocated prior to construction in accordance with current design and environmental clearance requirements, and in compliance with any necessary permitting. Utility relocation scheduling and work would be coordinated between Caltrans and utility owners, including the City of Eureka, to minimize disruption of service.

1.4.1.5 Construction Activities

The following common construction activities and methods would apply to both Build Alternatives.

Construction Equipment

Typical equipment used for the construction of the project would include cranes, backhoes, excavators, hydraulic jackhammers, drill rigs, hammer rigs, paving equipment, compaction equipment (rollers, vibrators, smoothing rollers), concrete pouring/pumping trucks, haul trucks, dump trucks, tanker trucks, Baker tanks, concrete mixer trucks, flatbed delivery trucks, forklifts, and work trucks.

Protection of Environmentally Sensitive Areas (ESA)

All Build Alternatives would utilize standard project measures to avoid impacts to environmentally sensitive areas (ESA). To prevent encroachment of construction personnel and equipment onto sensitive areas during construction activities, ESAs would be identified on the project plans, and contract specifications would be developed to identify the areas and dictate the method of protection for all ESAs. Both alternatives would include similar protection measures for ESAs, including, but not limited to, delineating sensitive areas with temporary high visibility fencing, and ensuring an approved biological monitor is on site during designated construction activities.

Vegetation Removal

Vegetation clearing would be required and would be confined to the project footprint, including temporary access roads and staging areas. All Build Alternatives would include similar vegetation removal Standard Measures and BMPs (see Section 1.6), and removal would be minimized to the amount necessary to facilitate construction. Vegetation would be removed using a combination of handheld and mechanized equipment. To the extent feasible, vegetation removal would be scheduled to avoid impacts to nesting birds. Erosion control and water quality BMPs would be employed during vegetation removal and would remain in place as needed.

Staging Areas

Under all Build Alternatives, building the bridge structures would require large staging areas. Staging areas would be used to perform construction activities, including off-loading and storage of construction materials and construction of structural elements, such as reinforcing cages and prefabricated forms. Staging areas need to be in close proximity and provide required access to the points of construction. The location of the staging areas would be determined after a preferred alternative is identified; however, assumptions have been made regarding some staging area requirements. Staging

areas could be constructed on native ground with appropriate road base materials, on existing improved surfaces, and on trestles or trestle type structures.

Removal of Staging Areas

Once construction is complete, staging areas would be returned to their pre-construction condition. For staging areas where placement of road base is necessary, and if required, the roadway base would be removed with standard excavation equipment and placed in haul trucks for disposal off-site. Staging areas established on existing improved surfaces would be cleaned of construction contaminants and any material would be disposed of at off-site locations. Staging areas constructed on trestle structures would be removed by the contractor.

Traffic Control

Under all Build Alternatives, anticipated traffic control includes lane reduction on multilane facilities at night, reversing control with flagging on city streets at night, short-term city street closures with detours, intermittent ramp closure with detour at the northbound 6th Street and southbound Target store on- and off-ramps, short-term sidewalk and crosswalk closures with detour, and moving lane closures during traffic striping. During construction, traffic lanes would not be less than 11 feet wide. Access to businesses and side roads would be maintained with detours or alternative access. Bicyclists would be accommodated during construction either by providing space adjacent to the open traffic lane or a bicycle detour. Work zone speed reduction would be required; however, minimal delay is anticipated from traffic control measures. Two lanes of traffic would be maintained in each direction of U.S. 101 during daylight hours and a minimum of one lane would be maintained in each direction during hours of darkness. Lane reduction during night work would allow for crane swings, additional access points to construction, and would enable the contractor to meet construction safety requirements during certain types of work.

Traffic Shifting

For both Build Alternative, traffic would be shifted to temporary alignments throughout the various phases of construction. To facilitate traffic shifting, K-rail may be used to separate traffic, and the median area adjacent to the bridges' approaches would require earthwork and grading to provide a temporary roadway section. The shifting of traffic alignments would occur during night work and could require a brief closure.

Paving Activities

Paving activities are included in the project scope of work for all Build Alternatives. The project would require both temporary and permanent paving work. New trail connections and areas where the roadway would conform to the replacement bridge approaches and existing roadway exits would include areas of permanent new or replacement pavement. Temporary traffic shifting during construction phases would require areas of temporary paving to route traffic across median locations. Temporary paving would be removed upon completion of the construction phase and areas would be revegetated.

Additional project features

Additional project features, including but not limited to guardrails, striping, signage, and upgrades to existing lightning, would be included within the project limits as needed per Caltrans design guidelines.

1.4.1.6 Right of Way

For both Build Alternatives, work would occur within the existing Caltrans right of way (ROW) and on adjacent private and public property. All Build Alternatives are anticipated to require temporary construction easements (TCEs) and ROW acquisition. TCEs are areas outside the existing State ROW that would be temporarily needed during construction of the project to provide equipment access, roads and ramps, staging areas, and work zones to construct elements of the project. Any land used as a TCE would be returned to an acceptable condition per the terms of the TCE agreement prior to the return of the land to the original owner. Portions of parcels adjacent to the bridge abutments and trail connections could need to be permanently incorporated into the project improvements and would require permanent ROW acquisition. The potential TCEs and permanent ROW acquisition that could be needed differs for each Build Alternative and are discussed further in Section 2.2.7, *Relocations and Real Property Acquisition*. Maps for each alternative are presented in Section 1.4, *Project Alternatives*. Identification of affected parcels would be further assessed once the preferred alternative is identified following circulation of the draft environmental document.

1.4.1.7 Access to Navigable Rivers

The Eureka Slough is a navigable channel. Pursuant to California Streets and Highways Code Section 84.5, Caltrans has given full consideration of, and prepared a report on, the feasibility of providing a means of public access to the Eureka Slough for public recreational purposes. The Feasibility Report for Public Access to Eureka Slough (Caltrans 2024a) provides details on the project scope and the existing public access opportunities to the slough within the project area. The project would not limit existing

access to Eureka Slough. The report found that under all Build Alternatives, access for public recreational purposes would be enhanced by the project by providing bicycle and pedestrian connections from the bridges to the existing, adjacent trail network and boat launch. Development of additional public access features beyond those included in the current project scope are not recommended.

1.4.2 Unique Design Features

The proposed project has two Build Alternatives and a No-Build Alternative. The Build Alternatives, as described in this section, consist of Alternative 2A (Temporary Bridge) and Alternative 2B (Adjacent Southbound Bridge). Both of the proposed Build Alternatives include replacement of both bridges. The traffic shifting during construction phases drives the differences between the alternatives and influences the final bridge alignments. Because this is a major transportation corridor between Eureka and Arcata, and along the mainline coastal corridor of U.S. 101, design alternatives are focused on minimizing impacts to the traveling public. This is achieved by keeping two lanes in each direction open during peak daytime hours and having temporary lane closures only at night.

Design features common to all Build Alternatives are described in Section 1.4.1 and project features that are unique to each Build Alternative are described below.

1.4.2.1 Alternative 2A: Temporary Bridge

Build Alternative 2A would rebuild the northbound and southbound bridges on the existing alignments (Figures 7-10). This alternative would require a temporary bridge and two trestles to be constructed to accommodate traffic, new bridge construction, and existing bridge demolition. A trestle would be constructed north of the southbound bridge and a temporary bridge would be built to the north of that trestle to accommodate southbound traffic. A trestle would be built to the south of the northbound bridge to accommodate construction and demolition activities on the northbound bridge. Northbound traffic would be detoured to the existing southbound bridge during demolition and construction activities on the northbound bridge.

The length of the bridges under Alternative 2A would be approximately 887-feet for the southbound bridge and 919-feet for the northbound bridge. The distance between the structures would be approximately 2 feet.

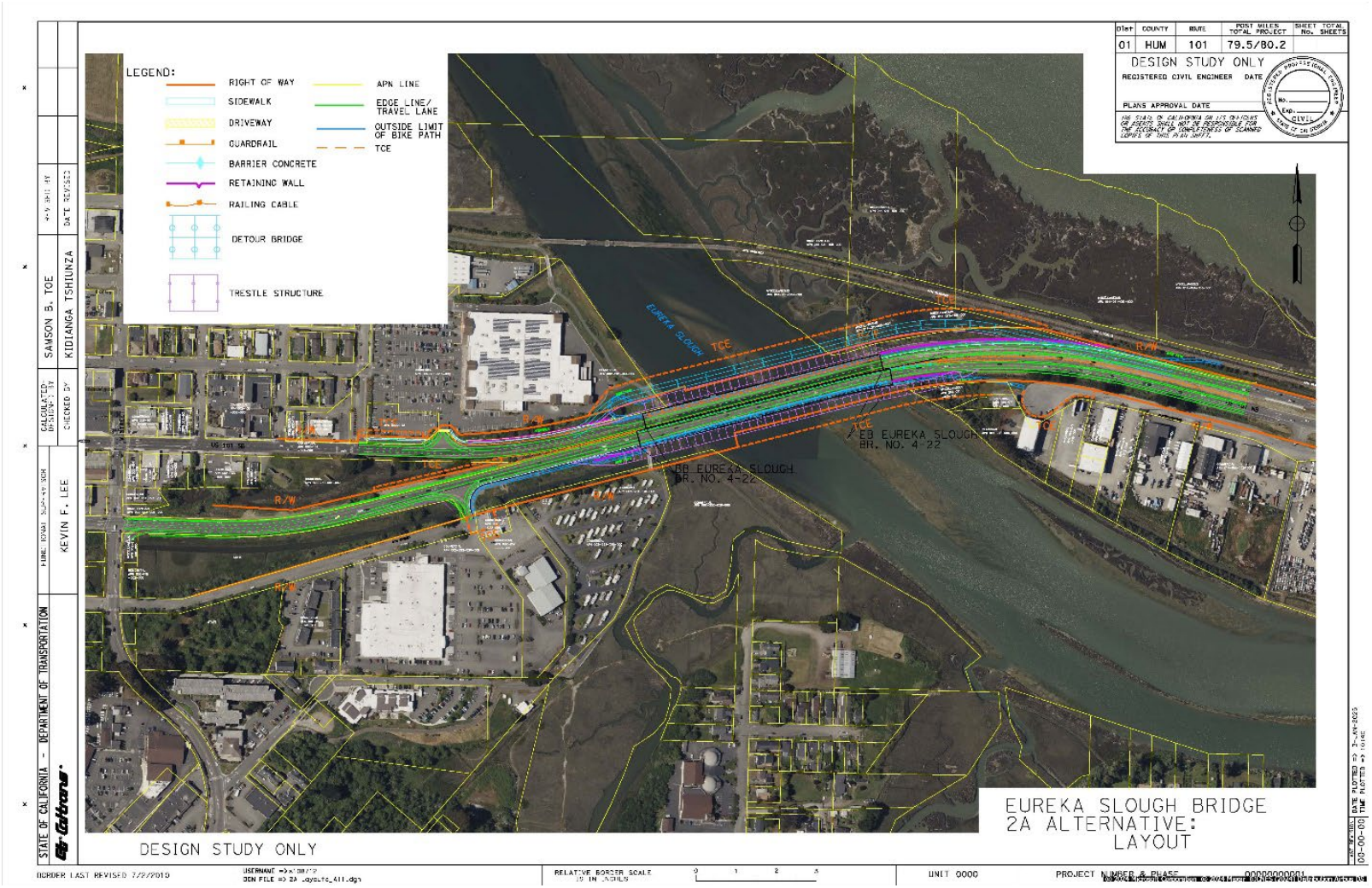


Figure 7. Alternative 2A Layout 1



Figure 8. Alternative 2A Layout 2

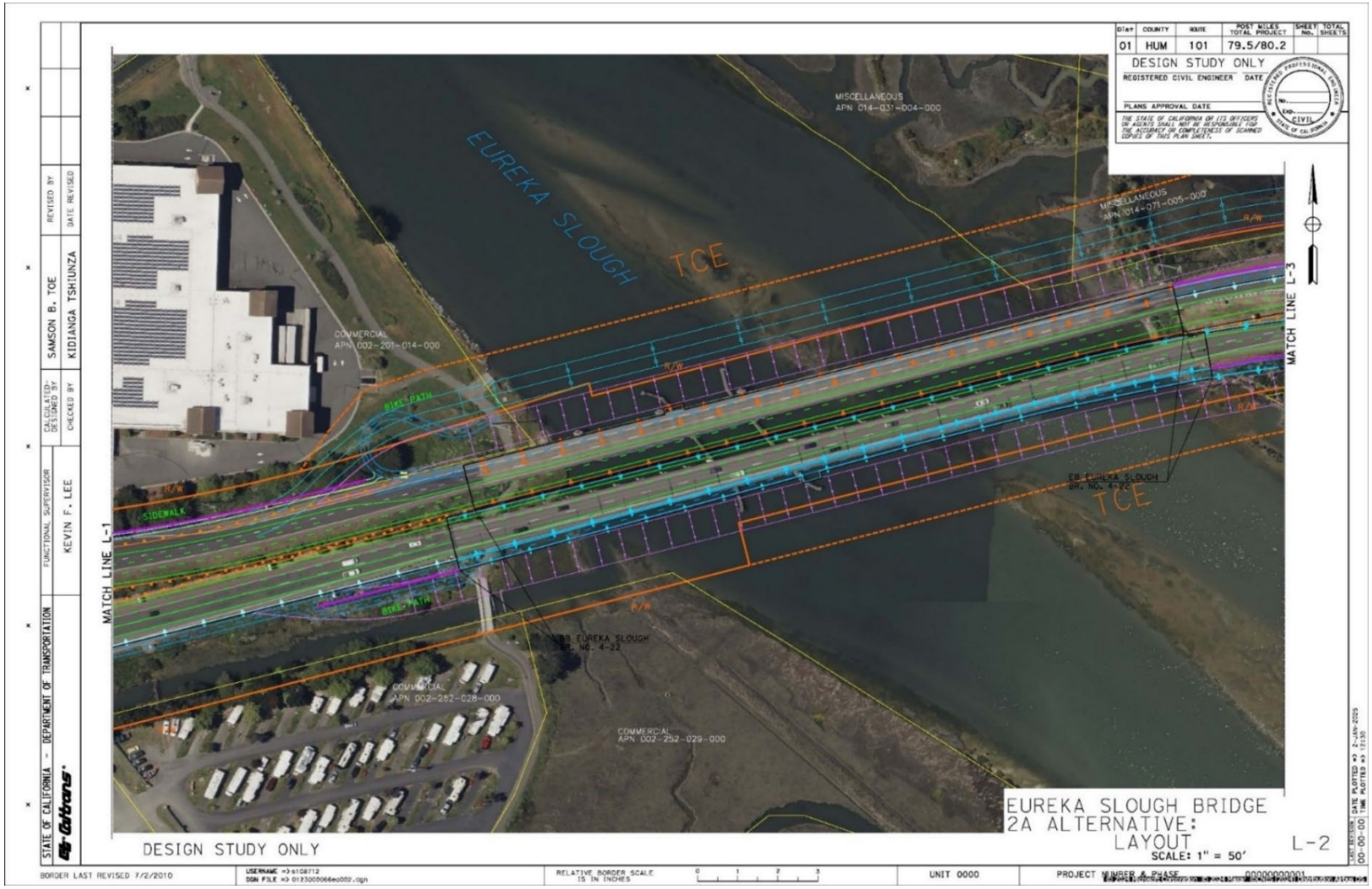


Figure 9. Alternative 2A Layout 3



Figure 10. Alternative 2A Layout 4

2A Right of Way

Build Alternative 2A is anticipated to require TCEs and ROW acquisition. Preliminary identification of parcels that could potentially be affected under Alternative 2A are discussed in detail in Section 2.2.7, *Relocations and Real Property Acquisition*. Refer to Figures 7 through 9 to identify where proposed TCE and ROW acquisition lines encroach onto adjacent parcels. Temporary and permanent impacts to adjacent parcels would be further assessed once a preferred alternative is identified following circulation of the draft environmental document

2A Traffic Shifting During Construction Phases

Build Alternative 2A would utilize a temporary bridge to accommodate southbound traffic. During the various phases of construction, traffic would be shifted in stages based on the work taking place during each phase of construction. The staging scenario for Alternative 2A would include the following (Figures 11-17):

- Construct temporary trestle structure to the north of the existing southbound bridge (Stage 1).
- Construct temporary southbound bridge structure to the north of the existing southbound bridge and temporary trestle (Stage 2).
- Shift southbound traffic to the temporary southbound bridge (Stage 3).
- Remove existing southbound bridge and construct new southbound bridge on existing alignment (Stage 3).
- Shift northbound traffic to the new southbound bridge (Stage 4).
- Construct temporary trestle structure to the south of the existing northbound bridge (Stage 5).
- Remove existing northbound bridge and construct new northbound bridge on existing alignment (Stage 6).
- Shift northbound and southbound traffic to the new northbound and southbound bridges (Stage 7).
- Remove the temporary trestle structures and temporary bridge.



Figure 11. Alternative 2A Construction Stage 1

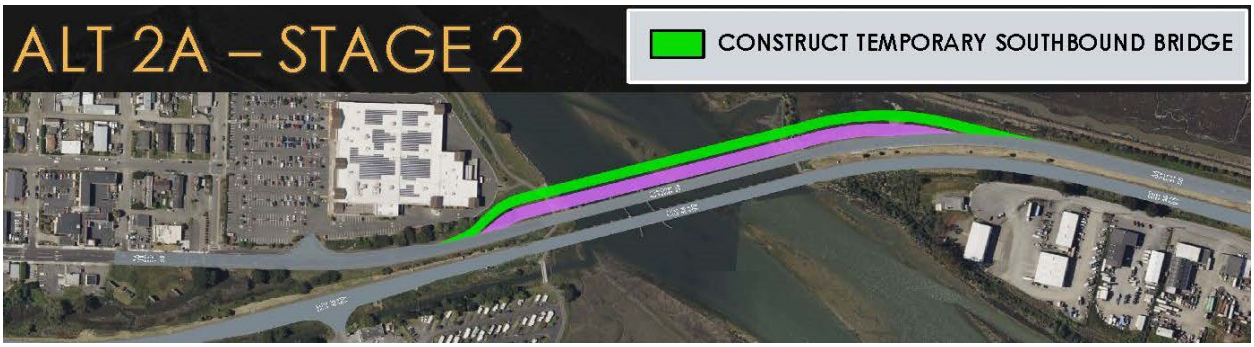


Figure 12. Alternative 2A Construction Stage 2

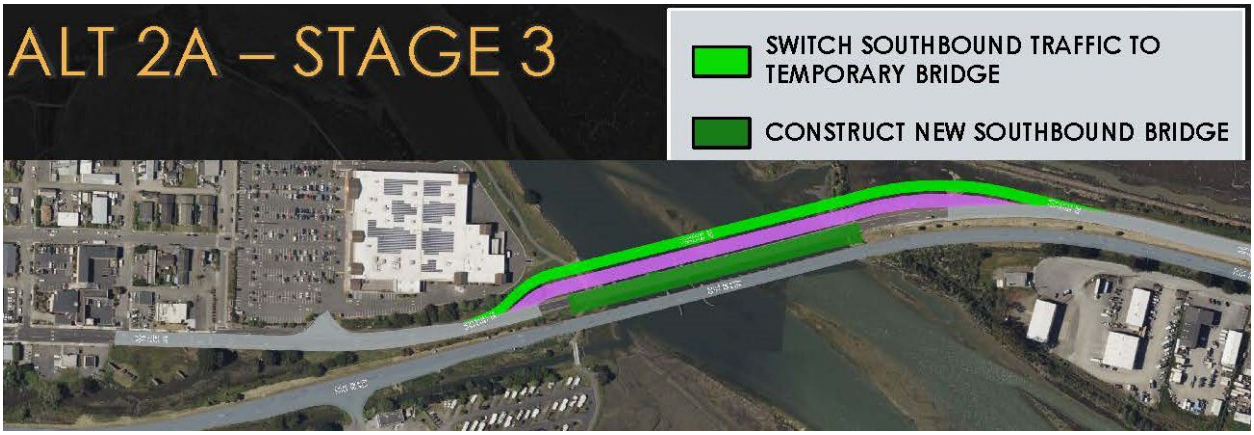


Figure 13. Alternative 2A Construction Stage 3

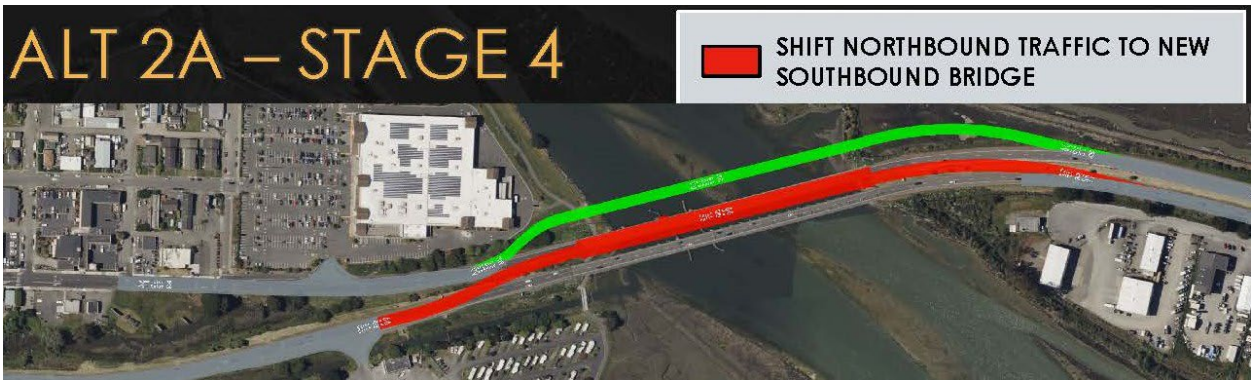


Figure 14. Alternative 2A Construction Stage 4



Figure 15. Alternative 2A Construction Stage 5

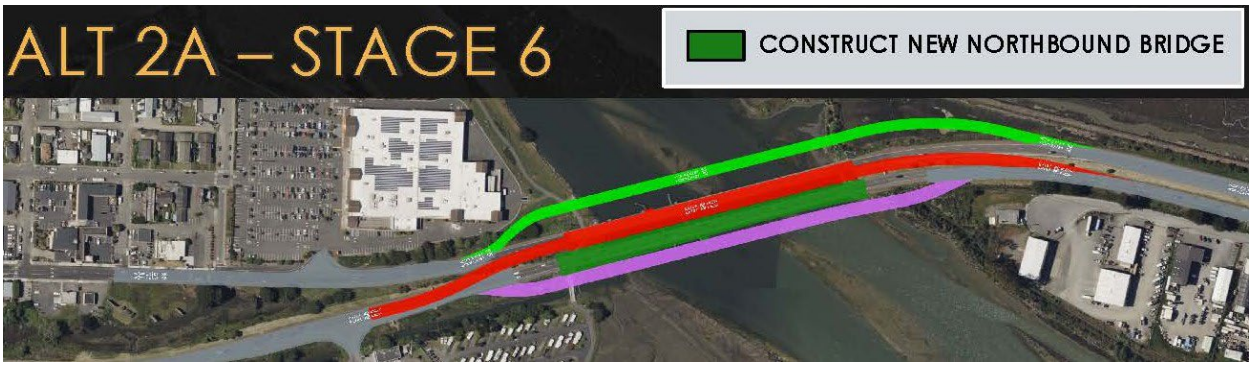


Figure 16. Alternative 2A Construction Stage 6

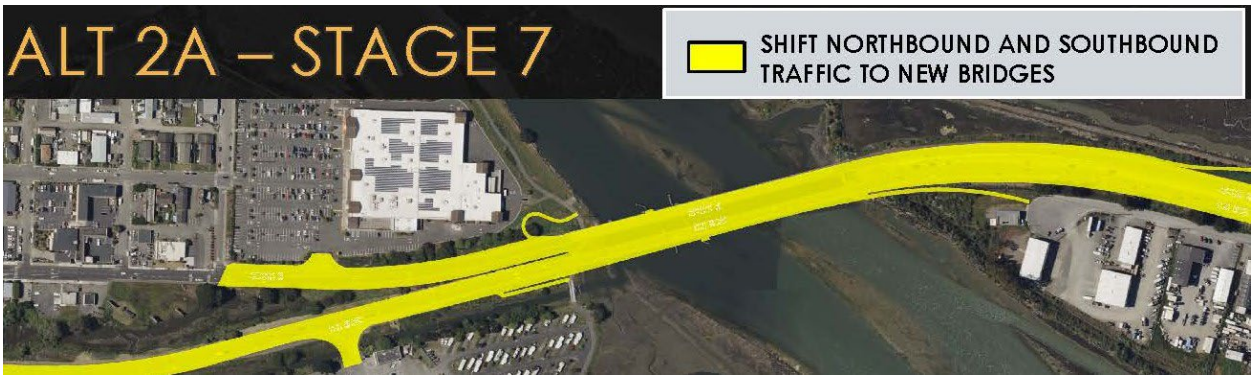


Figure 17. Alternative 2A Construction Stage 7

1.4.2.2 Alternative 2B: Adjacent Southbound Bridge

For construction purposes, Alternative 2B would rebuild the southbound bridge immediately north and adjacent to the highway (Figures 18-21). As with Alternative 2A, this alternative would require two trestles to accommodate new bridge construction and existing bridge demolition. One of the trestles would be constructed north of the southbound bridge, and the new southbound bridge would be constructed immediately adjacent to the existing southbound bridge (between the existing bridge and the trestle). Southbound traffic would be moved to the new southbound bridge and northbound traffic would be switched to the existing southbound bridge structure. A second trestle would be constructed to the south of the existing northbound bridge. This trestle would accommodate demolition and construction of the new northbound bridge structure. The new northbound bridge structure would be constructed on the existing northbound alignment. Once the new northbound bridge is completed, northbound traffic would be routed to the new structure. The existing southbound structure would then be demolished.

The length of the bridges under Alternative 2B would be approximately 878-feet for the southbound bridge and 922-feet for the northbound bridge with a distance of 45-feet between the two structures.



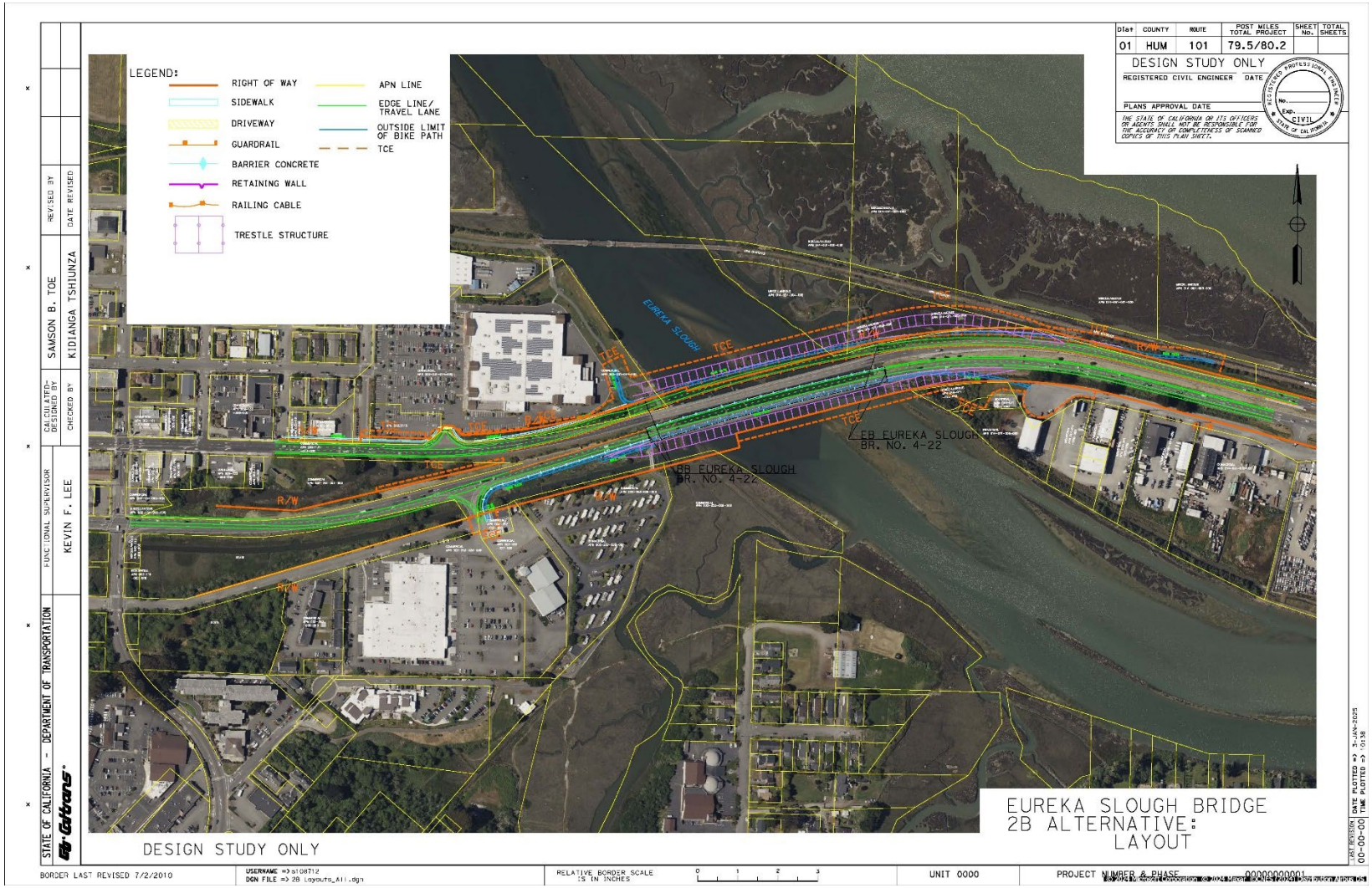


Figure 18. Alternative 2B Layout 1

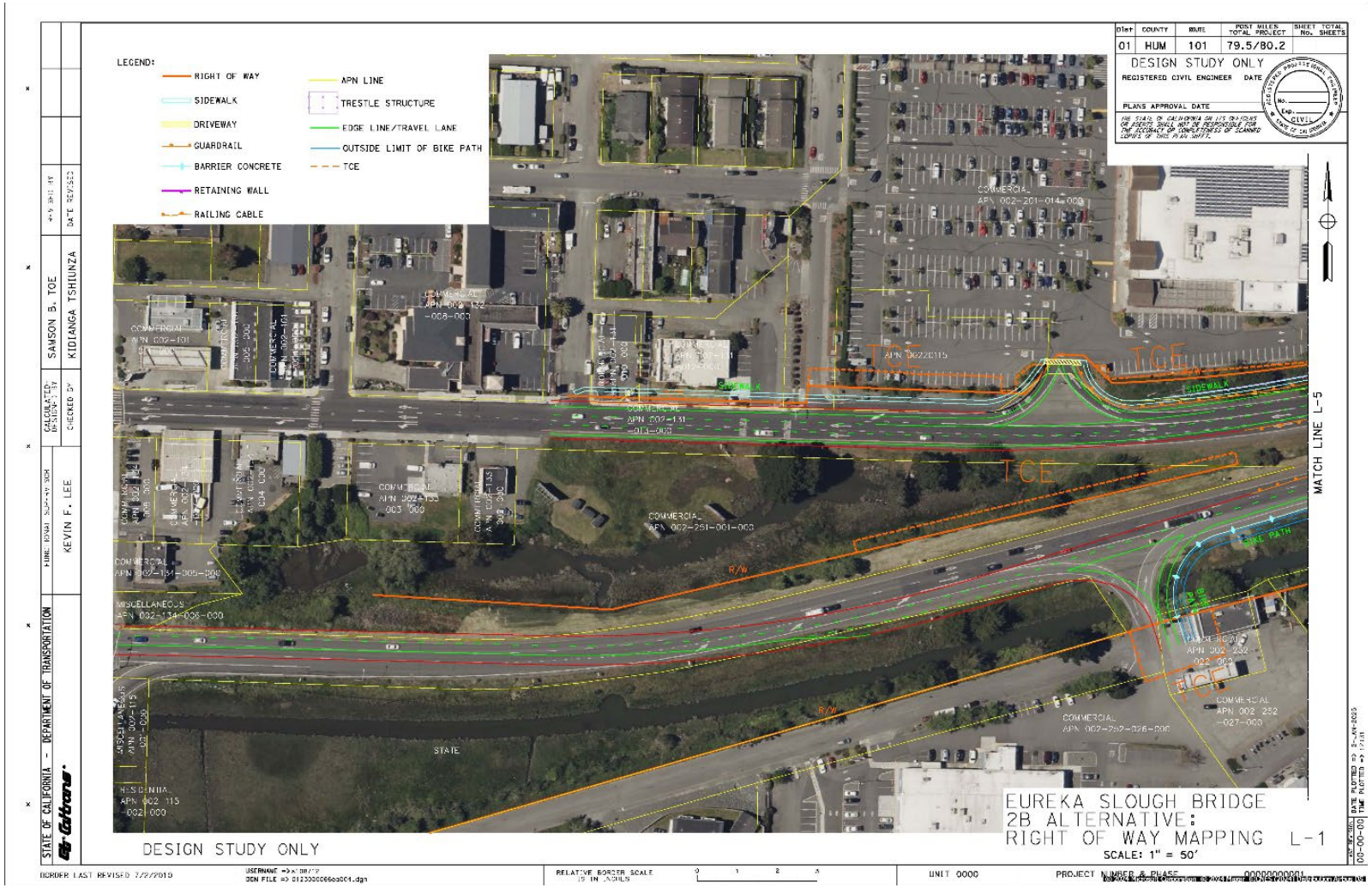


Figure 19. Alternative 2B Layout 2

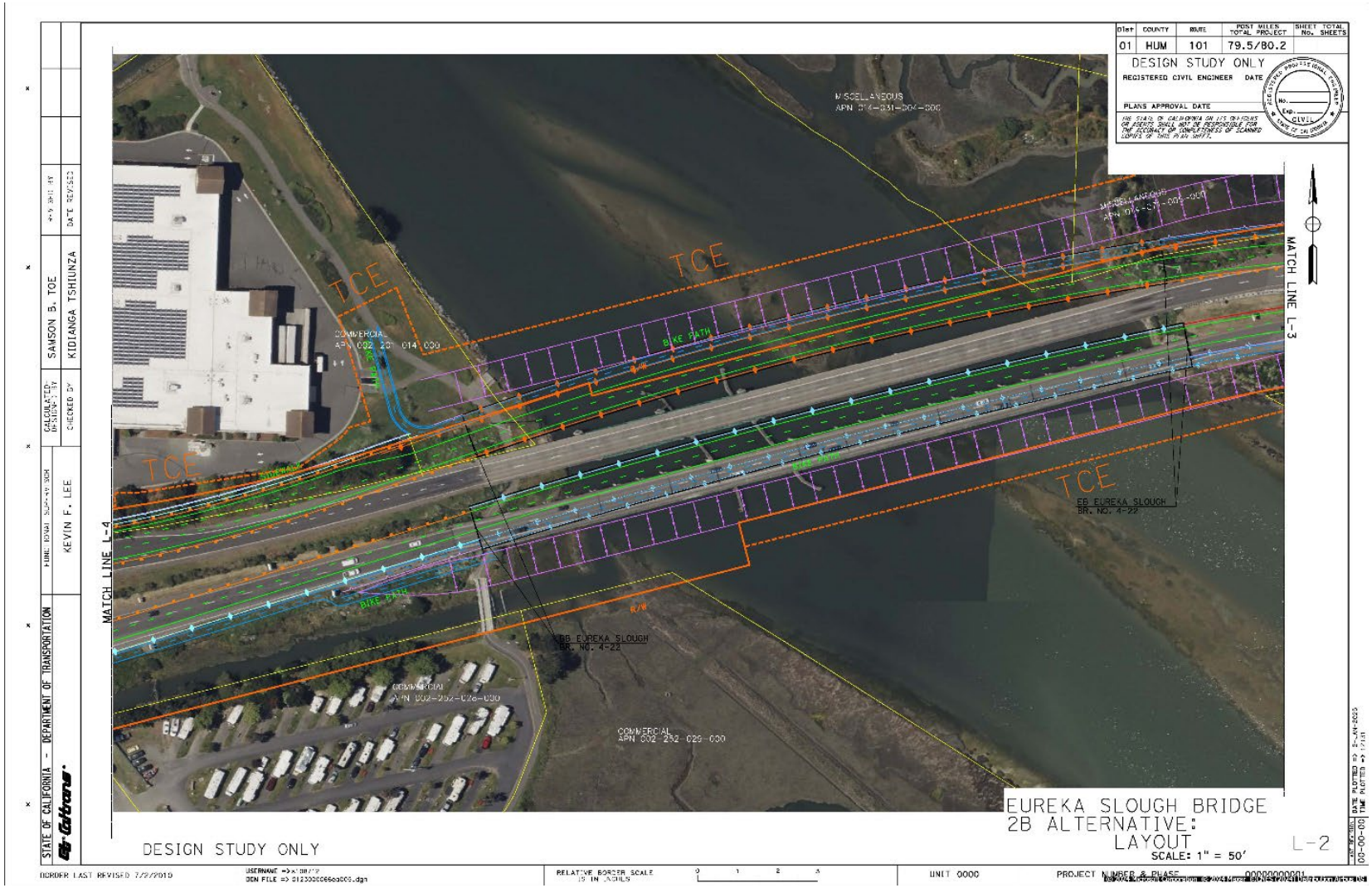


Figure 20. Alternative 2B Layout 3



Figure 21. Alternative 2B Layout 4

2B Right of Way

Build Alternative 2B is anticipated to require TCEs and ROW acquisition. Preliminary identification of parcels that could potentially be affected under Alternative 2B are discussed in detail in Section 2.2.7, *Relocations and Real Property Acquisition*. Refer to Figures 18 through 21 to identify where proposed TCE and ROW acquisition lines encroach onto adjacent parcels. Temporary and permanent impacts to adjacent parcels would be further assessed once a preferred alternative is identified following circulation of the draft environmental document

2B Traffic Shifting During Construction Phases

Build Alternative 2B would build a new southbound bridge north of the existing bridge and utilize the existing southbound bridge for northbound traffic to maintain two lanes in each direction throughout the various phases of construction. The staging scenario for Alternative 2B would include the following (Figures 22-27):

- Construct a temporary trestle to the north of the existing southbound bridge (Stage 1).
- Construct a new southbound bridge adjacent to the temporary trestle (Stage 2).
- Switch southbound traffic to the new southbound bridge and switch northbound traffic to the existing southbound bridge (Stage 3).
- Construct a temporary trestle south of the northbound bridge (Stage 3).
- Remove existing northbound bridge and construct new northbound bridge on existing alignment (Stage 4).
- Switch northbound traffic to new northbound bridge (Stage 5).
- Remove existing southbound bridge (Stage 6).

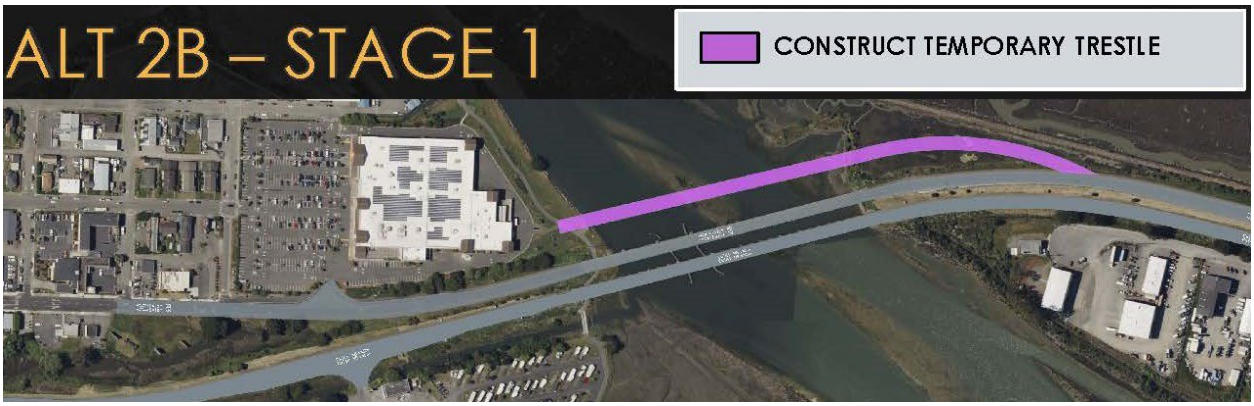


Figure 22. Alternative 2B Construction Stage 1

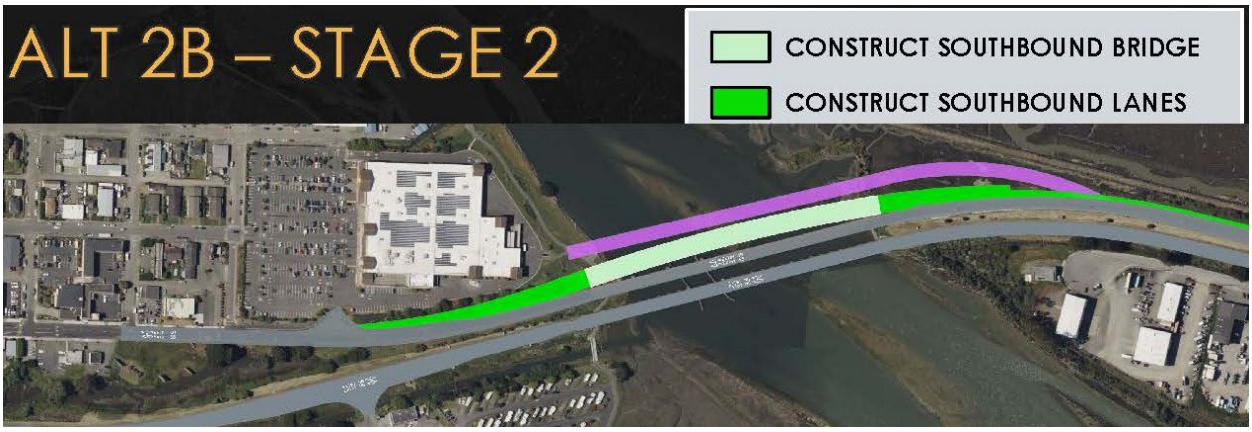


Figure 23. Alternative 2B Construction Stage 2

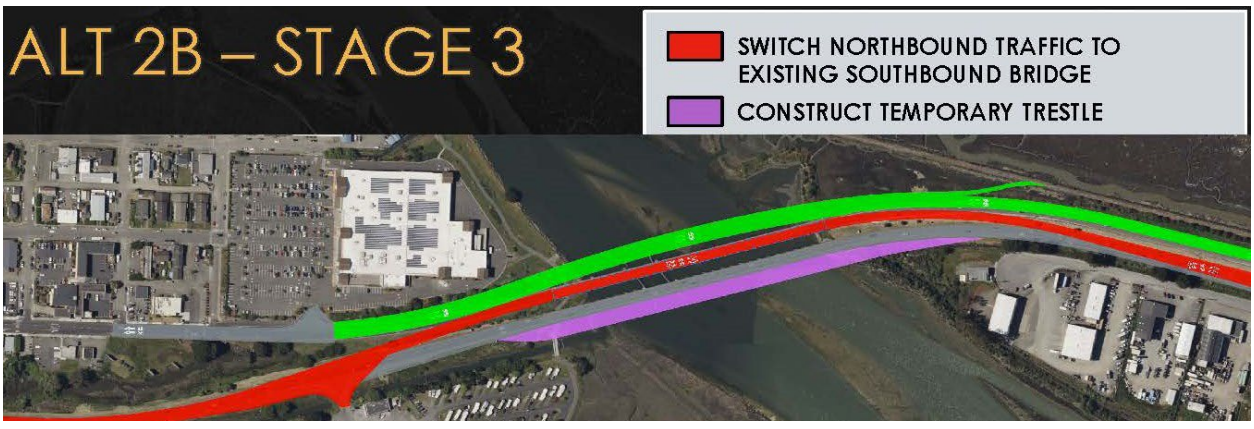


Figure 24. Alternative 2B Construction Stage 3

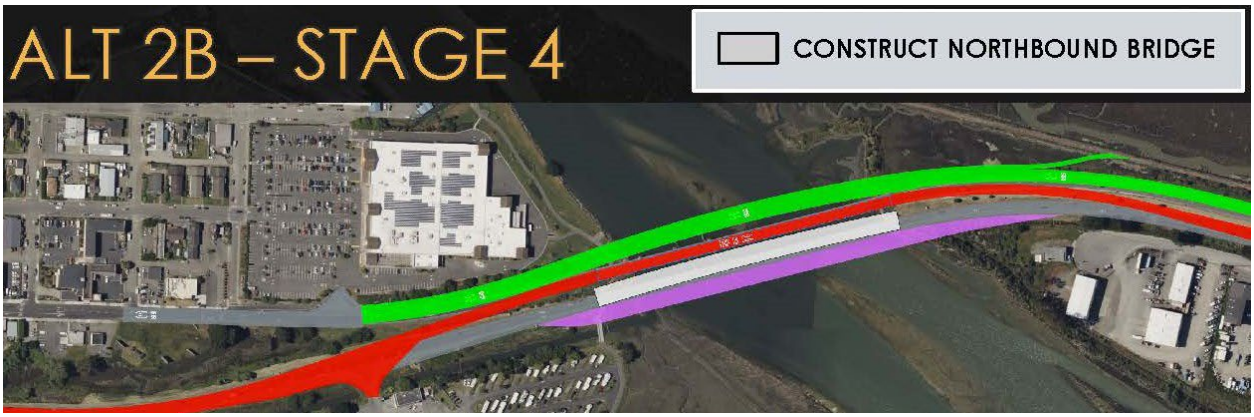


Figure 25. Alternative 2B Construction Stage 4

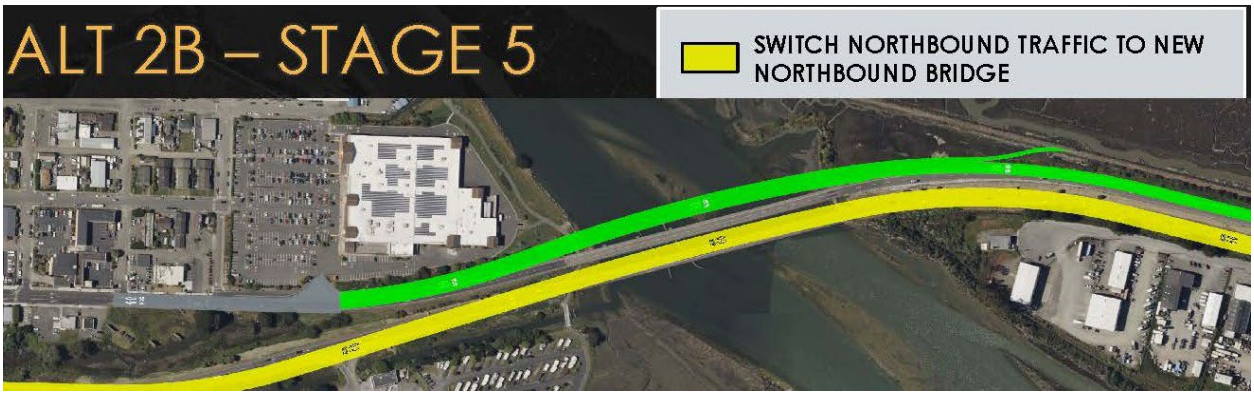


Figure 26. Alternative 2B Construction Stage 5

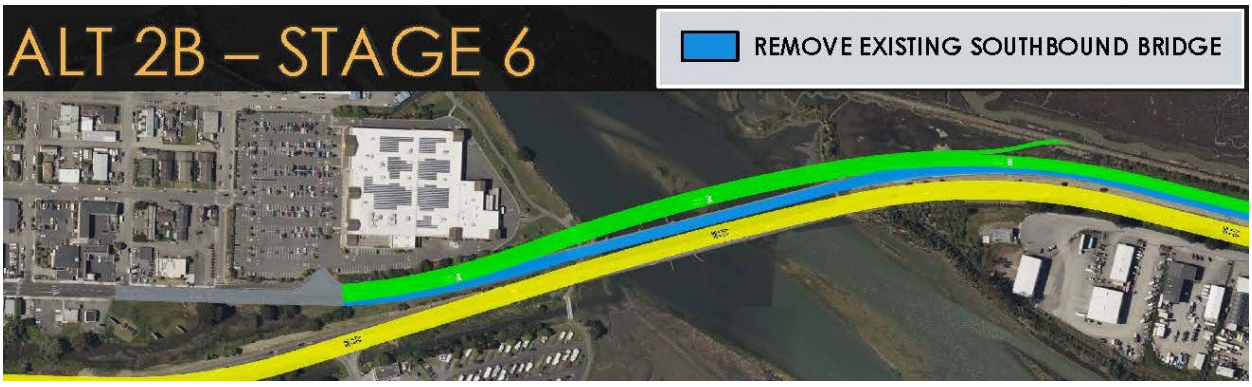


Figure 27. Alternative 2B Construction Stage 6

1.4.2.3 No-Build (No-Action) Alternative

Under the No Build Alternative, the proposed project would not be implemented. No construction activities would occur, and the existing structures would not meet current structural and geometric design standards and multimodal improvements would not be made.

1.4.3 Comparison of Alternatives

After the EIR/EA 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 any impacts that will not be mitigated below a level of significance, and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. Caltrans would then file a Notice of Determination with the State Clearinghouse that would identify whether the project will 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 FHWA, determines the NEPA action does not significantly impact the environment, Caltrans will issue a Finding of No Significant Impact (FONSI). If it is determined that the project is likely to have a significant effect on the environment, an Environmental Impact Statement (EIS) would be prepared.

Table S-1, in the Summary section of this document, provides a thorough summary of information for comparison of the two Build Alternatives and the No Build Alternative. Potential environmental effects are identified by resource category and proposed avoidance, minimization, and mitigation measures are included in Table S-1. Both Build Alternatives have similar effects to several resources; however, there are some key differences in the areas of traffic management, biological resources and right of way. Some of the key differences between the two build alternatives are discussed below.

Traffic Management

Resource topics relevant to traffic management are found in Table S-1 under Bikes and Pedestrian Facilities, Community Character and Cohesion, and Transportation. During construction, both Build Alternatives would maintain two lanes of traffic in each direction during peak travel times. The alternatives would maintain traffic by using two different traffic handling strategies. Traffic handling would be accomplished by utilizing a third bridge. Alternative 2A includes a temporary bridge to accommodate southbound traffic. The temporary bridge would be removed after the existing bridges have been demolished and the new bridges constructed at their existing locations. Alternative 2B

includes a new southbound bridge that would be constructed adjacent to the existing southbound bridge location. Southbound traffic would be shifted from the existing to the new southbound bridge. Subsequent construction phases would move northbound traffic to the existing southbound bridge while the existing northbound bridge is demolished, and the new northbound bridge is built.

Traffic delays during construction would be similar between the two Build Alternatives; however, Alternative 2A is estimated to take up to four construction seasons while Alternative 2B is estimated to take up to five construction seasons. Additional details are in Section 1.4.2, Unique Design Features and 2.2.9, Traffic and Transportation/Pedestrian and Bicycle Facilities.

Biological Resources

The project limits contain several sensitive resources; however, the impacts are similar for both alternatives. The following are some of the key differences between Alternatives 2A and 2B.

- Eel grass: Alternative 2A would temporarily impact 0.211 acre of eelgrass and Alternative 2B would temporarily impact 0.153 acre. Permanent impacts to eelgrass would be 0.0002 acre under Alternative 2A and 0.112 acre under Alternative 2B, a difference of 0.11 acre.
- Pickleweed: Alternative 2A would temporarily impact 0.021 acre of pickleweed mats and Alternative 2B would temporarily impact 0.145 acre, a difference of 0.12 acre. Permanent impacts to pickleweed mat would be 0.03 acre under Alternative 2A and 0.2 under Alternative 2B, a difference of 0.17 acre.
- Wetlands and Other Waters: Alternative 2A would temporarily impact 0.3 acre of wetlands and waters and Alternative 2B would temporarily impact 0.52 acre, a difference of 0.22 acre. Permanent impacts to wetlands and waters would be 0.16 acre under Alternative 2A and 0.6 under Alternative 2B, a difference of 0.44 acre.
- Alternative 2A would have no permanent impacts to Humboldt Bay owl's-clover or Point Reyes bird's-beak. Alternative 2B would permanently impact 218 square feet of Humboldt Bay owl's-clover and 1,089 square feet of Point Reyes bird's-beak.
- Humboldt Bay Wildlife Refuge: Alternative 2A would only have temporary impacts to the Refuge. Alternative 2B would have temporary and permanent impacts.
- Construction seasons: Threatened and endangered species, sound impacts to aquatic species. Alternative 2B could potentially be less impactful, depending on number of construction seasons.

Right of Way (Relocations and Real Property Acquisition)

The Build Alternatives have different footprints resulting in different right of way acquisition needs for the project. No residential or business relocations would be needed for the project. Both alternatives would require an estimated 9 temporary construction easements for minor portions of parcels adjoining the project limits. The exact limits of the TCEs have not yet been established, but they would vary only slightly between the Build Alternatives. Both alternatives would need a permanent easement to connect to the Humboldt Bay Trail South at the northeastern end of the project limits. This easement would be the same for both build Alternatives.

Permanent, partial right of way acquisitions would be needed to facilitate the connection from the southbound bridge bicycle/pedestrian lane to the Eureka Waterfront Trail, the extension of the sidewalk adjacent to southbound U.S. 101, and at the corner of northbound U.S. 101 and the 6th Street gas station and market parcel. The size and exact boundary of the acquisitions would vary based on the alternative selected however, the difference in total area acquired would be minor.

The project would need to use portions of the two Humboldt Bay National Wildlife Refuge (HBNWR) parcels located adjacent to the southbound U.S. 101 east bridge abutment. For Alternative 2A, the temporary bridge would need a TCE. Under Alternative 2B, the new southbound bridge would require a TCE and a partial acquisition of the HBNWR parcels. Additional information can be found in Section 2.2.7, Relocations and Real Property Acquisition.

1.4.4 Environmentally Superior Alternative

In accordance with CEQA Guidelines Section 15126.6(c)(2), an “environmentally superior alternative” must be identified among the alternatives analyzed in the EIR. The environmentally superior alternative is the alternative found to have an overall environmental advantage based on the impact analysis in the EIR. If the environmentally superior alternative is the “no project” alternative, also known as the No-Build Alternative, the EIR must identify an environmentally superior alternative among the proposed build alternatives.

For the Eureka Slough Bridges Replacement Project, under the No Build Alternative, the proposed project would not be implemented. No construction activities would occur, and the existing structures would not meet current structural and geometric design standards and multimodal improvements would not be made. The existing bridges would exceed their design life. Compared to the proposed build alternatives, which include several features that would impact environmental resources, the No-Build Alternative would be the environmentally superior alternative.

Determining which of the build alternatives is environmentally superior can involve judgment and depends on many factors. An evaluation of concerns that have the greatest potential to result in long-term, significant impacts must be conducted. Pursuant to CEQA Guidelines Section 15126.6(b), discussion of alternatives with potential for avoiding or substantially lessening the significant impacts should be considered even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly.

As indicated in Table S-1 and Section 1.4, for several resources Alternatives 2A and 2B have similar potential for effects (e.g., water quality, noise, air quality, etc.); however, there are some key differences related to the more sensitive resources located within the project area. The key factors are listed below:

- Right of Way/Recreation: Alternative 2A would not have permanent impacts on the Humboldt Bay National Wildlife Refuge, a Section 4(f) resource, whereas Alternative 2B would permanently impact a portion of two Refuge parcels.
- Wetlands and Other Waters: Alternative 2B would impact approximately 7 times more estuarine marsh than Alternative 2A. Alternative 2B would impact more (0.2) acres of other wetlands and waters than Alternative 2A.
- Sensitive Natural Communities: Alterative 2B would impact approximately 6 times more Pickleweed Mat Alliance than Alternative 2A. Alternative 2A would permanently impact fewer acres of Eelgrass Beds Pacific Aquatic Alliance.
- Hydrology: Alternative 2A would have 10.6 acres of Disturbed Soil Area (DSA) and 4.8 acres of new impervious surface (NIS), whereas Alternative 2B would have 13.3 acres DSA and 5.5 acres of NIS.
- Construction seasons: Traffic delays would be experienced throughout construction. Alternative 2A would take up to 5 construction seasons to construct. Alternative 2B would take up to 4 construction seasons to construct.

For many biological resource categories (e.g., wetlands, sensitive natural communities, special-status plant species), the impacts from Alterative 2B are greater than the impacts from Alternative 2A. For special-status wildlife species the impacts from the two Build Alternatives are very similar. Based on the sensitivity associated with biological resources, the analysis indicates that Alternative 2A would be the environmentally superior alternative.

Alternative 2A would have temporary impacts to the wildlife Refuge (Section 4(f) Resource[1]), whereas Alternative 2B would have temporary and permanent impacts to the Refuge. Further, Alternative 2A would result in fewer acres of DSA and NIS. Based on this, Alternative 2A has been identified as the Environmentally Superior Alternative; however, the Lead Agency is not obligated to select the Environmentally Superior Alternative for implementation if it would not accomplish the basic project objectives and/or is infeasible (see State CEQA Guidelines Section 15126.6(a), (c) and (f)).

1.5 Alternatives Considered but Removed from Further Discussion

Five alternatives, retrofit of both structures, the Jacobs Avenue connector, a northbound detour bridge, a highway shift to the south, and constructing in the median were considered but eliminated from further consideration.

1.5.1 Retrofit of Both Structures

While the project was originally scoped as a seismic retrofit of both structures, this alternative was advised against early on as a result of the Value Analysis. Caltrans determined that the amount of environmental clearance, permitting, and mitigation required for the bridge retrofit would be similar to bridge replacement. A retrofit would have required in-channel work around the piers, and could impact waters, fish species, and eel grass. Additionally, the seismic retrofit would not extend the life of the structures, and they would still need to be replaced likely within 10-20 years after the retrofit project, impacting the environment a second time. Resource agencies recommended the replacement option to minimize work in the channel.

[1] Section 4(f) refers to the original section within the U.S. Department of Transportation Act of 1966 which provided for consideration of park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development. The law, now codified in 49 U.S.C. § 303 and 23 U.S.C. § 138, applies only to the U.S. Department of Transportation (USDOT) and is implemented by the Federal Highway Administration (FHWA) and the Federal Transit Administration through the regulation 23 Code of Federal Regulations (CFR) 774. Section 4(f) mandates federal transportation agencies to "avoid or minimize harm" to publicly owned parks, recreational areas, wildlife and waterfowl refuges, and significant historic sites (public or private) when developing transportation projects, essentially requiring them to find feasible alternatives.

1.5.2 Jacobs Avenue Connector

The connector alternative was explored as either an additional southbound lane on the new northbound bridge, or as a third bridge to address potential future issues that the Jacobs Avenue area may have with a southbound return to Eureka. While a controlled left turn onto southbound U.S. 101 from Airport Road would be facilitated with a half signal constructed in 2025, traffic volume forecasting indicated this signal may need to be removed by 2035 due to traffic backing up on northbound U.S. 101. If the half signal at Airport Road is removed in the future, southbound traffic leaving the Jacobs Avenue area would need to travel approximately 1.8 miles northbound on U.S. 101 and make a U-turn through the Indianola interchange.

There were numerous traffic operations issues with both the additional southbound lane and third bridge options. This alternative was abandoned due to difficulty routing the southbound traffic at the Humboldt Plaza and Chevron/Redwood Market area, complications conforming with the existing exit at 6th Street, potential impacts to traffic flow on adjacent city streets, and the additional impacts to wetlands and waters, fish species, and other coastal resources.

1.5.3 Northbound Detour Bridge

A temporary detour bridge was considered adjacent to the south side of the northbound bridge. The construction scenario and staging would be similar (but mirrored) to Build Alternative 2A. However, this strategy led to more complicated longer trestle systems and detour bridge due to needing to span First Slough on one side and a levee, channels, and a tide gate on the other side. Additionally, a temporary bridge and trestle to the south of the existing alignment would impact the Shoreline RV Park and Ayres Family Cremation businesses. The project would need to occupy a portion of the RV Park and potentially close the cremation facility for the duration of construction (up to five years) as well as restricting access to other businesses at the west end of Jacobs Avenue. This alignment could also conflict with the existing gas station at the Humboldt Plaza, as the construction trestles, detour bridge or new alignment bridge would be realigning closer to that facility.

These considerations would increase the overall cost of the project, and impact local businesses, and biological resources. Thus, this strategy was considered not prudent or feasible and not pursued further.

1.5.4 Shift Highway to the South

The alternative would permanently shift the bridges to the south, which would also require shifting the highway to the south. This would require longer replacement bridges and a much more complicated, longer trestle system than other alternatives. It would result in permanent displacement of businesses, disruption of established roadway patterns, additional impacts to biological resources, and substantially increased costs. Shifting the highway to the south was considered not prudent or feasible and not pursued further.

1.5.5 Build in the Median

This alternative proposed to construct within the median adjacent to live traffic to minimize the environmental footprint. The option of building between the existing structures was considered but rejected due to:

1) Space limitation: Because of the limited space between the existing bridges, accessing the area with large equipment (e.g., cranes), including the need for equipment to pass each other, would constrain construction activities and/or make construction infeasible.
2) Traffic impacts: During construction, because of the need to routinely cross live traffic lanes to access the area between the bridges, this alternative would result in significant traffic impacts throughout the duration of construction.

1.6 Project Features, Standard Measures, and Best Management Practices Common to All Build Alternatives

This project contains a number of standardized project measures which are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. The project Standard Measures and Best Management Practices (BMPS) are identified below and are also addressed in the Environmental Consequences sections found in Chapter 2.

AESTHETICS/VISUAL RESOURCES

AR-1: Aesthetic treatment (such as tribal patterns) to bridges/guardrails/retaining walls would be included to address context sensitivity.

AR-2: Temporary access roads, construction easements, and staging areas that were previously vegetated would be restored to a natural contour and revegetated with regionally appropriate native vegetation.

AR-3: Where feasible, guardrail terminals would be buried; otherwise, an appropriate terminal system would be used, if appropriate.

AR-4: Where feasible, construction lighting would be temporary, and directed specifically on the portion of the work area actively under construction.

AR-5: Where feasible, the removal of established trees and vegetation would be minimized. Environmentally sensitive areas would have Temporary High Visibility Fencing (THVF) installed before start of construction to demarcate areas where vegetation would be preserved, and root systems of trees protected.

AR-6: To ensure that the vegetation control would be visually compatible with the scenic corridor, provide integral colored or stained Vegetation Control (Minor Concrete) at all MGS replacement locations. The color and application method would be determined during the final design phase of the project.

AIR QUALITY

AQ-1: The construction contractor must comply with the Caltrans Standard Specifications that specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including the North Coast Air Quality Management District regulations and local ordinances.

AQ-2: Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by California Code of Regulations (CCR) Title 17, Section 93114.

AQ-3: A *Dust Control Plan* will be developed documenting sprinkling, temporary paving, speed limits, and timely revegetation of disturbed slopes as needed to minimize construction impacts to existing communities. Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions. Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from

the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.

AQ-4: Environmentally sensitive areas will be established near sensitive air receptors (areas with populations identified as being particularly sensitive to air quality such as hospitals and schools) . Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.

BIOLOGICAL RESOURCES

BR-1: General

Before start of work, as required by permit or consultation conditions, a Caltrans biologist or Environmental Construction Liaison (ECL) would meet with the contractor to brief them on environmental permit conditions and requirements relative to each stage of the proposed project, including, but not limited to, work windows, drilling site management, and how to identify and report regulated species within the project areas.

BR-2: Animal Species

A. To protect migratory and nongame birds (occupied nests and eggs), if possible, vegetation removal would be limited to September 16–January 31, the period outside of the bird nesting season. If vegetation removal is required from February 1–September 15, during the bird nesting season, a nesting bird survey would be conducted by a qualified biologist within 5 days prior to vegetation removal. If an active nest is located, the biologist would coordinate with CDFW to establish appropriate species-specific buffer(s) and any monitoring requirements. The buffer(s) would be delineated around each active nest and construction activities would be excluded from these areas until birds have fledged, or the nest is determined to be unoccupied.

B. Hydroacoustic monitoring may occur during activities such as impact pile driving, hoe-ramming, or jackhammering which could potentially produce impulsive sound waves that may affect listed fish species. Hydroacoustic monitoring would comply with the terms and conditions of federal and state Endangered Species Act consultations.

   The *Hydroacoustic Monitoring Plan* would describe the monitoring methodology, frequency of monitoring, positions that hydrophones would be deployed, techniques for gathering and analyzing data, quality control measures, and reporting protocols.

To reduce potential hydroacoustic impacts to anadromous species due to impact pile driving, work would cease for the day once the Sound Exposure Level (SEL cumulative) thresholds for potential injury are reached (i.e., 187 dB for fish two grams or heavier, 183 dB for fish smaller than two grams), and a sound-attenuation system may be implemented. The sound attenuation system would be used for piles installed in water by impact hammer. If the sound attenuation system fails, pile driving will stop immediately and will not resume until the system is operational. Types of sound attenuation system include, but are not limited to:

a) Confined bubble curtain

b) Unconfined bubble curtain

c) Isolation casings

C. A qualified biologist would monitor in-stream construction activities that could potentially impact sensitive biological receptors (e.g., amphibians, fish). To ensure adherence to permit conditions, the biological monitor would be present during activities such as installation and removal of dewatering or diversion systems, bridge demolition, pile-driving and hoe-ramming, and drilling for bridge foundations. In-water work restrictions would be implemented.

D. Artificial night lighting may be required. To reduce potential disturbance to sensitive resources, lighting would be temporary, and directed specifically on the portion of the work area actively under construction. Use of artificial lighting would be limited to Cal/OSHA work area lighting requirements.

E. A Limited Operating Period would be observed, whereby all in-stream work below ordinary high water (OHW) would be restricted to the period between June 15 and October 15 to protect water quality and vulnerable life stages of sensitive fish species.

F. If pre-construction surveys determine presence, A *Bird Exclusion Plan* would be prepared by a qualified biologist prior to construction. Exclusion devices would be designed so they would not trap or entangle birds or bats. Exclusion devices would be installed outside of the breeding season (September 16 through January 31) to eliminate the re-occupancy of existing structures by migratory bird species that may attempt to nest on the structure during construction. On structures or parts of structures where it is not feasible to install bird exclusion devices, partially constructed and unoccupied nests within the construction area would be removed and disposed of on a regular basis throughout the breeding

season (February 1 through September 15 with biologist discretion) to prevent their occupation. Nest removal would be repeated weekly under guidance of a qualified biologist to ensure nests are inactive prior to removal.

G. If pre-construction surveys determine presence, a *Bat Exclusion Plan* would be prepared by a qualified biologist prior to construction. Exclusion devices would be designed so they would not trap or entangle bats or birds. The Bat Exclusion Plan would include guidelines for appropriate date of exclusion and temperature parameters based on bridge type, geographic location, and species present. At the direction of a qualified biologist, exclusion devices would be installed after the maternity season but before hibernation. If overlapping resources are present (e.g., nesting birds), coordination between the Bat Exclusion Plan and any other relevant plans would occur. Measures would be monitored by a qualified biologist.

H. An *Aquatic Species Relocation Plan*, or equivalent, would be prepared by a qualified biologist and include provisions for pre-construction surveys and the appropriate methods or protocols to relocate any species found. If previously unidentified threatened or endangered species are encountered or anticipated incidental take levels are exceeded, work would either be stopped until the species is out of the impact area, or the appropriate regulatory agency would be contacted to establish steps to avoid or minimize potential adverse effects.

I. To prevent attracting corvids (birds of the *Corvidae* family which include jays, crows, and ravens), no trash or foodstuffs would be left or stored on-site. All trash would be deposited in a secure container daily and disposed of at an approved waste facility at least once a week. Also, on-site workers would not attempt to attract or feed any wildlife.

BR-3: Invasive Species

Invasive non-native species control would be implemented. Measures would include:

A. Straw, straw bales, seed, mulch, or other material used for erosion control or landscaping which would be free of noxious weed seed and propagules.

B. All equipment would be thoroughly cleaned of all dirt and vegetation prior to entering the job site to prevent importing invasive non-native species. Project personnel would adhere to the latest version of the *California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol 2022 (Northern Region)* for all field gear and equipment in contact with water.

BR-4: Plant Species, Sensitive Natural Communities, and ESHA

A. Seasonally appropriate, pre-construction floristic surveys for sensitive plant species would be completed (or updated) by a qualified biologist prior to construction in accordance with *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities* (CDFW 2018).

B. A Revegetation Plan would be prepared which would include a plant palette, establishment period, watering regimen, monitoring requirements, and invasive species control measures. The Revegetation Plan would also address measures for wetland and riparian areas temporarily impacted by the project.

C. Prior to the start of work, Temporary High Visibility Fencing (THVF) and/or flagging would be installed around sensitive natural communities, environmentally sensitive habitat areas, rare plant occurrences, intermittent streams, and wetlands and other waters, where appropriate. No work would occur within fenced/flagged areas.

D. Upon completion of construction, all superfluous construction materials would be completely removed from the site. The site would then be restored by regrading and stabilizing with a hydroseed mixture of native species along with fast growing sterile erosion control seed, as required by the *Erosion Control Plan*.

BR-5: Wetlands and Other Waters

A. In-stream work would mostly be conducted in the period between June 15 and October 15 to protect water quality and vulnerable life stages of sensitive fish species (see also BR-2C). Construction activities restricted to this period include any work below the ordinary high water mark (OHWM) or the high tide line (HTL) of tidal waters. Construction activities performed above the ordinary high water mark of a watercourse that could potentially directly impact surface waters (i.e., soil disturbance that could lead to turbidity) would be performed during the dry season, typically between June through October, or as weather permits, per the authorized contractor-prepared Stormwater Pollution Prevention Plan (SWPPP),

Water Pollution Control Program (WPCP), and/or project permit requirements. See BR-4(C) for Temporary High Visibility Fencing (THVF) information.

B. If allowed by regulatory agencies, temporary wetland protection mats may be used to prevent permanent damage and minimize temporary damage to wetlands from construction activities. Mats should be designed to accommodate motorized equipment or vehicles and to protect the ground without ground preparation. Mats would be removed when wetland access is no longer needed or by November 1 of each year.

CULTURAL RESOURCES

CR-1: Caltrans would coordinate with the Wiyot Tribe, Blue Lake Rancheria, and Bear River Band of the Rohnerville Rancheria Tribe and incorporate measures to protect tribal resources, including potential work windows associated with tribal ceremonies.

CR-2: An archaeological monitor and Wiyot Tribe and/or Blue Lake Rancheria tribal monitor would be used during ground-disturbing activities.

CR-3: If cultural materials are discovered during construction, work activity within a 60-foot radius of the discovery would be stopped and the area secured until a qualified archaeologist can assess the nature and significance of the find in consultation with the State Historic Preservation Officer (SHPO).

CR-4: If human remains and related items are discovered on private or State land, they would be treated in accordance with State Health and Safety Code (H&SC) § 7050.5. Further disturbances and activities would cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to California Public Resources Code (PRC) § 5097.98, if the remains are thought to be Native American, the coroner would notify the Native American Heritage Commission (NAHC) who would then notify the Most Likely Descendent (MLD).

Human remains and related items discovered on federally-owned lands would be treated in accordance with the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (23 USC 3001). The procedures for dealing with the discovery of human remains, funerary objects, or sacred objects on federal land are described in the regulations that implement NAGPRA 43 CFR Part 10.

All work in the vicinity of the discovery shall be halted and the administering agency's archaeologist would be notified immediately. Project activities in the vicinity of the discovery would not resume until the federal agency complies with the 43 CFR Part 10 regulations and provides notification to proceed.

ENERGY

EN-1: When feasible, idling of construction vehicles and equipment would be limited.

EN-2: Energy efficient options would be considered when replacing old highway lighting and other highway infrastructure.

GEOLOGY, SEISMIC/TOPOGRAPHY, AND PALEONTOLOGY

GS-1: The project would be designed to minimize slope failure, settlement, and erosion using recommended construction techniques and Best Management Practices (BMPs). New earthen slopes would be vegetated to reduce erosion potential.

GS-2: In the unlikely event that paleontological resources (fossils) are encountered, all work within a 60-foot radius of the discovery would stop, the area would be secured, and the work would not resume until appropriate measures are taken.

GREENHOUSE GAS EMISSIONS

GHG-1: Caltrans Standard Specification "Air Quality" requires compliance by the contractor with all applicable laws and regulations related to air quality (Caltrans Standard Specification [SS] 14-9).

GHG-2: Compliance with Title 13 of the California Code of Regulations (CCR), which includes restricting idling of diesel-fueled commercial motor vehicles and equipment with gross weight ratings of greater than 10,000 pounds to no more than 5 minutes.

GHG-3: Caltrans Standard Specification "Emissions Reduction" ensures construction activities adhere to the most recent emissions reduction regulations mandated by the California Air Resource Board (CARB) (Caltrans SS 7-1.02C).

GHG-4: Use of a Transportation Management Plan (TMP) to minimize vehicle delays and idling emissions. As part of this, traffic would be scheduled and directed

to reduce congestion and related air quality impacts caused by idling vehicles along the highway during peak travel times.

GHG-5: All areas temporarily disturbed during construction would be revegetated with appropriate native species, as appropriate. Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. This replanting would help offset any potential CO_2 emissions increase.

GHG-6: Pedestrian and bicycle access would be maintained during project activities.

HAZARDOUS WASTE AND MATERIAL

HW-1: Per Caltrans requirements, the contractor(s) would prepare a project-specific *Lead Compliance Plan* (CCR Title 8, § 1532.1, the "Lead in Construction" standard) to reduce worker exposure to lead-impacted soil. The plan would include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of materials containing lead.

HW-2: When identified as containing hazardous levels of lead, traffic stripes would be removed and disposed of in accordance with Caltrans Standard Special Provision "Remove Yellow Traffic Stripes and Pavement Markings with Hazardous Waste Residue" (SSP 14-11.12).

HW-3: If treated wood waste (such as removal of sign posts or guardrail) is generated during this project, it would be disposed of in accordance with Standard Specification 14-11.14 "Treated Wood Waste."

HW-4: If asbestos-containing material is removed during this project, it would be removed and disposed of in accordance with Standard Special Provisions (SSP) 14-11.10 Naturally Occurring Asbestos and SSP 14–11.16 Asbestos-containing Construction Materials in Bridges".

HYDROLOGY AND FLOODPLAIN

HF-1: No new structures would be placed which would result in a substantial backflow during a flood event.

HF-2: Existing bridge pilings would be removed below the bed of the channel, which would reduce resistance and blockage of water moving downstream in a flood event.

NOISE/VIBRATION

NV-1: When feasible, noise-generating construction activities shall be restricted to between 7:00 a.m. and 7:00 p.m. Monday through Saturday, with no construction occurring on Sunday or Federal holidays. If work is necessary outside of these hours, notifications shall be made to interested parties in advance and additional noise controls shall be implemented where practical and feasible.

NV-2: Internal combustion engine driven equipment shall be equipped with manufacturer recommended intake and exhaust mufflers that are in good condition and appropriate for the equipment, and unnecessary idling of internal combustion engines within 100 feet of residences shall be strictly prohibited.

NV-3: "Quiet" air compressors and other "quiet" equipment shall be utilized where such technology exists.

TRAFFIC AND TRANSPORTATION

TT-1: Pedestrian and bicycle access would be maintained during construction.

TT-2: A Transportation Management Plan (TMP) would be applied to the project. The contractor would be required to schedule and conduct work to avoid unnecessary inconvenience to the public and to maintain access to driveways, houses, and buildings within the work zones.

UTILITIES AND EMERGENCY SERVICES

UE-1: All emergency response agencies within the project area would be notified of the project construction schedule and would have access to U.S. Highway 101 throughout the construction period.

UE-2: Caltrans would coordinate with utility providers to plan for relocation of any utilities to ensure utility customers would be notified of potential service disruptions before relocation.

UE-3: The project is located within the *Little or No* CAL FIRE Fire Hazard Severity Zone (FHSZ). The contractor would be required to submit a jobsite *Fire Prevention Plan* as required by Cal/OSHA before starting job site activities. In the event of an emergency or wildfire, the contractor would cooperate with fire prevention authorities.

WATER QUALITY AND STORMWATER RUNOFF

WQ-1: The project would comply with the provisions of the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Permit (Order 2022-0033-DWQ), effective January 1, 2023. If the project results in a land disturbance of one acre or more, coverage under the Construction General Permit (CGP) (Order 2022-0057-DWQ) is also required.

Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2022-0057-DWQ) or Water Pollution Control Program (WPCP) (projects that result in a land disturbance of less than one acre) that includes erosion control measures and construction waste containment measures to protect Waters of the State during project construction. For SWPPP projects (which are governed according to both the Caltrans NPDES permit and the Construction General Permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES and CGP and the corresponding requirements of those permits are adhered to. For WPCP projects (which are governed according to the Caltrans NPDES permit), soil disturbance is permitted to occur year-round as long as the Caltrans NPDES permit is adhered to.

The SWPPP or WPCP would identify the sources of pollutants that may affect the quality of stormwater; include construction site Best Management Practices (BMPs) to control sedimentation, erosion, and potential chemical pollutants; provide for construction materials management; include non-stormwater BMPs; and include routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the *Caltrans Storm Water Quality Handbooks: Construction Site BMPs Manual* to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

The project SWPPP or WPCP would be continuously updated to adapt to changing site conditions during the construction phase.

Construction may require one or more of the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (e.g., fuel, oil, hydraulic fluid, and grease) would be cleaned up in accordance with applicable local, state, and/or federal regulations.

- Accumulated stormwater, groundwater, or surface water from excavations or temporary containment facilities would be removed by dewatering.
- Water generated from the dewatering operations would be discharged on-site for dust control and/or to an infiltration basin, or disposed of offsite.
- Temporary sediment control and soil stabilization devices would be installed.
- Existing vegetated areas would be maintained to the maximum extent practicable.
- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the *Erosion Control Plan*.
- Soil-disturbing work would be limited during the rainy season.

WQ-2: The project would incorporate pollution prevention and design measures consistent with the *2016 Caltrans Storm Water Management Plan*. This plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2022-0033-DWQ).

The project design may include one or more of the following:

- Vegetated surfaces would feature native plants, and revegetation would use the seed mixture, mulch, tackifier, and fertilizer recommended in the Erosion Control Plan prepared for the project.
- Where possible, stormwater would be directed in such a way as to sheet flow across vegetated slopes, thus providing filtration of any potential pollutants.

1.7 Permits and Approvals Needed

The following permits, licenses, agreements, and certifications (PLACs) are required for project construction:

Table 1. Permits and Approvals

Agency	PLAC	Status
California Coastal Commission (CCC)	Coastal Act Federal Consistency Determination Coastal Development Permit (CDP)	Would be obtained after Final Environmental Document (FED) approval.
California Department of Fish and Wildlife (CDFW)	Section 1602 Lake and Streambed Alteration Agreement (LSAA) California Endangered Species Act (CESA) Coordination – Section 2080.1 Consistency Determination (CD) or Section 2081(b) Incidental Take Permit (ITP)	A 1602 Lake and Streambed Alteration Agreement permit and Section 2080.1 agreement (CD or ITP) would be obtained after FED approval.
North Coast Regional Water Quality Board (NCRWQB)	Clean Water Act Section 401 Water Quality Certification (WQC) or waiver and or/Porter Cologne Act Waste Discharge Requirements Compliance with the NPDES Construction General Permit	A 401 WQC and Low Threat Discharge (LTD) Waiver would be obtained after FED approval. A statewide NPDES permit for construction and operations would be in effect for the proposed project. Compliance review would take place during the design phase.
Humboldt Bay Harbor and Recreation District	Harbor District Development Permit	Obtain prior to construction.
State Lands Commission/City of Eureka	State Lands Land Use Lease for encroachment on tidelands/ submerged lands	Obtain after FED approval
North Coast Unified Air Quality Management District	Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Notification	File notification prior to construction
California Transportation Commission (CTC)	Vote to Approve Funds	Vote to approve project funding after FED

Agency	PLAC	Status
United States Fish and Wildlife Service (USFWS)	Section 7 Consultation for Threatened and Endangered Species	Complete prior to FED
USFWS Humboldt Bay National Wildlife Refuge	Section 4(f) Consultation	Ongoing coordination before and after FED
National Oceanic and Atmospheric Administration/ National Marine Fisheries Service (NOAA/NMFS)	Section 7 Consultation for Threatened and Endangered Species	Complete prior to FED
NOAA/NMFS	Essential Fish Habitat Consultation	Complete prior to FED
NOAA/NMFS	Marine Mammal Protection Act Consultation	Complete prior to FED
United States Army Corps of Engineers (USACE)	Clean Water Act Section 404 Permit	Obtain after FED approval
USACE	Rivers and Harbors Act Section 10 Permit	Obtain after FED approval
United States Coast Guard (USCG)	Rivers and Harbors Act Section 9; USCG Permit	Project determined exempt September 25, 2024
State Historic Preservation Office	No Historic Properties Affected	Determined on December 7, 2022
City of Eureka	Consolidation with State Coastal Commission for CDP if project extends into City Local Coastal Program (LCP)	Obtain after FED approval
City of Eureka	Section 4(f) Consultation: Eureka Waterfront Trail and Eureka Slough Boat Launch	Obtain prior to FED approval
Great Redwood Trail Agency	Encroachment Permit	Prior to construction



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

This chapter describes the impacts the proposed project alternatives would have on human, physical, and biological environments within the project area. There are three alternatives for the project, which include two Build Alternatives (Alternatives 2A and 2B) and the No Build Alternative. The potential impacts to the human, physical, and biological environments are often the same for the two proposed Build Alternatives. Where potential impacts differ between the Build Alternatives, the alternatives are compared. Each potential impact is described by resource topic in the following order: Regulatory Setting, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures (AMMs).

The AMMs are described at the end of each resource topic discussion and apply to all build alternatives unless stated otherwise. In addition to AMMs, the project includes Standard Measures and BMPs which apply to all applicable Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. These measures are also addressed in Chapter 1, Section 1.6, *Project Features, Standard Measures, and Best Management Practices Common to All Build Alternatives*.

2.1 Topics Considered But Determined Not To Be Relevant

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

2.1.1 Farmlands and Timberlands

There are no farmlands, agricultural resources, forest lands, or timberlands within or immediately adjacent to the project area. Areas adjacent to the project limits are not zoned for agricultural or timberland uses, and there are no Williamson Act contracts in effect within or adjacent to the project limits.

2.1.2 Wild and Scenic Rivers

No designated Wild and Scenic Rivers are within or adjacent to the project area.

2.1.3 Mineral Resources

The project does not conflict with resource recovery plans or operations in the vicinity of the project area.

2.1.4 Wildfire

The project is not located within or near a very high Fire Hazard Severity Zone (FHSZ).

2.2 Human Environment

This section discusses the Affected Environment, Environmental Consequences, and Avoidance, Minimization, and Mitigation Measures (AMMs) for the human environment within the project area. The human environment for the project area can be described using a land use study area (LUSA). The LUSA describes existing land use and community facilities for the project area and is defined as the physical areas directly surrounding U.S. 101 within the project area that have the potential to be subject to direct effects associated with implementation of the project. The LUSA for the proposed project includes the Environmental Study Limits (ESL) plus a one-third of a mile buffer and includes the population most likely to experience direct effects associated with the project's direct physical improvements.

2.2.1 Existing and Future Land Use

This section is based on information from the *Eureka Slough Bridges Replacement Project Community Impact Assessment* (CIA)(Caltrans 2025a).

2.2.1.1 Regulatory Setting

Goals, policies, and programs directing regional and local land use and development decisions within the project area are dependent on the City of Eureka 2040 General Plan (City of Eureka 2018). The Humboldt County Association of Governments (HCAOG) Regional Transportation Plan serves to communicate transportation priorities to state and federal government. The project is located in the Coastal Zone, within State and City of Eureka jurisdiction, and is subject to compliance with the California Coastal Act.

2.2.1.2 Affected Environment

The project is in Humboldt County, along U.S. 101, within the Eureka city limits. The city of Eureka is situated on Humboldt Bay in the central west portion of Humboldt County and is the largest coastal city in the region. Historically, the majority of development in the county has been concentrated around the north-south transportation corridor of U.S. 101.

Land use designations are established to guide decisions concerning land use, development, and environmental protection. Zoning codes support the enforcement of the land use designations within the project area. Designated land uses in the LUSA are Residential (low, medium, and high density), Commercial (downtown, general, neighborhood, general service, highway service, and waterfront), Professional Office, Public/Quasi-Public, Parks and Recreation, Agriculture, Natural Resource, and Water Conservation. Within the Environmental Study Limits (ESL), land use designations include Water Conservation, Natural Resource, General Service Commercial, and Highway Service Commercial. Land use designations for the LUSA and the ESL are shown below in Figure 28.

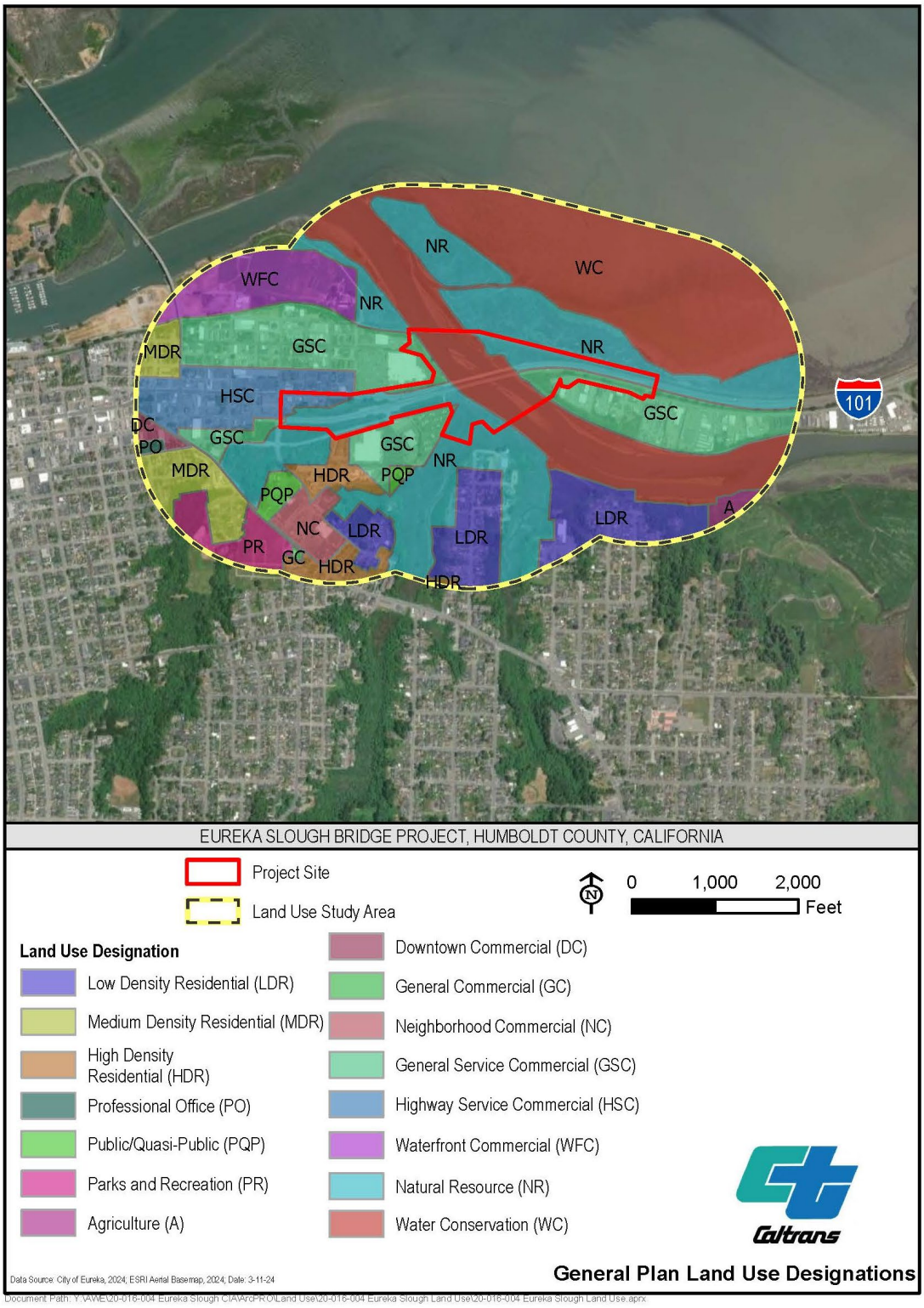


Figure 28. City of Eureka Land Use Designations

The project area is primarily urban, with businesses on the west and southeast sides of the Eureka Slough. Urban development adjacent to U.S. 101 on the west side of the Eureka Slough includes a Target store and parking lot, a number of small commercial businesses, and the Shoreline RV Park. Southbound U.S. 101 provides access to businesses along 4th Street, including an on- and off-ramp for direct Target store parking lot access. Northbound U.S. 101 provides access to businesses along 6th Street via an on- and off-ramp just west of the west bridge abutment. East of the Eureka Slough, and parallel to northbound U.S. 101, commercial and light industrial businesses, warehousing, and a mobile home park are located along Jacobs Avenue. At the northeast end of the project area, U.S. 101 borders the Humboldt Bay National Wildlife Refuge and is adjacent to the future location of Humboldt Bay Trail South. The Eureka Waterfront Trail passes under the west side of the Eureka Slough bridges and continues north and south adjacent to the Target and Shoreline RV properties. A small boat launch (Eureka Slough Boat Launch) accessible via the Eureka Waterfront Trail is located approximately 75 feet north of the southbound bridge.

2.2.1.3 Environmental Consequences

All Build Alternatives

Under all Build Alternatives, the existing Eureka Slough bridges would be replaced. The Build Alternatives would not open new areas to development or lead to changes in density. Although the Build Alternatives would require land acquisitions and/or temporary construction easements (TCEs) along the existing bridge alignments, zoning and land use designations in the LUSA would not change. Overall land use patterns in the LUSA would remain the same. Property acquisitions would mainly be partial acquisitions, representing a small percentage of each parcel, because construction would only be required along frontage to the existing highway. Although the precise location of right of way acquisition and TCEs would vary by alternative, both Build Alternatives are expected to affect the same parcels and to a similar extent. Details are discussed below under each alternative. As the project develops further, right of way acquisition and TCEs for each alternative would be determined. See Section 2.2.7 *Relocations and Real Property Acquisition* for more information.

Build Alternative 2A, Temporary Bridge

Build Alternative 2A would replace the bridges on the same alignment as the existing bridges. Minor parcel acquisition and TCEs would be required for construction access, installation of the temporary bridge, completion of bike path connections, and work near the northbound 6th Street exit and the southbound Target exit. Temporary closure of the Eureka Slough Boat Launch adjacent to the west bridge abutment is anticipated. Once construction is complete, all temporary structures would be removed, and temporarily disturbed areas would be returned to their preconstruction condition.

Since the bridges would be constructed at their existing locations, permanent land acquisitions are limited to narrow strips of frontage immediately adjacent to the existing highway right of way. Land zoned as Service Commercial (CS), Natural Resources (NR), and Conservation Water (CW) may be acquired. Land acquisition and TCEs for each alternative are shown on maps in Section 1.4, and their impacts are discussed in Section 2.2.7, *Relocations and Real Property Acquisition*.

Under Build Alternative 2A, overall land use patterns in the LUSA would remain the same, and zoning and land use designations would not change. The project would not change the existing setting of the bridges.

Build Alternative 2B, Adjacent Southbound Bridge

Build Alternative 2B would replace the southbound bridge adjacent to the existing southbound bridge. The replacement bridge would require TCEs and minor parcel acquisition due to the new bridge location shifting north beyond the existing state right of way. The northbound bridge would be replaced on the same location as the existing northbound bridge and would require TCEs. No right of way acquisition for the replacement northbound bridge is anticipated under Build Alternative 2B. Land zoned as Service Commercial (CS), Natural Resources (NR), and Conservation Water (CW) may be acquired. Land acquisitions and TCEs are discussed in Section 2.2.7 *Relocations and Real Property Acquisition*.

Under Build Alternative 2B, overall land use patterns in the LUSA would remain the same, and zoning and land use designations would not change. The project would not change the existing setting of the bridges.

No-Build Alternative

Under the No-Build Alternative, the project would not be implemented. There would be no land acquisitions or TECs. There would be no improvement in the traffic flow and safety throughout the LUSA.

2.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

Under all Build Alternatives, overall land use patterns in the LUSA would remain the same, and zoning and land use designations would not change. No avoidance, minimization, or mitigation measures are proposed.

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

Information in this section is based on the *Eureka Slough Bridges Replacement Project Community Impact Assessment* (CIA) (Caltrans 2025a).

2.2.2.1 Regulatory Setting

Growth and development within the project area are guided by land use policies and programs set forth in planning documents. This section identifies existing state, regional, and local plans that apply to the project area. When analyzing land use impacts, it must be determined whether a project is consistent with policies that govern land use and development.

2.2.2.2 Affected Environment

City of Eureka General Plan

Local land use planning within the project area is governed by the City of Eureka General Plan (City of Eureka 2018). The Transportation/Circulation elements of the City of Eureka General Plan place an emphasis on city-owned roads. U.S. 101 is maintained by the State (Caltrans) as a vital transportation artery serving both regional and interregional travel, as well as serving as a local road through the city of Eureka.

Humboldt County General Plan

Regionally, Humboldt County is governed by the County's General Plan (County of Humboldt 2017). The Transportation/Circulation elements of the Humboldt County General Plan place an emphasis on local and county-owned roads. U.S. 101 is maintained by the State (Caltrans) as a vital transportation artery serving both regional and interregional travel.

Humboldt County Association of Governments

The Humboldt County Association of Governments (HCAOG) prepared the Humboldt County Regional Transportation Plan (RTP) which includes goals and objectives for transportation and land use in the county (HCAOG 2022). In addition to the RTP, HCAOG has prepared various other plans related to active transportation and trails in Humboldt County including the Humboldt County Regional Pedestrian Plan, Humboldt County Regional Trails Master Plan, Humboldt County Corridor Preservation Report, and the Humboldt County Regional Bicycle Plan Update.

Additional Plans

Additional plans that apply to the Humboldt Bay area are the Humboldt Bay Management Plan, which is the primary planning document for the Humboldt Bay Harbor, Recreation and Conservation District, and the Humboldt Regional Climate Action Plan, which is a collaborative effort between Humboldt County and the cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, and Trinidad to reduce greenhouse emissions.

2.2.2.3 Environmental Consequences

All Build Alternatives

Consistency of all Build Alternatives with applicable City of Eureka General Plan, Humboldt County General Plan, and the HCAOG RTP is presented in Table 2. Consistency with the California Coastal Act is discussed in Chapter 2.2.3, *Coastal Zone*. Impacts would occur if the project were to conflict with land use designations or zoning, or with applicable environmental plans or policies.

Table 2. Consistency with State, Regional, and Local Plans and Programs

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
City of Eureka 2040 General Plan Policy LU-1.16. Public Access. Maintain and improve physical linkages from the community to the coastline, gulches, forests and Eureka's other distinct recreational resources where feasible by creating/preserving view corridors, enhancing trail and roadway connects, and providing signage and other wayfinding cues.	**Consistent.** Build Alternative 2A would maintain and improve physical linkages along the Humboldt Bay Trail South, Great Redwood Trail, and California Coastal Trail (CCT) by improving multimodal transportation along U.S. 101 between Eureka and Arcata.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Partially Consistent.** The No-Build Alternative would maintain but not improve physical linkages along U.S. 101 between Eureka and Arcata.
City of Eureka 2040 General Plan Policy E-5.1. Access, Infrastructure and Services. Ensure that convenient access to major transportation facilities, adequate utility and telecommunications infrastructure, high speed broadband, and sufficient public services are available and/or programmed to support commercial and industrial areas.	**Consistent.** Build Alternative 2A would replace the non-standard existing bridge and improve access for multimodal transportation between the commercial corridor (North Gateway District) and employment area (Jacobs Avenue to Indianola).	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Partially Consistent.** Under the No-Build Alternative, the existing Eureka Slough bridges would still provide transportation between the commercial and employment areas, but would not be convenient access for multimodal users.
City of Eureka 2040 General Plan Policy E-5.2 Alternative Goods Movement. Support the expansion of a range of transportation options for goods movement, including heavy rail connectivity, highway improvements, port and maritime shipping facilities, and air passenger and freight facilities and services.	**Consistent.** Build Alternative 2A is a highway improvement project on Humboldt County's most trafficked highway for goods movement.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not include any highway improvements.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
City of Eureka 2040 General Plan Policy E-7.1. Tourism Assets. Protect and maintain existing recreation and tourism assets (such as the Eureka Waterfront Trail and Boardwalk) and encourage the development of additional recreation and tourism businesses and industries.	**Consistent.** Build Alternative 2A would develop additional tourism assets by expanding trail facilities from the Eureka Waterfront Trail across Eureka Slough. There would be temporary disruption to access during construction.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Partially Consistent.** Under the No-Build Alternative, the Eureka Waterfront Trail would remain as is. The No-Build Alternative would not provide additional tourism assets.
City of Eureka 2040 General Plan Policy NR 1.1. Surface Water. Preserve, protect, and restore all surface water resources (including bays, rivers, streams, wetlands, and sloughs) to their natural state, to the maximum extent feasible.	**Consistent.** Build Alternative 2A would implement Standard Measures to protect surface water resources in Eureka Slough during construction.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Consistent.** The No-Build Alternative would have no effect on surface water resources.
City of Eureka 2040 General Plan Policy NR 1.5. Best Management Practices. Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from the construction of new impervious surfaces.	**Consistent.** Build Alternative 2A would implement Standard Measures that include construction site BMPs.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Consistent.** The No-Build Alternative would not require construction BMPs.
City of Eureka 2040 General Plan Policy AQ-1.10. Non-Motorized Transportation. Continue to plan for and secure adequate funding for interjurisdictional non-motorized transportation facilities to help reduce greenhouse gas emissions.	**Consistent.** Build Alternative 2A would include non-motorized transportation along U.S. 101.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not secure funding for or create non-motorized transportation facilities.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
City of Eureka 2040 General Plan Policy SL-1.12. City Projects. Integrate resilience to anticipated sea level rise impacts into City project designs when repairing and replacing aging infrastructure.	**Consistent.** Build Alternative 2A will address structural and geometric deficiencies in the northbound and southbound Eureka Slough bridge structures. The design has taken into account anticipated sea level rise.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve the structural and geometric deficiencies in the northbound and southbound Eureka Slough bridge structures or make improvements compatible with anticipated sea level rise.
City of Eureka 2040 General Plan Policy CS-1.4. Response Time. Strive to maintain an average response time of three (3) minutes for calls for service for critical life-threatening emergencies.	**Consistent.** Build Alternative 2A would include improvements that provide improved traffic movement and safety zones (shoulders) for emergency vehicles in the event of a collision or emergency incident, seismic event, or any other catastrophic event. During construction, a Transportation Management Plan (TMP) would be in place to maintain emergency response times. Refer to Section 4.3 Community Facilities and Services.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not address the design problems with the existing structure that lead to traffic build up on the bridges in the event of a collision.
City of Eureka 2040 General Plan Policy M-1.3. Multimodal Options. Establish an interconnected transportation network that offers safe and convenient mobility options including adequate streets, transit services, pedestrian walkways, bike routes, commercial rail connections, aviation services, and trucking and shipping.	**Consistent.** Build Alternative 2A would include multimodal transportation improvements along U.S. 101 connecting to existing and planned trail networks.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve multi-model transportation.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
City of Eureka 2040 General Plan Policy M-1.5. Range of Users. Ensure that the transportation network meets the needs of a variety of users by eliminating barriers, where feasible, to allow access by people of all abilities. Implement the Americans with Disabilities Act when designing, constructing, or improving transportation facilities.	**Consistent.** Build Alternative 2A will include Americans with Disabilities Act (ADA) compliance for the bicycle/pedestrian path.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve the existing facility, which includes the non-ADA-compliant raised sidewalk adjacent to the right lane on the northbound bridge structure.
City of Eureka 2040 General Plan Policy M-1.9. Aesthetic Design. Improve the appearance of existing transportation rights-of-way and incorporate high standards of aesthetic design when designing and constructing new transportation facilities, including streets, street trees, bikeways, walkways, and other related rights-of-way.	**Consistent.** Build Alternative 2A would take into consideration the aesthetic look of the bridge while preserving the scenic views for travelers along the bridge. For example, the bridge railing design selection considers scenic views.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Consistent.** Under the No-Build Alternative no construction would occur and the bridges would remain in their current condition.
City of Eureka 2040 General Plan Policy M-2.9. Multimodal Access. Promote the provision of multimodal access to activity centers such as commercial and employment uses, Downtown, Old Town, schools, and parks.	**Consistent.** Build Alternative 2A would include multimodal transportation over Eureka Slough, providing important links between the downtown commercial corridor and employment areas.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** Under the No-Build Alternative, the bridges would not be improved and the existing structures without multimodal transportation options would remain.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
City of Eureka 2040 General Plan Policy M-2.10. Congestion Relief. Continue to work with the HCAOG, Caltrans, and Humboldt County on options for long-term solutions to reduce congestion on U.S. 101, thereby reducing diversion of traffic through residential neighborhoods, and improving access in and out of Humboldt County.	**Consistent.** By improving road widths and shoulders for breakdowns and the structural and seismic integrity of the bridges, Build Alternative 2A improvements would provide uninterrupted traffic movement in the event of a collision or emergency incident, seismic event, or any other catastrophic event.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** Under the No-Build Alternative, the existing structure, with structural deficiencies that lead to an increased collision rate which impedes traffic movement, would not be fixed.
City of Eureka 2040 General Plan Policy HS-1.2. Shoreline Protection. Ensure that development on or near the shoreline of Elk River, Humboldt Bay, and Eureka Slough does not create, contribute significantly to, or is subject to, high risk of damage from shoreline erosion or geologic instability over the life span of the development.	**Consistent.** Build Alternative 2A would include Standard Measures to protect shoreline erosion.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Consistent.** The No-Build Alternative would not include development within Eureka Slough.
City of Eureka Coastal Land Use Plan Policy PAR-4.1 Diverse Modes of Transportation Encourage access to and among coastal destinations by means other than a personal automobile, such as by bus, shuttle service, scooter/bicycle share, rideshare, carpool, foot, bicycle, or kayak.	**Consistent.** Build Alternative 2A would create additional access to coastal destinations with the creation of the bicycle/pedestrian path.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve the existing facility that does not safely support multimodal transportation. Therefore, it would not encourage access to coastal designations.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
City of Eureka Coastal Land Use Plan Policy PAR-4.10 U.S. 101 through Eureka Incorporate pedestrian and bicycle safety and connectivity improvements into highway projects and pursue stand-alone projects where feasible to provide safe, comfortable, and convenient access, connectivity, and mobility for all users in a way that balances the roles of U.S. 101 as an interregional highway and "Main Street" for residents and visitors of Eureka. Where feasible, appropriate and consistent with the policies of this Land Use Plan, convert segments of Broadway into one-way couplets.	**Consistent.** Build Alternative 2A will incorporate a bicycle/pedestrian path along U.S. 101.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Consistent.** Under the No-Build Alternative, there would be no highway improvement project, so this policy would not apply.
City of Eureka Coastal Land Use Plan Policy LAR-6.13 Gateway to Eureka. Create gateways at the city's southern entry along Broadway and at the north end of southbound U.S. 101 (4th Street) west of the Eureka Slough Bridge to announce arrival and welcome visitors to Eureka. Clearly define these points of entry through the use of distinctive art, signage, lighting, and/or landscaping.	**Partially Consistent.** The project does not include gateway signage for the city of Eureka. Standard Caltrans signage at the city limits would remain. Build Alternative 2A would not preclude future gateway signage.	**Partially Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Partially Consistent.** The No-Build Alternative does not include gateway signage but would not preclude future gateway signage west of the southbound bridge.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
Humboldt County General Plan Policy C-P1. Circulation System. Encourage development of a circulation system that supports: A. Access to higher density residential areas, local commercial facilities, neighborhood parks and schools, while maintaining maximum bicycle and pedestrian connectivity.	**Consistent.** Build Alternative 2A would include development of the Eureka Slough bridges which would include improved access, including the addition of a bicycle/pedestrian path, to the commercial areas and recreational facilities in the vicinity.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve bicycle and pedestrian connectivity.
Humboldt County General Plan Policy C-P17. Highway Improvements. Encourage state and federal highway improvements that promote safety and connectivity for all users, especially for communities with highway arterials. The County supports a strategy for safety and operational improvements to the U.S. Highway 101 Safety Corridor that is implemented in a manner consistent with the general plan.	**Consistent.** Build Alternative 2A would be a highway improvement project that promotes safety and connectivity for all users along U.S. 101.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve safety and connectivity for all users.
Humboldt County General Plan Policy C-P20. State and Federal Consistency. Road construction and maintenance activities shall be consistent with and support approved state and federal salmon or steelhead recovery plans, Clean Water Act Total Maximum Daily Loads (TMDLs), and the National Pollution Discharge Elimination System (NPDES) Stormwater Program.	**Consistent.** Build Alternative 2A would include Standard Measures to minimize construction-related impacts on water quality and species recovery, in compliance with state and federal salmon or steelhead recovery plans, Clean Water Act TMDLs, and the NPDES Stormwater Program.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Consistent.** The No-Build Alternative would not include road construction activities and would not require compliance with regulatory plans and policies.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
Humboldt County General Plan Policy C-P38. Develop a Regional Trails System. Support efforts to establish and connect regional trails, particularly in the greater Humboldt Bay and lower Mad River areas, the Eel River Valley, along the Avenue of the Giants and in the Klamath-Trinity area. The system should include the California Coastal Trail (CCT) system and consist of multi-use trails where feasible.	**Consistent.** Build Alternative 2A would connect regional trails in the Humboldt Bay area. The project would extend the current CCT system (Humboldt Bay Trail and Eureka Waterfront Trail) along U.S. 101 between Eureka and Arcata.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve the regional trails system.
Humboldt County General Plan Policy C-P50. Highway Improvement. Encourage state and federal highway improvements that promote safety and connectivity for all users, especially for communities with highway arterials.	**Consistent.** Build Alternative 2A would include safe connections for all users including a bicycle/pedestrian path and improved safety for vehicular travel.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** Under the No-Build Alternative there would be no improvements for safety and connectivity.
HCAOG RTP Policy CLIMATE-4 Adaptation for sea level rise. HCAOG shall encourage partnerships to develop adaptation strategies that address sea level rise in Humboldt County	**Consistent.** Build Alternative 2A would address structural and geometric deficiencies in the northbound and southbound Eureka Slough bridge structures. The design has taken into account anticipated sea level rise.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not improve the structural and geometric deficiencies in the northbound and southbound Eureka Slough bridges.

Plans/Policies	Build Alternative 2A	Build Alternative 2B	No-Build Alternative
HCAOG RTP Policy STREETS-2 Humboldt Bay Trail. HCAOG recognizes the Humboldt Bay Trail South, and planned connections and envisioned extensions, as a regional priority multi-use trail, and supports multi-jurisdictional, public, and private efforts to develop and maintain it.	**Consistent.** Build Alternative 2A will benefit the Humboldt Bay Trail South by providing connections to existing and planned trail segments and improving bicycle/pedestrian options over Eureka Slough.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** The No-Build Alternative would not benefit the Humboldt Bay Trail South. There is currently no trail crossing over Eureka Slough on U.S. 101.
HCAOG RTP Policy STREETS-3 Complete Streets Improvements. HCAOG shall include Complete Streets improvements in regionally funded transportation system projects to the extent feasible, as consistent with California Complete Streets Act of 2008 (AB 1358) and Caltrans Deputy Directive 64-R2.	**Consistent.** Build Alternative 2A would construct Complete Streets by including the bicycle/pedestrian improvements.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent.** Under the No-Build Alternative, the existing bridge does not meet the Complete Streets criteria.
HCAOG RTP Policy GM-3 (Road/Trucking). HCAOG prioritizes projects to design and maintain truck routes consistent with Complete Streets goals whenever safe and feasible.	**Consistent.** Build Alternative 2A would improve truck route conditions and meet Complete Street goals for U.S. 101, a main trucking route for Humboldt County.	**Consistent.** Build Alternative 2B is similar to Build Alternative 2A.	**Inconsistent**. The No-Build Alternative would not change truck route conditions or meet Complete Streets goals.



The land use and transportation goals and policies related to the project include prioritizing multimodal forms of transportation, connection between existing trail network systems, safe and reliable transportation, and preserving the Humboldt Bay coastal resources. Build Alternative 2A and Build Alternative 2B would contribute to City and County goals and policies by improving multimodal access, providing an essential trail link over Eureka Slough, and improving safety and reliability of the transportation network. The project would not conflict with applicable City of Eureka 2040 General Plan and Coastal policies, Humboldt County General Plan, or HCAOG RTP policies.

All Build Alternatives would improve the functionality and safety of the bridges and provide a facility that accommodates pedestrians and cyclists. The Build Alternatives are consistent with the applicable goals and policies of the plans identified above. The project would be consistent with land use policies and programs in existing regional, local, and area plans that guide growth and development within the project area.

For all Build Alternatives, Caltrans would implement the Standard Measures and BMPs from Section 1.6 to minimize impacts to resources included in state, regional, and local plans and programs.

No Build Alternative

The existing bridges would not be replaced under the No Build Alternative; therefore, this alternative would not be consistent with most applicable goals and policies of the plans identified above.

2.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance, minimization, or mitigation measures are proposed.

2.2.3 Coastal Zone

The project is located in the Coastal Zone. The Coastal Act's resource protection policies apply to the human, physical and biological environment. This section discusses coastal jurisdiction and consistency with Coastal Act policy.

2.2.3.1 Regulatory Setting

This project has the potential to affect resources protected by the Coastal Zone Management Act (CZMA) of 1972. The CZMA is the primary federal law enacted to preserve and protect coastal resources. The CZMA sets up a program under which coastal states are encouraged to develop coastal management programs. States with an approved Coastal Zone Management Plan are able to review federal permits and activities to determine if they are consistent with the State's Coastal Zone 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 CZMA: 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 CZMA delegates power to coastal states to develop their own Coastal Zone Management Plans, the California Coastal Act delegates power to local governments (15 coastal counties and 58 cities) to enact their own Local Coastal Programs (LCPs). LCPs determine the short- and long-term use of coastal resources in their jurisdiction consistent with the California Coastal Act goals. The California Coastal Act calls for local governments with jurisdiction within the Coastal Zone to prepare an LCP to implement the California Coastal Act at the local level. An LCP consists of two parts: a Land Use Plan (LUP), which details the kinds, locations, and intensity of land uses, and resource protection and development policies in the Coastal Zone; and an Implementation Plan, which includes the Coastal Zoning Code and other implementing ordinances that conform with and carry out LUP policies. The Chapter 3 policies of the California Coastal Act (California Public Resources Code Sections 30200-30270) are the guiding policies of the LUP. The City of Eureka General Plan contains an LCP, discussed in Section 2.2.1, Existing and Future Land Use. The Eureka LCP consists of the Coastal LUP, which is a component of the Eureka General Plan, and the Coastal Zoning Code, a component of the Eureka Municipal Code. The Humboldt County General Plan contains a Humboldt Bay Area Coastal Plan, discussed in Section 2.2.1.2, Humboldt County General Plan. Humboldt County Code Title III - Land Use and Development, Division 1 – Planning, Chapter 3, Regulations Inside the Coastal Zone, contains a codification of Humboldt County's general ordinances regarding development in the Coastal Zone.

2.2.3.2 Affected Environment

The project is located in the Coastal Zone. The project area is within the California Coastal Commission's (CCC) original jurisdiction and subject to the permit requirements of the California Coastal Act (CCA), as administered by the CCC (Figures 29 and 30). The project would require a Coastal Development Permit (CDP) to be processed by the State CCC. If, during subsequent phases of project development, the project area includes locations within the City of Eureka or County of Humboldt, the City or County Local Coastal Plan would apply, and Caltrans would seek to consolidate the multiple jurisdictions for processing under the State.

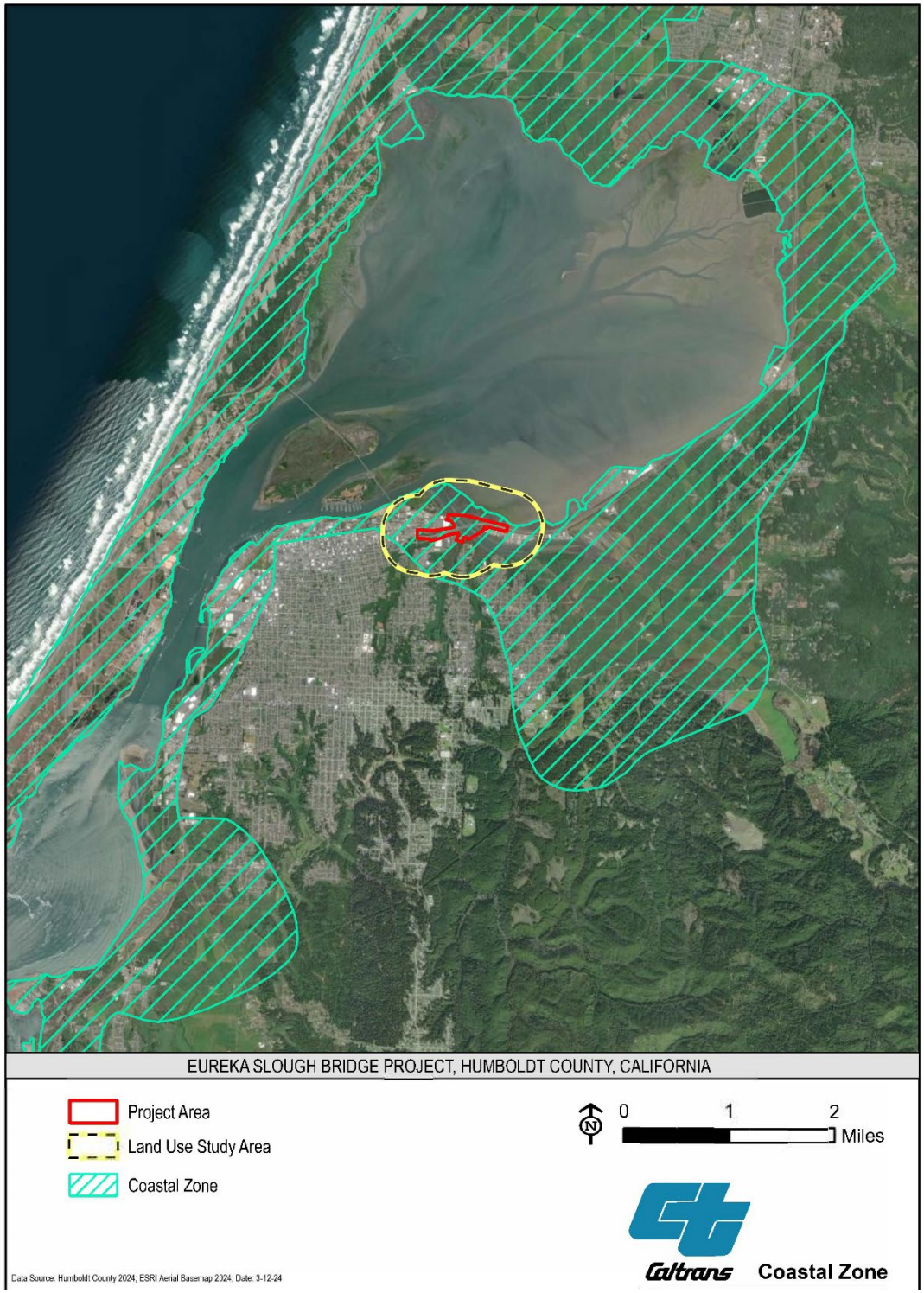


Figure 29. Land Use Study Area and ESL within the Coastal Zone

Eureka Slough Bridges Replacement Project: Coastal Jurisdiction
01 -HUM 101-PM 79.5 /80.2

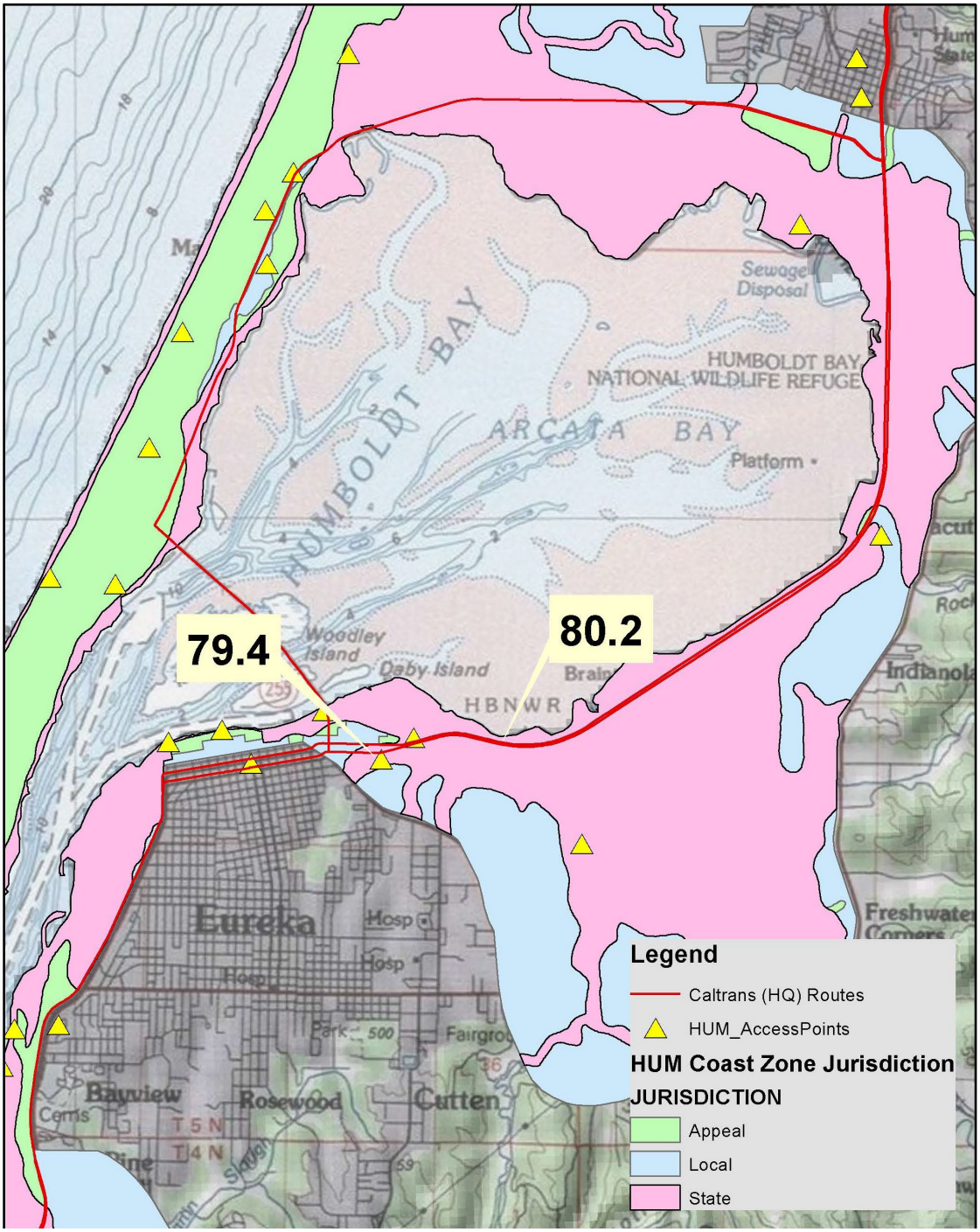


Figure 30. Coastal Zone Jurisdiction

2.2.3.3 Environmental Consequences

All Build Alternatives

Under all Build Alternatives, the project would directly affect regulated coastal resources. Table 3 evaluates the project's consistency with the CCA, Chapter 3 Coastal Resources Planning and Management Policies. Table 3 also provides a reference to the applicable section of this document or other technical study that includes a full analysis of each of these topics. The project Build Alternatives would be consistent with the CCA. Coastal resources would be protected to the fullest extent feasible.

Table 3. Coastal Act Consistency

Coastal Act Chapter Three Policy Area	Coastal Act Consistency Analysis
Public Access	
Coastal Act Section 30210. In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse. **Coastal Act Section 30211.** Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation. **Coastal Act Section 30212.** (a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) adequate access exists nearby, or, (3) agriculture would be adversely affected. Dedicated accessway shall not be required to be opened to public use until a public agency or private	The Eureka Slough bridges provide substandard bicycle and pedestrian access. Currently, the northbound bridge has a 5-foot-wide raised sidewalk adjacent to the right lane, which does not meet current standards for mobility for all modes of transportation. **Build Alternatives:** Both Build Alternatives 2A and 2B would provide two 12-foot-wide travel lanes, with 5-foot-wide inside shoulder, 10-foot-wide outside shoulder, and a 12-foot-wide separated bicycle/pedestrian pathway in each direction, which would greatly facilitate multimodal access within the Coastal Zone. Build Alternative 2A and Build Alternative 2B would provide an important link in the existing and planned Humboldt Bay Trail system. Build Alternative 2A and Build Alternative 2B would improve coastal access by increasing safety, connectivity, and reliability of the bridge for hikers, cyclists, travelers, commuters, and freight carriers. **Consistent**. Temporary impacts on public access are discussed in Section 2.2.4, *Parks and Recreation* and in Section 2.2.11 *Traffic and Transportation/Pedestrian and Bicycle Facilities*. The existing Eureka Waterfront Trail is located beneath the Eureka Slough bridges west of Eureka Slough. A small boat launch Eureka Slough Boat Launch) is located adjacent to the trail behind the Target store. Use of the Eureka

Coastal Act Chapter Three Policy Area	Coastal Act Consistency Analysis
association agrees to accept responsibility for maintenance and liability of the accessway. **Coastal Act Section 30213.** Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. **Coastal Act Section 30214**. (a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following: (1) Topographic and geologic site characteristics. (2) The capacity of the site to sustain use and at what level of intensity. (3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the proximity of the access area to adjacent residential uses. (4) The need to provide for the management of access areas so as to protect the privacy of adjacent property owners and to protect the aesthetic values of the area by providing for the collection of litter. (b) It is the intent of the Legislature that the public access policies of this article be carried out in a reasonable manner that considers the equities and that balances the rights of the individual property owner with the public's constitutional right of access pursuant to Section 4 of Article X of the California Constitution. **Coastal Act Section 30220**. Protection of certain water-oriented activities. Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.	Waterfront Trail would be intermittently restricted during bridge construction and bridge removal for the safety of construction workers and the public. The Eureka Waterfront Trail would remain open during construction to the extent feasible, except when a safe work zone prevents trail use. Short-term trail closures would be managed as part of the Transportation Management Plan (TMP) for the project. The contractor would provide a safe and accessible route and traffic control in accordance with Caltrans *Temporary Pedestrian Access Routes Handbook* (Caltrans 2020a). Advanced notification of potential trail closures, including on-site signage, would be provided to warn trail users of potential delays due to closures. The length of closure would depend on construction activities. Marina traffic is limited in the north Humboldt Bay due to the shallow water and tidal conditions. Portions of Eureka Slough are open during the state waterfowl hunting seasons. The boat launch would be temporarily closed during construction. Although boat access along the slough would be maintained during construction, signage would be placed at boat put-ins to inform boaters about potential delays at the Eureka Slough bridges and safety precautions due to construction activities. Temporary closures associated with project construction would not adversely affect public access in the long term. **Consistent** **No-Build Alternative:** The No-Build Alternative would not improve existing non-standard conditions. **Not Consistent**.

Coastal Act Chapter Three Policy Area	Coastal Act Consistency Analysis
Coastal Act Section 30221. Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area. **Coastal Act Section 30223**. Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible. **Coastal Act Section 30224**. Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land. **Coastal Act Section 30252.** The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing non-automobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of on-site recreational facilities to serve the new development.	

Coastal Act Chapter Three Policy Area	Coastal Act Consistency Analysis
Visual Resources and Community Character	
Coastal Act Section 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.	A Visual Impact Assessment was prepared for the project and found that all build alternatives would not have a substantial effect to a scenic vista, degrade the existing visual character of the site, or create a new source of substantial light or glare that would affect day or nighttime views in the area. **Consistent.** **Build Alternatives:** Build Alternative 2A and Build Alternative 2B would preserve the scenic and visual quality of the area. The addition of pedestrian facilities on the new bridges would enhance viewer opportunities. Railing aesthetics that would affect the visual character would be considered at a later stage in project development. **Consistent.** **No-Build Alternative:** The No-Build Alternative would neither enhance nor detract from the existing visual quality. **Consistent**.
Coastal Hazards/Shoreline Development	
Coastal Act Section 30253 (in part) New development shall: (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard. (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. **Coastal Act Section 30235.**Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.	**Build Alternatives:** The project was designed to be safe from flood hazards and for seismic stability. See Section 1.3, *Project Description*, for further information. Although the project is within a floodplain, the project would not impede or redirect flood flows. The project would not create or contribute to geologic instability or alteration of bluffs and cliffs, nor alter natural shoreline processes or contribute to pollution problems. Under Build Alternative 2A and Build Alternative 2B, the proposed permanent bridges would have fewer piers in the channel and would therefore improve flow conditions when compared to the existing bridges. Build Alternative 2A and Build Alternative 2B would require construction of a retaining wall to retain slope and maintain access to the back of the Target store. The project design includes measures to minimize potential for shoreline erosion, and BMPs would be utilized. Project features have been incorporated to prevent scour and revegetate disturbed surfaces. **Consistent**. **No-Build Alternative:** The No-Build Alternative would not improve structural or geometric deficiencies of the bridge. **Not Consistent**.

Coastal Act Chapter Three Policy Area	Coastal Act Consistency Analysis
Coastal Act Section 30236. Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the floodplain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.	
Public Participation	
Coastal Act Section 30006. The public has a right to fully participate in decisions affecting coastal planning, conservation and development; that achievement of sound coastal conservation and development is dependent upon public understanding and support; and that the continuing planning and implementation of programs for coastal conservation and development should include the widest opportunity for public participation.	**Build Alternatives:** Caltrans held a public scoping meeting to involve the local community in the public process; see Chapter 4, *Comments and Coordination*. **Consistent.** **No-Build Alternative:** The No-Build Alternative would not adversely affect environmental justice communities. **Consistent.**

Based on the analysis presented above, the Build Alternatives are consistent with the public access, visual resources, community character, coastal hazards and shoreline development, and environmental justice policies of the CCA. During construction, short-term access restrictions to Eureka Slough and trails in the immediate project area would occur; however, the project would have a long-term beneficial impact on trail access and use by providing safe pedestrian and bicycle connections on the bridges.

For all Build Alternatives, the project would include the Standard Measures and BMPs indicated in Section 1.6, including TT-1, TT-2, AR-1 through AR-6, BR-4, BR-5, and WQ-1, and WQ-2.

No Build Alternative

The No-Build Alternative would not change existing conditions, the existing bridges would not be replaced, and public access would not be improved. The No Build Alternative would not be consistent with most applicable Coastal Act goals and policies.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

Additional measures would be implemented to further minimize impacts to regulated coastal resources:

CI: For travelers by foot or bicycle, access across the project limits would be provided throughout the duration of construction.

Visual-1: Aesthetic treatment, such as color and pedestrian railing design, would be applied to the bridge railing to increase its visual compatibility. Bridge structures, such as retaining walls and wingwalls, would be aesthetically treated with color, texture, and/or patterns to increase the project's visual compatibility with the surrounding environment.

PR-1: Except during certain times (e.g., existing bridge abutment removal), Eureka Slough Boat Launch and Eureka Waterfront Trail access would be facilitated. When access would be limited, detour signage would be provided and/or flaggers would be present to ensure user safety.

No mitigation measures are proposed.

2.2.4 Parks and Recreational Facilities

This section is based on information from the *Eureka Slough Bridges Replacement Project Community Impact Assessment* (CIA)(Caltrans 2025a) and the Section 4(f) Evaluation, which is provided in Appendix A, *Section 4(f).*

2.2.4.1 Regulatory Setting

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

2.2.4.2 Affected Environment

The City of Eureka, Humboldt Bay, and Eureka Slough are destinations for various recreation activities. Within the project Land Use Study Area, which is described in Section 2.2.1, *Existing and Future Land Use*, there are numerous parks and recreational facilities (Figure 31 below). Some recreational facilities are protected by Section 4(f) of the Department of Transportation Act of 1966.

Section 4(f) codified in federal law 49 United States Code 303 states that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Where the use of a 4(f) property is unavoidable for a transportation project, measures to minimize harm to the protected resource are implemented. A project results in "use" of a 4(f) property when it permanently incorporates or temporarily occupies a qualifying property. Additional detail on Section 4(f) is provided in Appendix A.

The Eureka Waterfront Trail and the Eureka Slough Boat Launch are recreational facilities open to the public and meeting the requirement qualifying them as 4(f) resources (Figure 32 below). The Eureka Waterfront Trail is located beneath the Eureka Slough bridges along the west side of Eureka Slough. The trail runs parallel to the slough and provides a level, paved section of pedestrian and bicyclist access along the west side of the slough. The Eureka Waterfront Trail serves as a connection to the greater regional trail system by way of Humboldt Bay Trail South and the future Bay to Zoo Trail. The Eureka Slough Boat Launch, accessed from the Eureka Waterfront Trail, is located approximately 75 feet north of the southbound U.S. 101 Eureka Slough bridge. A parking area serving the trail and boat launch is located behind the Target store, and accessed by way of the Target parking lot.

The Humboldt Bay National Wildlife Refuge (HBNWR) (Refuge) qualifies as a 4(f) resource as a wildlife and waterfowl refuge. At the east bridge abutment of southbound U.S. 101, the highway is adjacent to the HBNWR. The wildlife refuge is managed by the U.S. Fish and Wildlife Service. The portion of the HBNWR within the project area consists of mudflats, wetlands, and tidal channels. There are no boat landings or trails on this portion of the Refuge. Temporary or permanent use of HBNWR property adjacent to the highway would not diminish the value of the Refuge. Section 2.4, *Biological Environment*, addresses potential impacts on the sensitive natural environment in the Refuge, and Appendix A discusses Section 4(f).

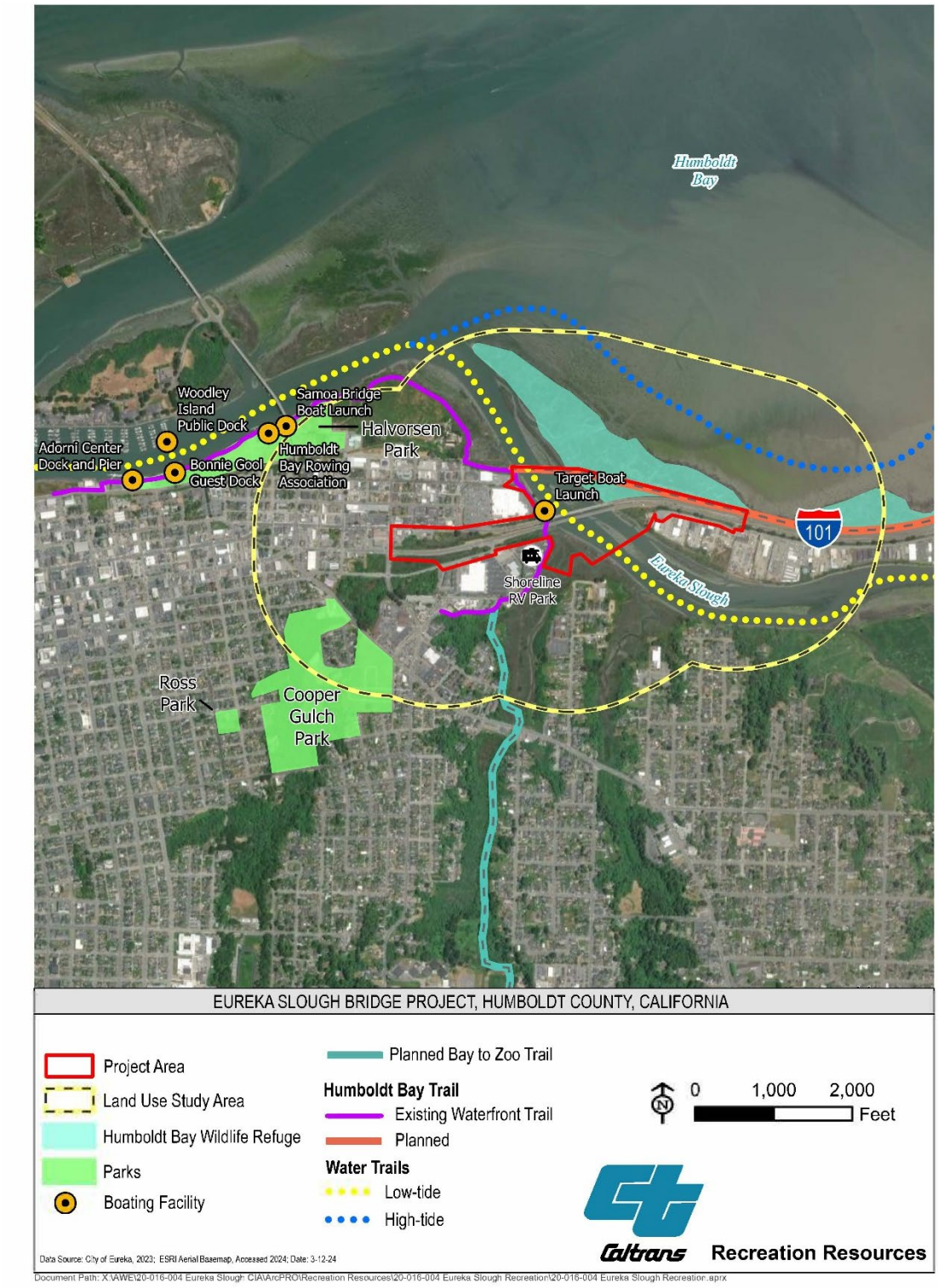


Figure 31. Parks and Recreational Facilities



Figure 32. Aerial View of Eureka Waterfront Trail, Eureka Slough Boat Launch.

2.2.4.3 Environmental Consequences

All Build Alternatives

Impacts from all Build Alternatives that are common to the Eureka Waterfront Trail, Eureka Slough Boat Launch, and the Humboldt Bay National Wildlife Refuge are discussed in the following sections.

Eureka Waterfront Trail

Under all Build Alternatives, the Eureka Waterfront Trail would remain open during daytime construction to the extent feasible, except to protect worker and public safety. Construction-related noise, visual changes, and air quality emissions could also deter trail users. During temporary, intermittent closures, the contractor would provide a safe and accessible route and traffic control in accordance with Caltrans *Temporary Pedestrian Access Routes Handbook* (Caltrans 2020a). Advanced notification of potential trail closures, including on-site signage, would be provided to warn trail users of potential delays due to closures. During short-term daytime trail closures, trail traffic could be managed using signage and flaggers. The length of closures would depend on construction activities.

Under all Build Alternatives, following completion of construction, the project would result in no permanent adverse effect to the activities, features, or attributes qualifying the Eureka Waterfront Trail as a recreation resource. The project would provide connections to the Eureka Waterfront Trail and Humboldt Bay Trail South by constructing separated pedestrian/bike lanes to accommodate multimodal use of the bridges. Under all Build Alternatives, the completed project would not affect public access to the Eureka Waterfront Trail in the long term. Further detail on the Eureka Waterfront Trail is provided in the Section 4(f) Evaluation in Appendix A.

Eureka Slough Boat Launch

The Eureka Slough Boat Launch would be similarly impacted under all Build Alternatives. During construction, the boat launch would be intermittently closed to maintain public safety. Boat access to the slough would be maintained during construction and signage would be placed at nearby boat launches to inform boaters navigating under the Eureka Slough bridges of potential delays, any closures at the Eureka Slough Boat Launch, and directions to alternative boat launches. Signage would also include safety precautions due to construction activities.

After construction is complete, the boat launch would be restored to its pre-project condition. Under all Build Alternatives, project would not permanently affect public access or the activities, features or attributes qualifying the boat launch as a recreation resource.

Humboldt Bay National Wildlife Refuge

Under all Build Alternatives, construction activities would either temporarily or permanently occupy a sliver of HBNWR land (a Section 4(f)-designated resource) adjacent to the existing highway. Use of HBNWR property adjacent to the highway would not diminish the value of the Refuge's activities or features.

Section 2.4, *Biological Environment*, addresses potential impacts on the sensitive natural environment in the Refuge, and Appendix A discusses Section 4(f). Depending on the selected alternative, a temporary construction easement (TCE), a special use permit, or right of way acquisition would be required for work within the HBNWR. TCEs would be used for access to construction areas and placement of temporary structures. In some instances, a special use permit could also be required during construction activities. Right of way acquisition would be needed for permanent structures or roadway features that would extend onto parcels adjacent to the state ROW. Additional information on ROW is found in Section 2.2.7, *Relocations and Real Property Acquisition*.

A temporary occupancy under Section 4(f) is when a property is used for construction activities, but is not permanently part of the project. Temporary use under Section 4(f) is defined as use lasting no longer than the time needed to construct a project. Temporary use would require a TCE. Permanent occupancy is when a property is permanently used for transportation purposes and occurs through a right of way acquisition or a permanent easement. Impacts to HBNWR specific to only Alternative 2A or Alternative 2B are discussed below.

Build Alternative 2A Impacts to HBNWR

Under Alternative 2A, construction of the temporary bridge and construction trestle to the north of the southbound bridge would require a TCE from the HBNWR. Temporary occupancy for Alternative 2A would last for up to 5 years. See Section 2.2.7, *Relocations and Real Property Acquisitions* for more information. Temporary use of this narrow strip of property would not adversely affect the activities, features, and attributes of the Refuge, alter the recreation potential of the property, or change the long-term function and value of this natural area.

Build Alternative 2B Impacts to HBNWR

Under Alternative 2B, a TCE and right of way acquisition from HBNWR would be required. A TCE would be required for the construction trestle and would be in place for approximately 4 years. Permanent right of way acquisition or a permanent easement of the HBNWR property adjacent to the existing highway would be required for the replacement southbound bridge. See Section 2.2.7, *Relocations and Real Property Acquisitions* for more information. It is anticipated that loss of this narrow strip of HBNWR property would not adversely affect the activities, features, and attributes of the Refuge, alter the recreation potential of the property, or change the long-term function and value of this natural area. Section 2.4, *Biological Environment*, addresses potential impacts on the sensitive natural environment in the Refuge.

For all Build Alternatives, the project would include the Standard Measures and BMPs listed in Section 1.6 to minimize impacts to parks and recreation resources during construction. Transportation measure **TT-1** and **TT-2** would ensure pedestrian and bicycle access is maintained and a Transportation Management Plan (TMP) is in place.

No Build Alternative

The existing bridges would not be replaced under the No Build Alternative. This alternative would not affect the parks and recreational facilities within the project area.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

Additional avoidance and minimization measures would be implemented for trail access and detour notifications for the trail and boat launch during construction.

CI-1: For travelers by foot or bicycle, access across the project limits would be provided throughout the duration of construction.

PR-1: Except during certain times (e.g., existing bridge abutment removal), Eureka Slough Boat Launch and Eureka Waterfront Trail access would be facilitated. When access would be limited, detour signage would be provided and/or flaggers would be present to ensure user safety.

WR-1: Potential effects to biological resources on the wildlife refuge would be offset through one or more of the Biological Measures discussed in the Mitigation Monitoring and Reporting Program (MMRP) (Appendix C). Final measures would be coordinated with the Humboldt Bay National Wildlife Refuge.

No mitigation measures are proposed.

2.2.5 Growth

This section is based on information from the *Eureka Slough Bridges Replacement Project Community Impact Assessment* (CIA)(Caltrans 2025a). Growth-related impacts were evaluated to determine the likelihood of impacts and the potential need for further analysis based on *Caltrans Guidance for Preparers of Growth-related, Indirect Impact Analysis* (Caltrans 2006).

2.2.5.1 Regulatory Setting

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…"

Transportation agencies play a role in land use changes by providing infrastructure that can improve mobility and/or open access to new locations. This section addresses growth in the Land Use Study Area (LUSA) and Humboldt County and the extent to which the project would contribute to that growth.

2.2.5.2 Affected Environment

The population in Humboldt County increased by less than 8 percent between 2000 and 2020, compared to California's population growth of over 16 percent for the same period. Slow growth in Humboldt County is projected to continue, with limited areas for planned development. Factors that may drive population growth include Humboldt State University's recent designation as a polytechnic university (now known as Cal Poly Humboldt), the possible influx of remote workers, and the potential development of an offshore wind energy industry spurring development on Humboldt Bay.

Eureka and Arcata are the largest cities in Humboldt County, with Census 2020 populations of 26,512 and 18,857, respectively. Approximately one-third of Humboldt County's population resides in these two cities. In addition to incorporated cities, there are several unincorporated communities, such as Bayside, Cutten, Manila, Myrtletown, McKinleyville, and Samoa surrounding Humboldt Bay. About 55 percent of the county's population live in the Humboldt Bay area.

Eureka is largely built out with much of its remaining undeveloped land located in areas that contain natural, regulatory, or other constraints that limit development potential.

2.2.5.3 Environmental Consequences

Caltrans has developed guidance for determining whether a project may influence growth either directly or indirectly. Growth-inducing projects are those that result in a direct or indirect measurable increase in population, housing, and/or employment. Evaluation of a transportation project's potential to induce growth focuses on assessing the project's potential to facilitate or accelerate growth beyond planned developments, or influence the location, type, and rate of future growth and development.

Accessibility refers to a project's potential to reduce travel costs, either in terms of money or time, thus potentially enhancing the attractiveness of surrounding land to developers and consumers. Changes in accessibility provided by a transportation project may unintentionally result in changes to the spatial distribution of development over time. One outcome of increased accessibility can be growth-related effects on environmental resources.

Caltrans guidance employs a two-phase approach to evaluate a proposed project for growth-related impacts. The first phase, called "first-cut-screening" utilizes screening questions to determine if further in-depth analysis is warranted. After evaluating the project for changes in accessibility, potential to influence growth, reasonably foreseeable influence on the LUSA, and growth-related impacts on resources of concern, it was determined that the Build Alternatives would not increase roadway capacity, relieve congestion, or increase accessibility; therefore, no further analysis is required.

All Build Alternatives

Under all Build Alternatives, the existing bridges would be replaced. Each new bridge would have two traffic lanes, standard inside and outside shoulders, and a separated bicycle/pedestrian lane on the outside edge. The Build Alternatives would not increase roadway capacity, relieve congestion or affect travel times or cost. The project would not affect the attractiveness of the area to development or change access to local roads. The Build Alternatives would not result in changes to land use, or rates and types of development affecting growth.

No-Build Alternative

The existing bridges would not be replaced under the No-Build Alternative. The No-Build Alternative would not change existing conditions; therefore, this alternative would not affect travel cost, behavior, accessibility, and growth in the LUSA.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

No direct or indirect adverse effects associated with growth would be anticipated with implementation of the proposed project. No avoidance, minimization, or mitigation measures are proposed.

2.2.6 Community Character and Cohesion

This section is based on information from *Eureka Slough Bridges Replacement Project Community Impact Assessment* (CIA)(Caltrans 2025a).

2.2.6.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). The Federal Highway Administration (FHWA) in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

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

2.2.6.2 Affected Environment

Community character describes the features that make a community unique and that establish a sense of place for its residents. These features include population, demographics, economic and social history, importance of various facilities such as parks, libraries, health providers, community centers, and emergency services, and plans for the future. Cohesion is the degree to which residents have a sense of belonging to their neighborhood. Cohesion can be influenced by interaction among the individuals, groups, and institutions that make up a community and usually results from continued association over time.

A Community Study Area (CSA) characterizes the socioeconomic environment of the project area and is defined as the census tracts or census block groups located immediately adjacent to the Environmental Study Limits (ESL). The CSA for the proposed project includes two census tracts: Census Tract 5 and Census Tract 8. Census Tract 5 includes the section west of the Eureka Slough. Census Tract 8 is the section east of the Eureka Slough.

Some factors that can influence a community's sense of belonging or level of commitment include housing, household size, household tenure, race and ethnicity, age, transit-dependent populations, and parks and recreational facilities. Communities with a higher percentage of owner-occupied residences are typically more cohesive because their population tends to be less mobile. Homeowners often take a greater interest in what is happening in their communities than renters do because they have a financial stake in the community. Information about the community within the CSA is included below.

Population

Table 4 below illustrates the population for the state of California, Humboldt County, the CSA, and the cities of Eureka and Arcata. In 2022, the population of the CSA totaled 8,157, representing approximately 6 percent of the county population. In 2022, the population of the county totaled 136,132, representing approximately 0.3 percent of the state's total population.

Table 4. 2022 Population

Area	2022 Population
California	39,356,104
Humboldt County	136,132
Community Study Area	8,157
Eureka	26,519
Arcata	18,536

Source: U.S. Census Bureau (2021), ACS 5-year data (Table ID B03002)

Race and Ethnicity

The racial characteristics of the state, county, CSA, and the cities of Eureka and Arcata are presented in Table 5. The county is predominantly white compared to the state as a whole (71.6 percent compared to 35.2 percent). The CSA is predominantly white (76.9 percent of the population) and has a slightly lower percentage of Hispanic residents (9.4 percent) and American Indian/Alaskan Native residents (0.8 percent) than the county (12.6 percent and 3.4 percent, respectively).

Homogeneity of the population may contribute to higher levels of cohesion. Communities that are ethnically homogeneous often speak the same language, hold similar beliefs, and share a common culture, and are therefore more likely to engage in social interaction on a routine basis. The CSA is not substantially more ethnically homogeneous than the county as a whole.



Table 5. Racial Characteristics of Eureka and Arcata

Area	Total	Hispanic or Latino (of Any Race)	%	Not Hispanic or Latino													
				White	%	Black or African American	%	American Indian/ Alaska Native	%	Asian	%	Native Hawaiian/ Pacific Islander	%	Other Race	%	Two or More Races	%
California	39,356,104	15,617,930	39.7	13,848,294	35.2	2,102,510	5.3	114,271	0.3	5,861,649	14.9	135,460	0.3	176,652	0.4	1,499,338	3.8
Humboldt County	136,132	17,129	12.6	97,416	71.6	1,601	1.2	4,593	3.4	4,256	3.1	324	0.2	833	0.6	9,980	7.3
Community Study Area	8,157	766	9.4	6,276	76.9	120	1.5	69	0.8	268	3.3	0	0	23	0.3	635	7.8
Eureka	26,519	3,793	14.3	17,298	65.2	632	2.4	481	1.8	1,467	5.5	138	0.5	113	0.4	2,597	9.8
Arcata	18,536	2,964	16.0	12,663	68.3	499	2.7	155	0.8	639	3.4	118	0.6	287	1.5	1,211	6.5



Age

The median age in the CSA is 45.4 years, which is higher than that of the county at 39.5 years. As shown in Table 6, the age demographics of the CSA reflect a lower percentage of the population between the ages of 18 and 64 (58.0 percent) than the county (62.3 percent) and a higher percentage of the population over the age of 65 (23.3 percent) than the county (18.9 percent). Elderly and young population groups are considered more susceptible to the negative environmental effects resulting from construction and transportation projects (e.g., health impacts, air quality, noise, etc.).

Table 6. Age Statistics

Area	Under 18		18 to 64		Elderly (65+)		Percent Under 18 and Elderly	Median Age
	Number	Percent of Population	Number	Percent of Population	Number	Percent of Population		
California	8,774,570	22.3	24,716,234	62.8	5,865,300	14.9	37.2	37.3
Humboldt County	25,608	18.8	84,836	62.3	25,688	18.9	37.7	39.5
Community Study Area	1,526	18.7	4,727	58.0	1,904	23.3	42.0	45.4
Eureka	4,530	17.1	17,485	65.9	4,504	17.0	34.1	39.8
Arcata	2,315	12.5	14,033	75.7	2,188	11.8	24.3	27.2

Communities with a higher percentage of elderly residents (65 years or older) tend to demonstrate a greater social commitment to their communities. The elderly population, which includes retirees, often tend to be more active in the community because they have more time available for volunteering and participating in social organizations. The CSA has a higher elderly population than the city of Eureka or Humboldt County, partially due to a retirement community located near the project area.

Communities with a high percentage of families with children are often more cohesive than communities comprised largely of single people. This may be because children tend to establish friendships with other children in their communities, and the social network of children often leads to the establishment of friendships and affiliations among parents in the communities. The U.S. Census Bureau reports number of persons per household (U.S. Census Bureau 2021). This analysis assumes that higher persons per household translates to more families with children. There are fewer persons per household in the CSA (2.12 persons) than in the county (2.42 persons), and both are considerably lower when compared to the state (2.89 persons).

Table 6 shows that a lower percentage of the population is under the age of 18 years in the CSA (18.7 percent) which is similar to the county (18.8 percent). Based on persons per household and percentage of the population under the age of 18 years, the CSA population likely consists of a similar number of families per 100 households than the county as a whole. According to the county's Housing Element, the county's household size has been shrinking while the state has been increasing, and this trend is expected to continue as the county population continues to age.

Neighborhoods

The CSA includes the interface between urban development in Eureka and the natural area of Humboldt Bay. Communities are often delineated by physical barriers such as transportation infrastructure, large open spaces, and natural features such as rivers. Eureka is delineated by Humboldt Bay, forest land, and a series of sloughs and creeks (Eureka, Freshwater, Ryan, and Fay). Access to Eureka from the north is limited to the U.S. 101 bridges over Eureka Slough, State Route 255 over Humboldt Bay (Samoa and Eureka Channels of Humboldt Bay), and Myrtle Avenue over Ryan and Freshwater sloughs.

Eureka's community character is a result of a number of factors including the city's natural setting, the history of the area, the city's growth pattern, and its unique community places. The city was established in the 1850s as a planned development by a land company that divided the land into lots. The development pattern created blocks of buildings and structures that, still today, retain historic and architectural integrity. This development fostered cohesive neighborhoods that integrate a variety of architectural styles with people of varied socioeconomic status. Victorian era structures have been retained and rehabilitated to provide a connection with the city's history. Eureka has over 8,000 historic and architecturally significant structures which contribute to its character. There are also 22 sites/properties listed on the National Register of Historic Places.

The city is divided into various community places, which are defined based on their land use, building densities, geographical barriers, general character, and other common factors, and are identified in the City of Eureka General Plan. Four community places are located within the project's LUSA (Figure 33).

Downtown Eureka (Downtown, Commercial Bayfront, and Library District), located northwest of the project area, contains commercial land uses and consists of a mix of architectural styles with smaller and mid-sized lots. The North Gateway/Bridge District is a commercial corridor with single-family and multi-family residential structures mixed with commercial visitor services that encompass the western portion of the project area. Jacobs Avenue, on the east side of the project area, consists of predominately industrial and commercial properties. One notable exception to the industrial and commercial

properties is the Lazy J Mobile Home & RV Park. This mobile home park caters to longer-term residents and has 54 individual lots for residents of all ages. The Jacobs Avenue properties generally front Jacobs Avenue with a rear property line abutting a levee along the Eureka Slough. Myrtletown is located immediately adjacent to the eastern boundary of the city of Eureka and to the southwest of Eureka Slough. This area is primarily made up of single-family homes and small apartment buildings. Many of the houses in this area have a unique style characterized by low-pitched roofs, floor-to-ceiling windows and open, central floor plans.

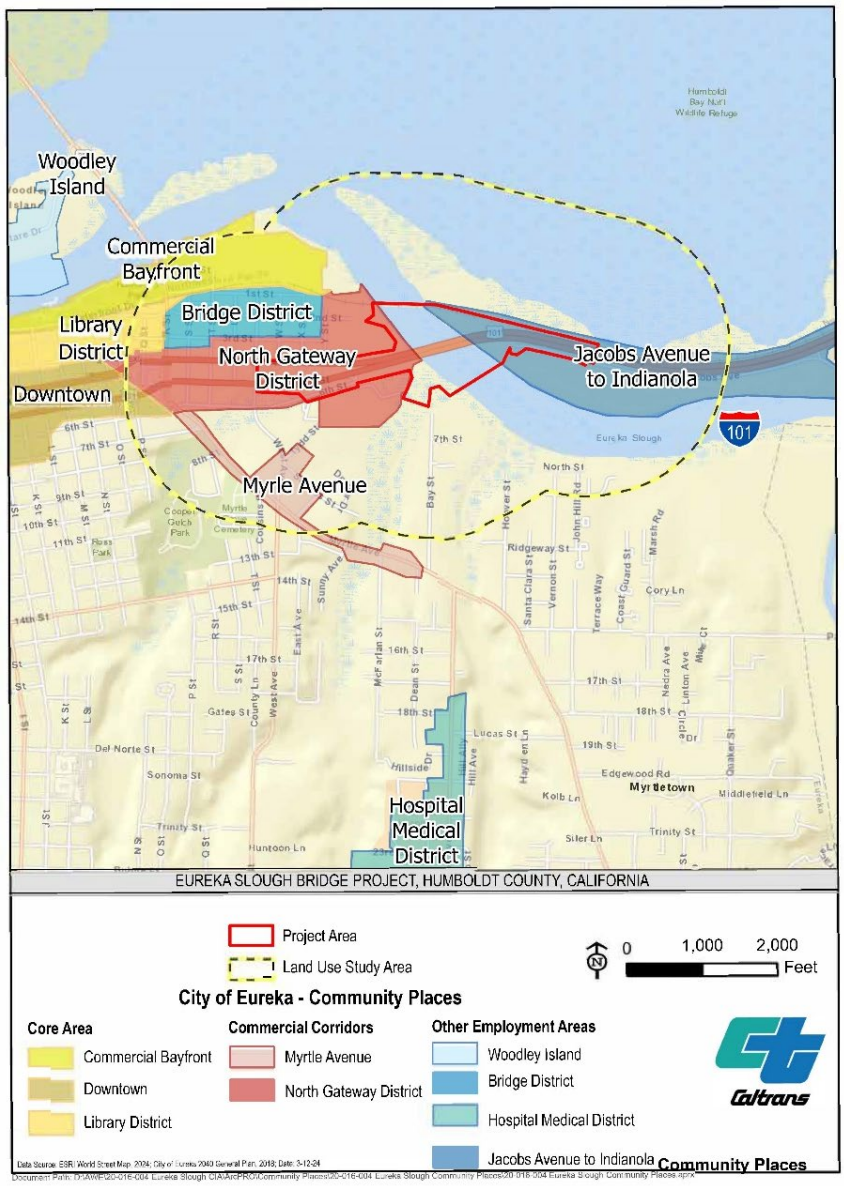


Figure 33. Community Places Within the Project Land Use Service Area

Housing

Table 7 below shows housing characteristics in the state, county, CSA, and the cities of Eureka and Arcata. In 2022, the available housing in the CSA (3,973 units) represented approximately 6.4 percent of the county's total housing stock (62,306 units). Housing characteristics within the CSA vary from the housing characteristics in the county and state. A higher percentage of vacant housing units are available within the CSA (11.5 percent) and the county (12.5 percent) compared to the state (7.7 percent). Higher vacancy rates may indicate more housing units owned by persons who have a primary residence elsewhere; many homes in the CSA may be second homes or vacation homes that are not primary residences.

Table 7. Selected Housing Characteristics

Area	Total Housing Units	Percent Vacant	Percent Single-Family Units	Average Household Size (Persons)	Percent Occupied Housing That is Owner-Occupied	Median House Value ($)	Median Rent ($ per month)
California	14,424,442	7.7	64.5	2.89	55.6	659,300	1,856
Humboldt County	62,306	12.5	73.8	2.42	56.8	386,000	1,191
Community Study Area	3,973	11.5	63.8	2.12	47.7	362,650	1,201
Eureka	11,992	9.1	68.7	2.3	48.5	348,900	1,073
Arcata	8,308	9.8	52.6	2.26	33.2	412,100	1,236

Source: U.S. Census Bureau (2021), ACS 5-year data (Table IDs B25002, B25003, B25010, B25024, B25064, and B25077)

Owner-occupied housing makes up 47.7 percent of the occupied housing in the CSA, which is less than the percent in the county and state (56.8 and 55.6 percent, respectively), and similar to Eureka (48.5 percent). The percent of owner-occupied housing is markedly lower in Arcata (33.2 percent), when compared to all other geographic regions, which may be attributed to rental demands from the student population. Communities with a higher percentage of owner-occupied residences are typically more cohesive because their population tends to be less mobile. Homeowners often take a greater interest in what is happening in their communities than renters do because they have a financial stake in the community. This often translates to a stronger sense of belonging to their communities. The level of community cohesion attributable to housing ownership in the CSA is representative of Eureka.

The median house value in Eureka and the CSA ($348,900 and $362,650, respectively) is lower than in the county ($386,000), which is substantially lower when compared to the state ($659,300). The median rent in the CSA and in the county is essentially the same ($1,201 and $1,191, respectively), which is higher than the median rent in Eureka ($1,073). Median rent is substantially lower in the CSA, Eureka, and the County when compared to the state ($1,856).

Communities with a high percentage of long-term residents are typically more cohesive because a greater proportion of the population has had time to establish social networks and develop an identity with the community. Table 8 indicates that the CSA has a higher percentage of householders who have lived in their units for longer periods of time when compared to all other area classifications. The CSA consists of 13.5 percent householders who have lived in their current housing unit since 1989 or earlier and only 3.5 percent householders in their current housing since 2021 or later. The percentage of Eureka householders living in their current housing prior to 1989 is 11.3 percent and since 2021 or later is 3.5 percent.

Table 8. Householder Tenure

Area	Year Householder Moved into Unit by Percentage					
	2021 or Later	2018 to 2020	2010 to 2017	2000 to 2009	1990 to 1999	1989 or Earlier
California	4.6	19.1	36.4	19.2	10.7	10.0
Humboldt County	4.8	19.4	33.7	18.6	11.7	11.8
Community Study Area	3.5	28.5	24.5	20.2	9.8	13.5
Eureka	3.5	20.7	36.9	21.0	6.6	11.3
Arcata	12.2	27.2	33.2	13.6	9.0	4.9

Source: U.S. Census Bureau (2021), ACS 5-year data (Table ID B25038)

Housing Projection and Future Housing Needs

An adequate supply of affordable housing is fundamental to community well-being and economic prosperity. The supply of available land for multi-family housing is constrained by infrastructure limitations and zoning. Housing challenges facing the city and county in the coming years include meeting the housing needs of the very low-income and the shelter needs of the homeless, accommodating the growing population of elders, and an adequate supply of workforce rental housing for those earning less than the median income.

Housing age can provide a general indication of housing quality. As housing ages, the quality of the housing stock tends to decrease. Table 9 shows the time period of original construction of the occupied housing structures by percentage. The CSA consists of 24.1 percent housing structures built prior to 1939 and only 6.9 percent housing structures built since 2000 as compared to the county with 14.2 percent housing structures built prior to 1939 and 12.8 percent housing structures built since 2000. A high number of housing structures in the county were built more than 25 years ago (nearly 86 percent) and an even higher number of structures in the CSA were built more than 25 years ago (93 percent). Since the age of unit is a primary factor contributing to the need for repairs in housing, the data suggests that a high percentage of households may be in need of repair. Overall, the condition of housing in Eureka is commensurate with a community with aged housing stock and a physical environment that requires constant upkeep to prevent water intrusion, mold, and other issues.

Table 9. Physical Housing Characteristics

Area	Year Occupied Housing Structure was Built by Percentage						
	2020 or Later	2010 to 2019	2000 to 2009	1980 to 1999	1960 to 1979	1940 to 1959	1939 or Earlier
California	0.4	5.5	11.0	25.6	30.1	18.6	8.7
Humboldt County	0.3	4.4	8.1	26.3	25.0	21.7	14.2
Community Study Area	0.4	2.0	4.5	31.5	16.7	20.9	24.1
Eureka	0.1	0.4	2.5	15.9	22.1	27.2	31.8
Arcata	0.7	7.8	9.0	25.5	26.2	23.5	7.3

Source: U.S. Census Bureau (2021), ACS 5-year data (Table ID S2504)

Household Income

As shown in Table 10 below, the average household size in the CSA (2.12 persons) is smaller than in the county average (2.42 persons). Median household incomes within the CSA ($48,266) were similar to Eureka ($51,971), but lower than in the county ($57,881). The median household income in Arcata ($43,444) is likely skewed lower based on the student population associated with Cal Poly Humboldt.

Table 10. Selected Income Characteristics

Area	Average Persons per Household	Median Household Income ($)	Individuals Evaluated	Individuals Below Federal Poverty Level (%)	Families Evaluated	Families Below Federal Poverty Level (%)
California	2.89	91,905	38,643,585	12.1	9,093,707	8.5
Humboldt County	2.42	57,881	133,139	19.8	29,397	11.0
Community Study Area	2.12	48,266	7,649	20.5	1,603	14.2
Eureka	2.30	51,971	26,164	19.3	5,440	10.4
Arcata	2.26	43,444	16,947	34.5	2,782	16.7

Source: U.S. Census Bureau (2021), ACS 5-year data (Table IDs B17012, B19013, S2501, S1701, S1702)

The percentage of individuals living below the federal poverty level within the CSA (20.5 percent) is only slightly higher than in the city (19.3 percent) and the county (19.8 percent), all of which are substantially higher when compared to the state (12.1 percent). The number of families living below the federal poverty level within the CSA (14.2 percent) is higher than that of the city (10.4 percent), county (11.0 percent), and the state (8.5 percent). This may be due in part to the smaller percentage of families in the CSA when compared to the county.

Employment

Humboldt County is the largest and most populous of the North Coast counties. The top employers are primarily located in Eureka and Arcata, and represent diverse sectors including medical services, agriculture, service industry, and government. Table 11 below provides information on major employment sectors. Tourism activity supports the leisure and hospitality industry including restaurants, hotels, bars, shops, and related businesses. The most prominent agricultural commodity is cannabis, followed by timber, livestock, nursery products, aquaculture, vegetable crops, field crops, then fruit and nut crops.

Table 11. Employment Characteristics

Employment Area	Percentage of Workforce				
	California	Humboldt County	Community Study Area	Arcata	Eureka
Management, business, science, and arts occupations	41.7	36.6	37.5	37.3	36.2
Service occupations	17.6	21.4	22.7	21.7	22.9
Sales and office occupations	20.0	20.0	21.7	22.1	19.9
Natural resources, construction, and maintenance occupations	8.8	10.4	9.0	5.9	8.1
Production, transportation, and material moving occupations	11.9	11.6	9.1	12.9	12.9

Eureka has experienced above average unemployment in recent years. Its residents are most highly concentrated in service-related occupations such as food preparation, sales, and administrative support. The area has experienced a gradual shift away from manufacturing and industrial, toward a more service-based economy.

Regional Economy

Logging and agriculture have historically been the backbone of the Humboldt County economy, but recent decades have seen other sectors grow significantly, such as government services, medical, education, tourism, and recreation (HCAOG 2023). Eureka is the largest population center in Humboldt County and is a hub for employment and retail commerce, capturing a large portion of the countywide retail sales and tourism economy.

The Port of Eureka is located about 225 miles north of San Francisco and 156 nautical miles south of Coos Bay, Oregon. Historically, the port's main purposes were the exportation of forest products and to serve as the home port for a vast commercial fishing fleet. Humboldt Bay harbor is the only deep-water port in Northern California due to a recent harbor-deepening project. The port can accommodate international and Panama Canal class vessels.

Eureka is a port-based fishing community. Eureka's commercial fisheries include oysters, groundfish, Dungeness crab, Chinook salmon, albacore tuna, Pacific whiting, and Pacific Ocean shrimp. Recreational fisheries for several species, including salmon, rockfish, halibut, sharks and rays, clams, and surf perch, occur from boats, beaches, and other manmade structures. Aquaculture operations have been in Humboldt Bay since the 1950s. Humboldt Bay provides access to recreational activities, such as kayaking, bird watching, walking, cycling, and fishing.

Because of its rural and remote location on the North Coast of California, Humboldt County is at a disadvantage in the transportation of freight, particularly by truck. Standard-size interstate trucks are not allowed to pass through several tight turns on U.S. 101, making the import and export of equipment, products, and cattle more expensive, time consuming, or impossible in some cases. Highway restrictions are reported as a concern by every industry in the region and are a substantial and serious constraint to economic growth and sustainability. Caltrans has completed improvements to allow interstate trucks along the entire length of State Route 299 from Redding to Arcata (County of Humboldt 2017).

Business Activity

Eureka's industrial land uses include a variety of development types, but were historically focused on a combination of resource-based activities, including timber processing, commercial fishing and related activities. In more recent decades, most of the resource-based industries have experienced a period of decline, with significant contractions in both volume and local employment. The industrial sector continues to generate a significant amount of income, on a regional basis, through the ongoing export of durable and non-durable goods, such as timber, fish products, and assorted manufactured goods (City of Eureka 2015). Eureka provides retail shopping opportunities for area residents and visitors. Tourism brings income into the local economy by attracting visitors from outside the area who spend money on lodging, food, transportation, shopping, entertainment, and services.

Fiscal Conditions

The California Department of Tax and Fee Administration (CDTFA) 2021-2022 Annual Report (CDTFA 2022) reported local sales and use tax revenue for fiscal year 2021-2022 distributed to Eureka was $12.6 million; and to Humboldt County and cities within Humboldt County (including Eureka) $25.8 million. Taxable sales for the state continued a rapid growth from their low point during the 2020 recession, increasing 16.3 percent overall from the preceding year. Humboldt was one of only four counties (including nearby Trinity, Mendocino, and Lake) to experience a decrease in taxable sales from the prior year, while 32 of California's 58 counties experienced growth of greater than 10 percent. CDTFA also reported Humboldt County with the third highest timber production volume (219,558 board feet), behind Butte and Plumas counties (264,070 and 220,672 board feet, respectively), and the highest market value ($86.6 million), accounting for nearly 24 percent of the state timber market value ($363.6 million). Total taxable transactions in Eureka for 2022 were reported by CDTFA at $961 million and in Humboldt County at $2.4 billion.

2.2.6.3 Environmental Consequences

All Build Alternatives

All Build Alternatives would have a similar effect to characteristics that contribute to community character and cohesion including population, neighborhood land use, geographical barriers, general character, other common factors and housing availability.

Population

The Build Alternatives would not affect regional population characteristics, including rates of growth or population demographics such as age, racial characteristics, and ethnic composition. As described in Section 2.2.5, *Growth*, Build Alternative 2A and Build Alternative 2B would not provide new access to previously unserved areas, remove any impediment to growth, or provide an entirely new public facility. No population growth would be expected.

The project would not increase traffic volumes or change patterns in the LUSA. The project may encourage a change from vehicular to bicycles/pedestrian traffic due to improved multimodal access. The project would not alter the regional population characteristics.

Neighborhoods, Communities, and Community Character

Under all Build Alternatives, there would be no permanent adverse change to the community character or cohesion of neighborhoods in the LUSA. The project would occur within and adjacent to the existing Caltrans right of way and would not result in any access changes. Because the proposed project would not change the traffic mix or move major roadways, the project would not divide an existing neighborhood or result in additional barriers within the LUSA. The project would not result in land use changes, increase roadway capacity, relieve congestion, cause new businesses to relocate to the area, or stimulate additional development.

During construction, there would be temporary traffic delays that could affect access in and near the project area. Implementation of a Transportation Management Plan (TMP) would minimize these effects, as discussed in Chapter 5 *Traffic and Transportation/Pedestrian and Bicycle Facilities*.

Community character is also a function of the environmental setting of a neighborhood. Construction activities under both Build Alternatives would result in air pollutant emissions which could temporarily affect community character. Section 2.3.6, Air Quality, concludes that short-term degradation of air quality is expected from airborne dust generated by excavation, grading, hauling, and other construction activities, as well as emissions from construction equipment powered by gasoline and diesel engines.

Caltrans BMPs and standard specifications would minimize release of fugitive dust and toxic air contaminants.

Construction activities would result in temporary increases to noise and vibration levels at adjacent sensitive receptors which could temporarily affect community character. Section 2.3.8, *Noise and Vibration* addresses potential noise impacts. The Noise Study Report identifies noise-sensitive receptors where noise levels would have a substantial increase in noise levels during construction of the project. Construction activities would be conducted following applicable regulations, would be short-term and intermittent, and would be minimized by adhering to Caltrans BMPs and standard specifications.

All Build Alternatives would improve resilience to catastrophic events (earthquakes, sea level rise, tsunamis). The new bridges would improve community access to emergency services in case of natural disasters and other events. Build Alternative 2A and Build Alternative 2B improve safety and increase multimodal access through connections to the regional trail system. The Build Alternatives contribute to community cohesion and provide safer, more structurally sound bridges to aid in local response to emergencies.

Under all Build Alternatives, the proposed project would maintain the scenic characteristics of the present roadway. The addition of bicycle and pedestrian facilities on the structures would enhance viewer opportunities. Railing aesthetics that would maintain the visual character will be considered at a later stage in project development.

Housing

The Build Alternatives would not require the acquisition of residential buildings or the relocation of any residents. During construction, construction workers from out of the area may elect to stay in short term housing options near the project area. The project would not contribute to permanent changes in the housing characteristics of the LUSA and surrounding areas.

Under all Build Alternatives, to minimize impacts to community character and cohesion, the project would include Standard Measures and BMPs (Section 1.6) for air quality, aesthetics and visual resources, noise and vibration, traffic and transportation, and utilities and emergency services.

Regional Economy and Business Activity

All Build Alternatives

Economic impacts of transportation projects generally relate to short-term construction activities and to changes resulting from the long-term operation of the facility. The primary economic impact of transportation projects on businesses are changes in the level of business activity. Factors that can influence business activity include access, parking, regional and local traffic patterns, property values, tax revenue, and the environment near the business.

Under all Build Alternatives, the project area and the regional economy would not experience long-term impacts from the project. There would be no permanent changes in accessibility, traffic volumes, and transportation routes. Parking is not permitted along U.S. 101 within the project area and business parking areas would not be impacted. No businesses would be acquired or relocated, and any right of way acquisition would consist of minor slivers of property adjoining the highway. Property values are not expected to change as a result of the project. No additional distance or travel time would be created by the project. The project would result in additional sidewalk and trail connections, increasing access for bicyclists and pedestrians within the project area and increased access to the regional trail system.

Permanent changes to the physical environment that can lead to economic effects such as noise, air quality, and aesthetics are not expected. Refer to Section 2.3, *Physical Environment* for additional information on the environmental consequences of the project on specific environmental resources.

Under all Build Alternatives, short term construction activities would temporarily impact business activity within the project area. Temporary construction impacts would occur throughout the construction of the project and would vary depending on the current construction phase and activity. The economic impacts during construction would be relatively minor and temporary within the project area and would not impact the regional economy. Throughout the duration of construction, activities resulting in noise, vibration and dust could make the project area less pleasant and discourage business patronage. However, U.S. 101 and adjoining street access would be maintained throughout construction. Signage and temporary detours would be utilized in accordance with the project Transportation Management Plan (TMP) to maintain access to all businesses located within the project area. Access would also be maintained for bicyclists and pedestrians. Work zone speed reductions would be enforced, which would not affect businesses. Employment circumstances within the project area would not be impacted. Project construction would not require any businesses to close or relocate, affect a

major employer in the area, or result in lost jobs that would impact the unemployment rate in the community.

Construction of the project would generate direct and indirect temporary economic activity, including the purchases of goods and services and employment of workers required for construction. Construction activities may directly create new jobs in the local community and region. The employment and income generated by construction expenditures would be spread over the period required to construct the project. The extent of the economic impact of construction on the local economy would depend on the amount of spending in the local economy by construction personnel and whether construction expenditures occur in the local economy. Construction related decreases and increases in business activity in the Land Use Study Area (LUSA) would result in temporary changes in sales taxes revenue. Construction expenditures may generate a temporary minor increase in regional economic activity and would have a negligible fiscal impact on the City of Eureka.

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6) to minimize impacts to community character and cohesion. Transportation measures **TT-1** and **TT-2** would ensure pedestrian and bicycle access is maintained and a Transportation Management Plan (TMP) is in place. Standard measures for aesthetic/visual resources, air quality, noise and vibration, and utilities and emergency services would minimize impacts to community character and cohesion during construction of the project.

No Build Alternative

The existing bridges would not be replaced under the No-Build Alternative. This alternative would have no effect on regional population characteristics, community character or cohesion, or housing in the LUSA.

2.2.6.4 Avoidance, Minimization, and/or Mitigation Measures

Additional avoidance and minimization measures would be implemented to protect community character and cohesion.

CI-1: For travelers by foot or bicycle, access across the project limits would be provided throughout the duration of construction.

Noise-1: Prior to nighttime pile installation or other activities that may cause elevated noise levels, public outreach and notifications would occur.

Noise-2: Where feasible, shielding would be provided around jackhammers, concrete saws, and pile installation hammer.

PR-1: Except during certain times (e.g., existing bridge abutment removal), Eureka Slough Boat Ramp and Eureka Waterfront Trail access would be facilitated. When access would be limited, detour signage would be provided and/or flaggers would be present to ensure user safety.

Visual-1: Aesthetic treatment, such as color and pedestrian railing design, would be applied to the bridge railing to increase its visual compatibility. Bridge structures, such as retaining walls and wingwalls, would be aesthetically treated with color, texture, and/or patterns to increase the project's visual compatibility with the surrounding environment.

No mitigation measures are proposed.

2.2.7 Relocations and Real Property Acquisition

This section is based on information from *Eureka Slough Bridges Replacement Project Community Impact Assessment* (CIA) (Caltrans 2025a). The Land Use Study Area is described in Section 2.2.1, *Existing and Future Land Use*.

2.2.7.1 Regulatory Setting

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

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

2.2.7.2 Affected Environment

The Land Use Study Area (LUSA) for the project contains multiple uses including residential, commercial (downtown, general, neighborhood, general service, highway service, and waterfront), professional office, public/quasi-public, parks and recreation, agriculture, natural resource, and water conservation. The land uses in the LUSA are described further in Section 2.2.1, *Existing and Future Land Use*. Designated land uses within the project site include Highway Service Commercial, General Service Commercial, Natural Resource, and Water Conservation (Figure 34).

Properties affected by temporary construction easements (TCE) or right of way (ROW) acquisition would be those within the project site shown in Figures 35-40.

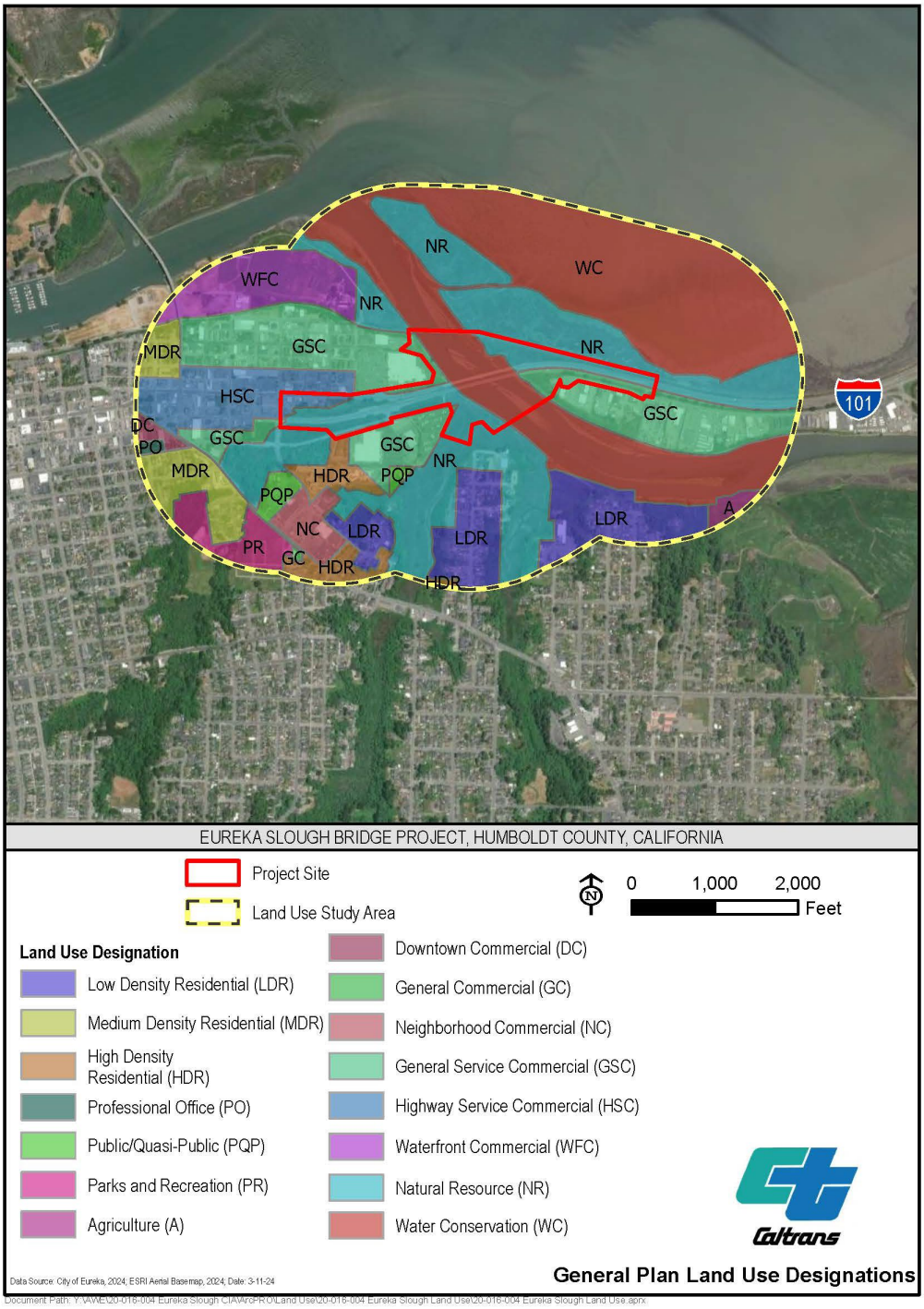


Figure 34. Land Use Designations in the LUSA

2.2.7.3 Environmental Consequences

All Build Alternatives

All Build Alternatives would require TEC and partial ROW acquisition. TCEs are areas outside the Caltrans ROW that would be needed during construction of the project, such as for access and staging of equipment and supplies. Acquisition of ROW is required for areas that would be permanently converted to a transportation use.

No residential or business relocations would be required as part of the project. TCEs and ROW acquisitions are not expected to cause a substantial adverse effect on the community and would not divide neighborhoods as the settings of these properties are directly adjacent to existing highway infrastructure. All permanent ROW acquisitions would consist of slivers of parcels that would be utilized for roadway shoulder, sidewalk, or trail connections. Project construction may temporarily displace unhoused residents within the project area. Consistent with Caltrans Office of Homelessness and Encampments procedures, Caltrans would work with local agencies to develop plans to move people off the state ROW and out of the construction zone before construction begins.

Build Alternative 2A Temporary Bridge

Final determinations of ROW and TCEs needed for Build Alternative 2A would be made during the final design phase. Parcels that would likely require TCEs or partial ROW acquisitions along the roadway frontage for Build Alternative 2A are shown below in Table 12.

Table 12. Alternative 2A Right of Way Needs

APN	Address/Location	Land Use	TCE	ROW Acquisition
002-201-014	2525 4th Street	Commercial (Target)	TCE - Partial	ROW – Partial acquisition for bike path
N/A	Eureka Waterfront Trail and Eureka Slough Boat Launch easement	Public land (City of Eureka)	TCE - Partial	None
002-201-015	2525 4th Street outlot	Commercial (Target outlot)	TCE - Partial	None
002-252-022	2480 6th Street	Commercial (Chevron gas station)	TCE - Partial	ROW – Partial acquisition for bike path

APN	Address/Location	Land Use	TCE	ROW Acquisition
N/A	Eureka Slough, north of bridges	Water Conservation Public land (City of Eureka, Eureka Slough)	TCE - Partial	None
N/A	Eureka Slough, south of bridges	Water Conservation Public land (City of Eureka, Eureka Slough)	TCE - Partial	None
014-041-002	Humboldt Bay Trail South	Natural Resource (Great Redwood Trail Authority/ County of Humboldt)	TCE - Partial	None
014-051-003	Humboldt Bay Trail South	Natural Resource (Great Redwood Trail Authority/County of Humboldt)	TCE - Partial	ROW – Permanent easement for bike path
014-031-004*	Adjacent to slough	Natural Resource Public land (HBNWR)	N/A	ROW – Partial/Full: TBD
014-071-005*	Between Humboldt Bay Trail South and U.S. 101	Natural Resource Public land (HBNWR)	N/A	ROW – Partial/Full: TBD*
014-071-014	2620 Jacobs Avenue	Commercial (Ayres Family Cremation)	TCE - Partial	None
014-071-015	Between U.S. 101 and slough at west end of Jacobs Avenue	Caltrans ROW, Public land	N/A	N/A

Figures 35–37 show the project area parcels, existing Caltrans ROW, and proposed TCEs for Build Alternative 2A. ROW acquisition would be proposed for areas where the project footprint extends beyond the existing Caltrans ROW.

Under Build Alternative 2A, TCEs would be needed along the southwest and southeast corners of the Target parking lot (APNs 002-201-015 and 002-201-014), within the median between the Target exit and the 6th Street exit (APN 002-251-001), and near the 6th Street gas station (APN (002-252-022). The parcel adjacent to the northbound U.S. 101 east bridge abutment is owned by Caltrans (APN 014-071-015). The California State Lands Commission (CSLC) has jurisdiction over tidelands in California; however, the Eureka Slough was ceded from the CSLC to the City of Eureka, therefore the City has jurisdiction of the slough areas (no parcel numbers). The City also has jurisdiction of the Eureka Waterfront Trail and the Eureka Slough Boat Launch, both of

which have a permanent easement through the rear of the Target parcel (APN 002-201-015). The east cul-de-sac of Jacobs Avenue is a City of Eureka parcel.

Both of the Humboldt Bay National Wildlife Refuge (HBNWR) parcels adjacent to southbound U.S. 101 (APNs 014-071-005 and 014-031-004) would require a TCE or partial or full ROW acquisition for the sliver of land that would be temporarily used under Build Alternative 2A. Caltrans and the Refuge are currently considering ROW options for the parcels. U.S. Fish and Wildlife Service policy will need to integrate with state and federal department of transportation policy to determine the best option while fulfilling the missions of both agencies.

Permanent, partial ROW acquisition would be needed for the east end of the sidewalk between southbound U.S. 101 and the southwest corner of the Target parking lot (APN 002-201-015). The bicycle/pedestrian lane at the west and east ends of the southbound U.S. 101 bridge would require a permanent, partial ROW acquisition from Target (APN 002-201-014) and a permanent ROW easement to connect to Humboldt Bay Trail South (APN 014-051-003). The bicycle/pedestrian lane at the west end of the northbound U.S. 101 bridge would require a permanent, partial ROW acquisition from the 6th Street gas station (APN 002-252-022).

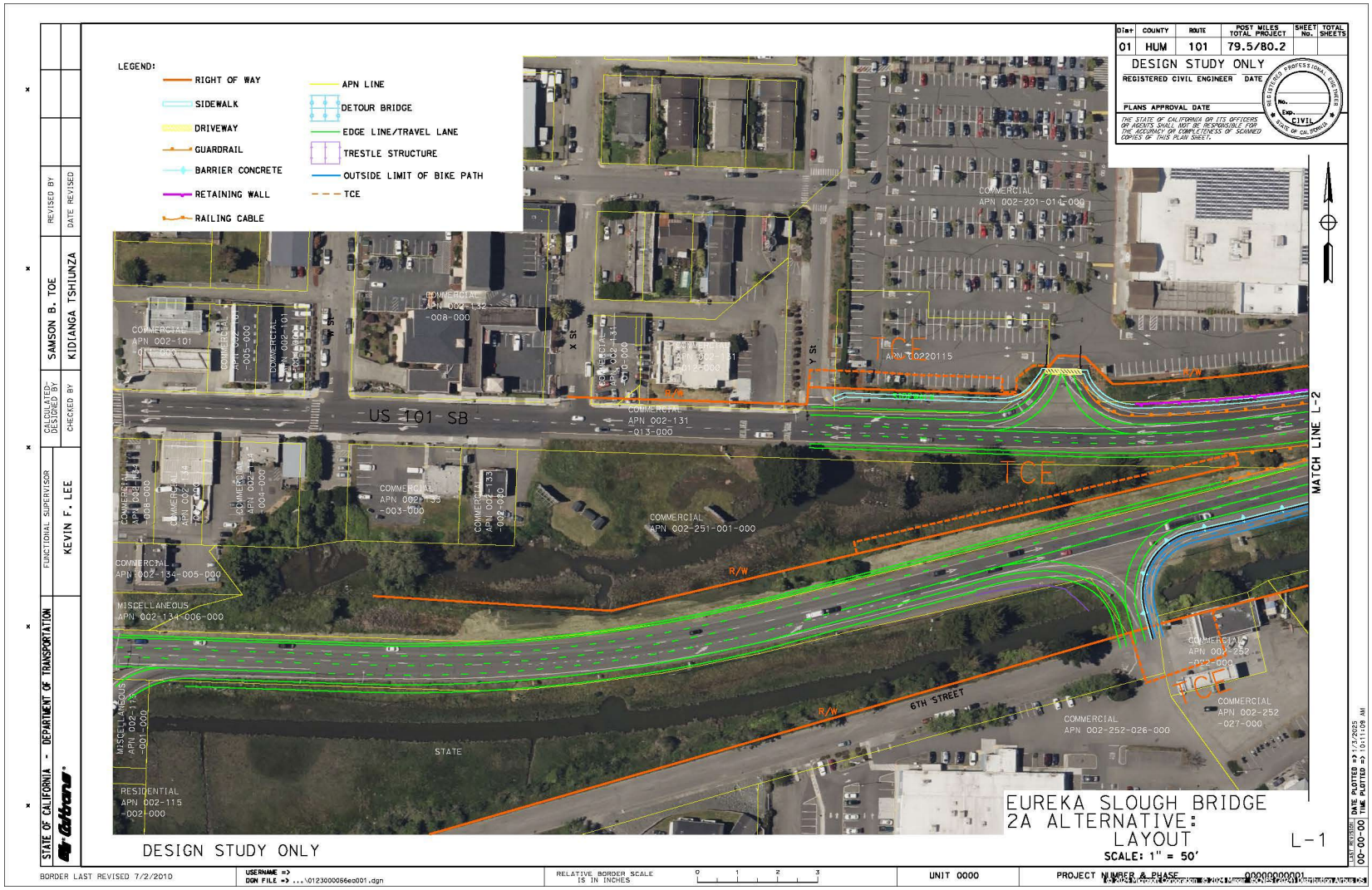


Figure 35. Alternative 2A Right of Way Layout 1

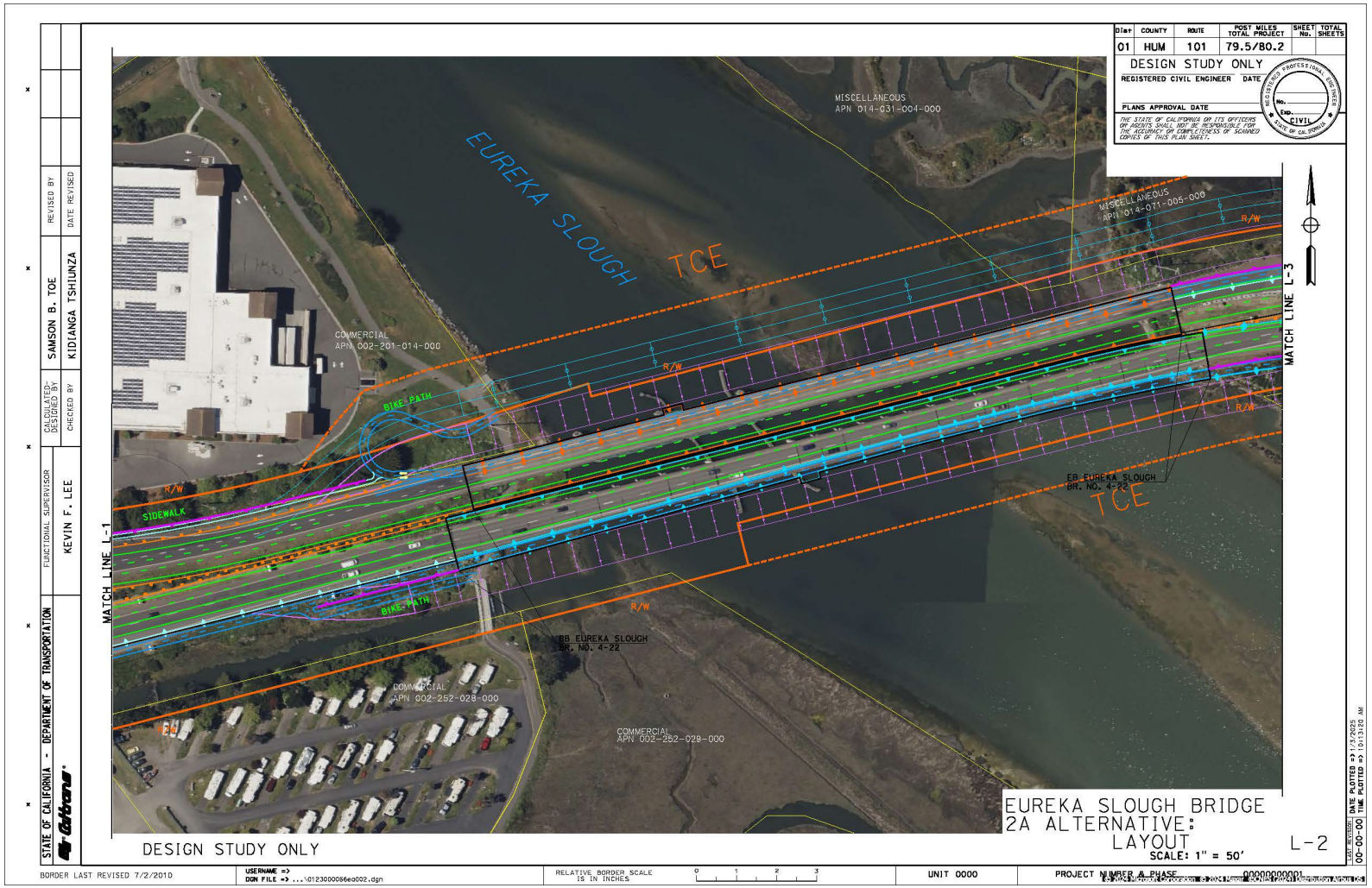


Figure 36. Alternative 2A Right of Way Layout 2

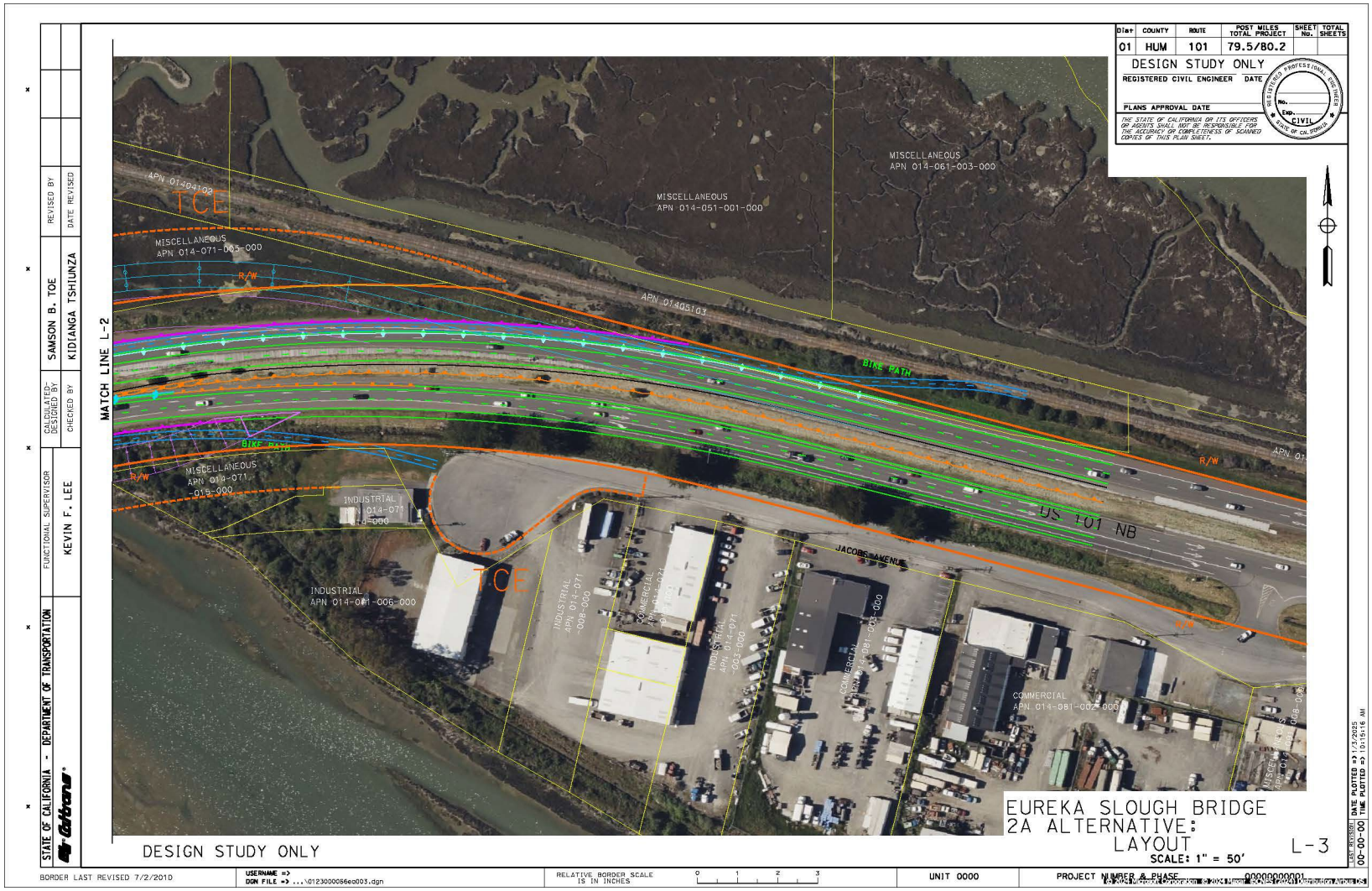


Figure 37. Alternative 2A Right of Way Layout 3



Build Alternative 2B, Adjacent Southbound Bridge

Final determinations of ROW and TCEs needed for Build Alternative 2B would be made during the final design phase. Parcels that would likely require TCEs or partial ROW acquisitions along the roadway frontage for Build Alternative 2B are shown below in Table 13.

Table 13. Alternative 2B Right of Way Needs

APN	Address/Location	Land Use	TCE	ROW Acquisition
002-201-014	2525 4th Street	Commercial (Target)	TCE - Partial	ROW – Partial
002-201-015	2525 4th Street outlot	Commercial (Target outlot)	TCE - Partial	None
002-251-001	Median between northbound and southbound U.S. 101	Public land (City of Eureka)	TCE - Partial	None
002-252-022	2480 6th Street	Commercial (Chevron)	TCE - Partial	None
N/A	Eureka Slough, north of bridges	Water Conservation Public land (City of Eureka)	TCE - Partial	ROW – Partial
N/A	Eureka Slough, south of bridges	Water Conservation Public land (City of Eureka)	TCE - Partial	None
014-041-002	Humboldt Bay Trail South	Natural Resource (Great Redwood Trail Authority/ County of Humboldt)	TCE - Partial	None
014-051-003	Humboldt Bay Trail South	Natural Resource (Great Redwood Trail Authority/ County of Humboldt)	TCE - Partial	ROW – Partial
014-031-004*	Adjacent to slough	Natural Resource Public land (NWR)	N/A	ROW – Full*
014-071-005*	Between Humboldt Bay Trail South and U.S. 101	Natural Resource Public land (NWR)	N/A	ROW – Full*
014-071-014	2620 Jacobs Avenue	Commercial (Ayres Family Cremation)	TCE - Partial	None
014-071-015	Between U.S. 101 and slough at west end of Jacobs Avenue	Caltrans ROW, Public land	N/A	N/A

Figures 38–40 show the project area parcels, existing Caltrans ROW, and proposed TCEs for Build Alternative 2B. ROW acquisition would be proposed for areas where the project footprint extends beyond the existing Caltrans ROW. Build Alternative 2B includes a northward shift of the southbound bridge alignment. This permanent shift requires permanent ROW acquisition from the parcels adjacent to the north of the southbound U.S. 101 bridge.

Under Build Alternative 2B, TCEs would be needed along the entire southern edge where the Target parking lot abuts the Caltrans ROW (APNs 002-201-015 and 002-201-014), within the median between the Target exit and the 6th Street exit (APN 002-251-001), and near the 6th Street gas station (APN (002-252-022). The parcel adjacent to the northbound U.S. 101 east bridge abutment is owned by Caltrans (APN 014-071-015). The California State Lands Commission (CSLC) has jurisdiction over tidelands in California; however, the Eureka Slough was ceded from the CSLC to the City of Eureka, therefore the City has jurisdiction of the slough areas (no parcel numbers). The City also has jurisdiction of the Eureka Waterfront Trail and the Eureka Slough Boat Launch, both of which have a permanent easement through the rear of the Target parcel (APN 002-201-015). The east cul-de-sac of Jacobs Avenue is a City of Eureka parcel.

Both of the Humboldt Bay National Wildlife Refuge (HBNWR) parcels adjacent to southbound U.S. 101 (APNs 014-071-005 and 014-031-004) would require a partial or full ROW acquisition to accommodate the northward shift of the new southbound bridge under Build Alternative 2B. Caltrans and the Refuge are currently considering ROW options for the parcels. U.S. Fish and Wildlife Service policy will need to integrate with state and federal department of transportation policy to determine the best option while fulfilling the missions of both agencies.

Under Build Alternative 2B, permanent, partial ROW acquisition would be needed for the east end of the sidewalk between southbound U.S. 101 and the southwest corner of the Target parking lot (APN 002-201-015). The bicycle/pedestrian lane at the west and east ends of the southbound U.S. 101 bridge would require a permanent, partial ROW acquisition from Target (APN 002-201-014) and a permanent ROW easement to connect to Humboldt Bay Trail South (APN 014-051-003). The bicycle/pedestrian lane at the west end of the northbound U.S. 101 bridge would require a permanent, partial ROW acquisition from the 6th Street gas station (APN 002-252-022).

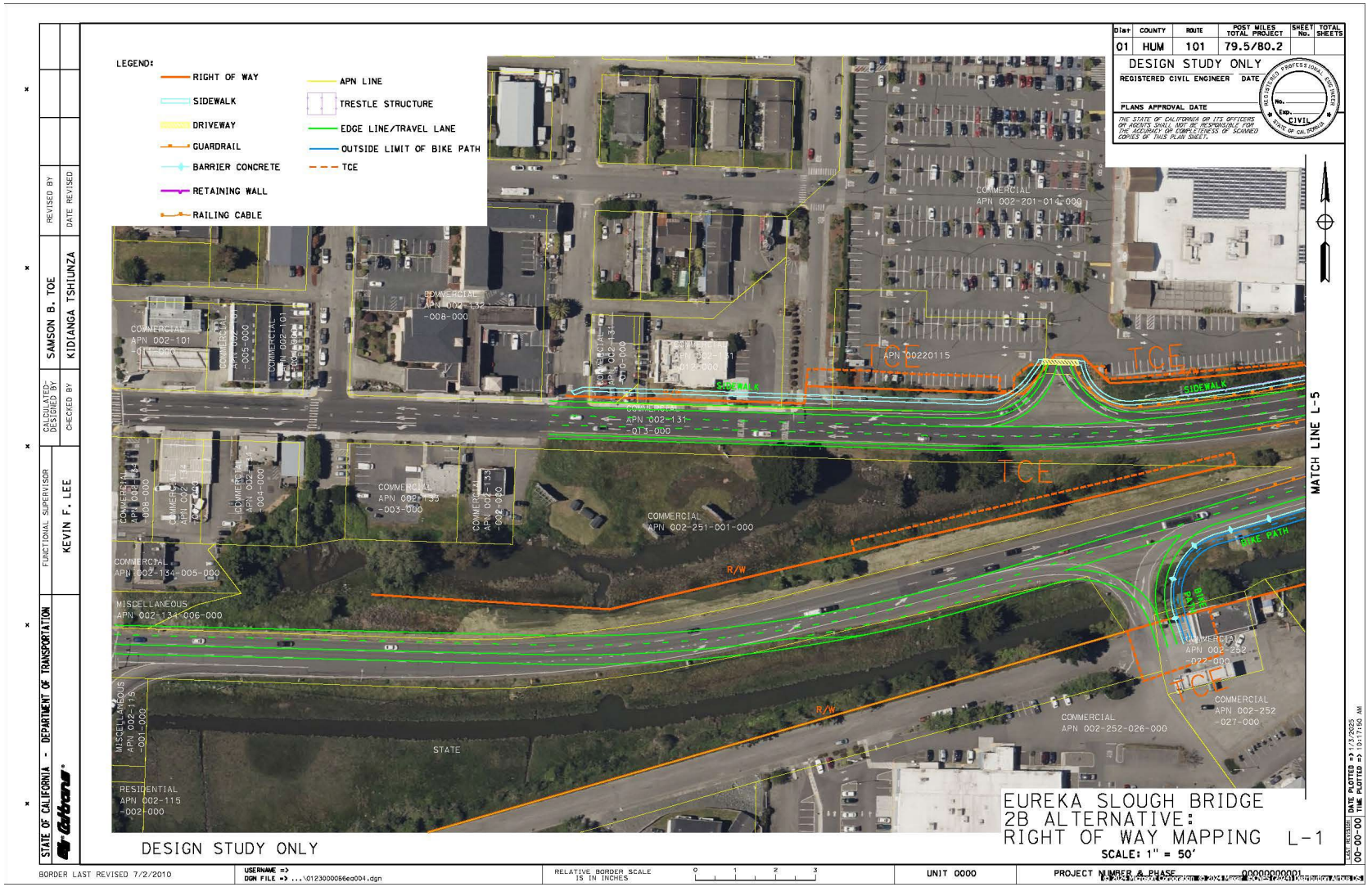


Figure 38. Alternative 2B Right of Way Layout 1

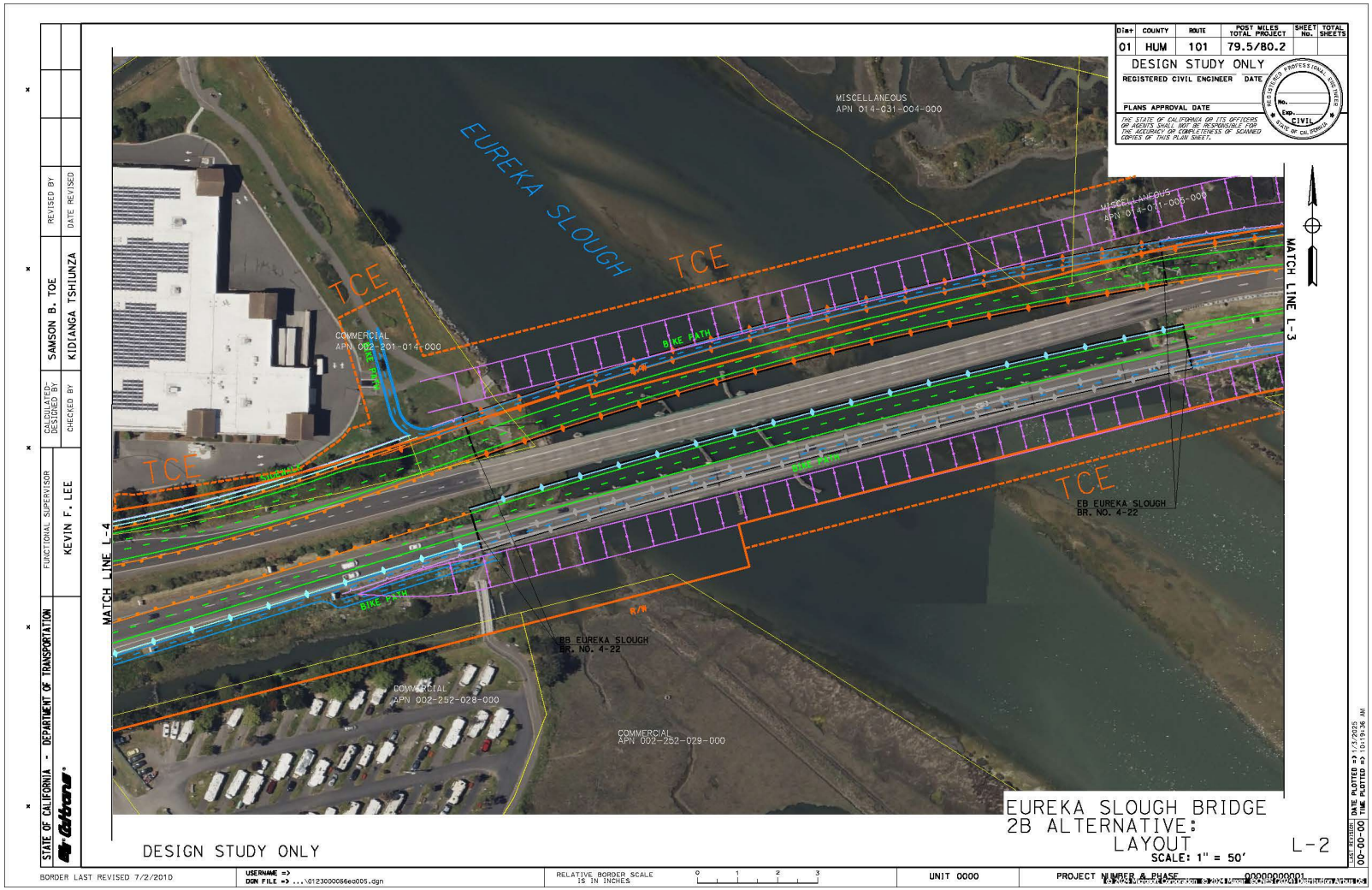


Figure 39. Alternative 2B Right of Way Layout 2



Figure 40. Alternative 2B Right of Way Layout 3



For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6) to minimize impacts to adjacent private and public parcels. Vegetation Removal and the Removal of Staging Areas on TCE parcels is discussed in Section 1.4.1.5, *Construction Activities* and 1.4.1.6, *Right of Way*. Potential permanent ROW acquisition and TCEs on the HBNWR parcels are discussed in the Programmatic 4(f) Evaluation in Appendix A.

No Build Alternative

The existing bridges would not be replaced under the No Build Alternative. This alternative would not require TCEs or ROW property acquisition.

2.2.7.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance, minimization, and/or mitigation measures are proposed.

2.2.8 Utilities/Emergency Services

Information in this section is from the project's *Draft Transportation Management Plan* (Caltrans 2024b) and the Community Impact Assessment (Caltrans 2025a).

2.2.8.1 Affected Environment

Utility companies serving the project area with facilities include Humboldt Bay Community Services District and the City of Eureka (water and sewer), Pacific Gas & Electric (electricity), AT&T (communication), and Suddenlink (communication). Utilities and infrastructure located within the project area include four Pacific Gas & Electric poles carrying electric and Suddenlink communication lines, four AT&T poles, approximately 1,200 feet of underground AT&T communication lines, and approximately 1,200 feet of 8-inch-diameter sewer and 12-inch-diameter water lines for the City of Eureka.

The Eureka Police Department (EPD) provides police protection within the project area. EPD is headquartered in downtown Eureka and is responsible for approximately 18 square miles inside the city limits. The EPD main office is located at 604 C Street, approximately one mile southwest of the project area, and EPD Old Town Annex is located at 302 E Street, approximately one mile west of the project area. The Humboldt County Sheriff's Office main station is located in Eureka at 826 4th Street, approximately 0.7 miles west of the project area; however, it does not provide services within the city limits. The California Highway Patrol also has jurisdiction on U.S. 101.

Humboldt Bay Fire (HBF) provides emergency response and non-emergency public safety services from five fire stations located in and around Eureka, including access and water rescue in Humboldt Bay. HBF Station 4, located at 1016 Myrtle Avenue, provides services to the project area. Station 4 responded to 1,566 incident calls in 2023.

CAL FIRE has determined that Humboldt County has no *Very High* Fire Hazard Severity Zones in Local Responsibility Areas (LRAs). For wildland fire protection, the project area is located in a Local Responsibility Area. Local Responsibility Areas are areas where local governments have financial responsibility for wildland fire protection.

2.2.8.2 Environmental Consequences

All Build Alternatives

Project impacts to utilities and emergency services would be the same under both Build Alternatives.

Utilities

Under all Build Alternatives construction would require the relocation of utilities within the project area prior to construction. Caltrans would coordinate with utility providers to verify utility locations during the design phase of project development. Potholing would be used, as needed, to determine the location of existing underground utilities during the design phase.

Emergency Services

Under all Build Alternatives, there would be temporary traffic delays on U.S. 101 during construction which could result in temporary delays in emergency response. A TMP would be developed to manage circulation and access during construction. The TMP would include features such as traffic controls to minimize speeds and congestion, and measures to maintain access for police, fire, and medical services along U.S. 101 within the project area. Contract specifications would require the contractor to notify local authorities before the start of construction activities, including but not limited to City of Eureka Public Works, City Ambulance of Eureka, EPD, Redwood Transit Authority, and HBF Stations 1 and 4.

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6) to minimize impacts to utilities and emergency services. Standard measures **UE-1**, **UE-2**, and **UE-3** would be implemented to minimize impacts from service disruptions. Standard measure **TT-2**, a project *Transportation Management Plan*, would be included with a *Contractor Contingency Plan* and an *Emergency Response Access Plan* to ensure minimal delays to the public and emergency personnel.

No Build Alternative

The existing bridges would not be replaced under the No Build Alternative. The No Build alternative would have no impact on utilities or emergency services.

2.2.8.3 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance, minimization, or mitigation measures are proposed.

2.2.9 Traffic and Transportation/Pedestrian and Bicycle Facilities

This section includes information summarized from the project's *Community Impact Assessment* (Caltrans 2025a), *Caltrans Traffic Data and Designation Request* (Caltrans 2023a), and *Draft Transportation Management Plan* (Caltrans 2024b).

2.2.9.1 Regulatory Setting

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

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

2.2.9.2 Affected Environment

The Eureka Slough bridges are located within the city of Eureka along U.S. Highway 101 in Humboldt County, California. Eureka Slough bridges, located at the north end of the city of Eureka on U.S. 101, is the primary north-south transportation route through Humboldt County and accommodates a relatively high traffic volume between the cities of Eureka and Arcata.

Caltrans' Office of Transportation Analytics, Modeling and Forecasting provided traffic data and modeling for the project area. Traffic data is provided for the base year (2019), current year (2023), construction year (2033), and the 10-year, 20-year, and 40-year design projections in Table 14. Average Daily Traffic (ADT) is the average number of vehicles that pass a given point over a 24-hour period. Peak hour is defined as heaviest traffic flow at an estimated time during the day and indicates the volume in both directions.

Table 14. Traffic Data

Year	Average Daily Traffic (ADT)	Peak Hour Traffic
Base Year 2019	35,900	3,980
Current Year 2023	37,800	4,200
Construction Year 2033	42,400	4,710
Design Year 2043	47,100	5,230
Design Year 2053	51,800	5,750
Design Year 2073	61,100	6,780

Within the project limits, the highway is a four-lane divided highway. The northbound and southbound shoulders approaching the bridges accommodate bicyclists with Class III bike lanes. At the west boundary of the project area, a section of sidewalk provides safe access for pedestrians adjacent to southbound U.S. 101 from "Y" Street and continuing west.

The existing southbound bridge is 849-feet 6-inches in length and approximately 37 feet wide with two 12-foot-wide travel lanes, a 4-foot 6-inch-wide right shoulder and a 1-foot 9-inch-wide left shoulder. The existing northbound bridge is 946-feet 10-inches in length and approximately 37-feet wide with two 12-foot-wide travel lanes, a 4-foot 5-inch-wide right shoulder, and a 3-foot 7.5-inch-wide left shoulder. The northbound right shoulder has a non-standard 3-foot-wide elevated sidewalk. Both bridge structures

have non-standard bridge rails and narrow shoulders, and do not provide safe access for pedestrians and bicyclists.

Regional trails providing bicyclist and pedestrian access within the project area include the Eureka Waterfront Trail, the Humboldt Bay Trail South (which is currently under construction), and the planned Bay to Zoo Trail. The Eureka Waterfront Trail includes a portion of the California Coastal Trail, and northbound and southbound U.S. 101 throughout the project limits is officially designated as a portion of the Pacific Coast Bike Route.

Transit service in Humboldt County is administered through the Humboldt Transit Authority, which provides fixed route and dial-a-ride transportation options. One fixed route bus stop exists within the project limits along northbound U.S. 101 at "Y" Street, adjacent to the Target store parking lot.

The southbound structure has a non-standard profile which contributes to a collision rate at the bridge departure that is double the statewide average for similar facilities. A 5-year collision analysis for the project limits was generated in January 2024. A total of 24 collisions occurred within the project limits during the analysis time period. These collisions included 0 Fatal, 13 Injury, and 11 Property Damage Only collisions. Of the total number of collisions, 17 involved multi-vehicles, 1 involved a pedestrian and 0 involved a bicyclist. Three of the collisions occurred in wet conditions and 6 occurred in dark conditions.

2.2.9.3 Environmental Consequences

All Build Alternatives

Project impacts to traffic and transportation, and pedestrian and bicyclist facilities would be the same under both Build Alternatives.

The Build Alternatives would not result in an increased vehicle capacity for the bridges or change the long-term traffic operations within the project area. The project would not affect bus transit or rail service. The project is consistent with state, regional and local plans including the Humboldt County Association of Governments Regional Transportation Plan (HCAOG) and the City of Eureka General Plan (HCAOG 2022; City of Eureka 2018). Under all Build Alternatives, access to the regional trail system would be improved for bicyclists and pedestrians and safety would be improved for all highway users.

The following section describes the potential for short-term impacts to vehicles, bicyclists, and pedestrians during construction.

Construction could occur over a period of up to five construction seasons. Construction activities would mostly be performed at night because of the high daytime traffic volumes and relatively low nighttime traffic volumes. To the extent practicable, two lanes of traffic would be maintained in each direction during daylight hours. When needed, one-lane traffic control may be implemented at night, during off-peak hours. Temporary full closures could take place at night during construction phases that require the shifting of traffic. Full closures would be infrequent and temporary. Detours would be defined, and wayfinding signs would be provided to direct motorists, bicyclists, and pedestrians around any closures. Delays would be minimized through the implementation of a Transportation Management Plan.

Under all Build Alternatives, operation of the project would improve traffic safety with better stopping sight distance for vehicles traveling on the southbound bridge, and both bridges would include wider shoulders to accommodate disabled and emergency vehicles in the event of an emergency, maintenances vehicles, and a clear recovery zone. Bicycle and pedestrian safety (including ADA compliance) would be improved with separated lanes on the replacement bridges and trail connections to the Eureka Waterfront Trail and Humboldt Bay Trail South. From the western abutment of the southbound lane, the sidewalk would be extended to the existing sidewalk at “Y” Street.

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6), including Standard Measures **TT-1** and **TT-2** to minimize impacts to traffic and transportation facilities.

No Build Alternative

Under the No Build Alternative, the Eureka Slough bridges would not be replaced. No safety improvements for sight distance would be implemented and the bridges would not be brought to current seismic standards. Under the No Build Alternative, multimodal improvements would not be made, safety would not be improved for bicyclists and pedestrians, and connections to the regional trail system would not be constructed.

2.2.9.4 Avoidance, Minimization, and/or Mitigation Measures

The additional measures would be implemented to minimize impacts to traffic and transportation, pedestrian, and bicyclist facilities during construction.

CI-1: For travelers by foot or bicycle, access across the project limits would be provided throughout the duration of construction.

PR-1: Except during certain times (e.g., existing bridge abutment removal), Eureka Slough Boat Ramp and Eureka Waterfront Trail access would be facilitated. When access would be limited, detour signage would be provided and/or flaggers would be present to ensure user safety.

No mitigation measures are proposed.

2.2.10 Visual/Aesthetics

A Visual Impact Assessment (VIA) was prepared for the project (Caltrans 2024c). The purpose of the VIA is to document potential visual change in the Area of Visual Effect (AVE). The AVE includes viewsheds for viewers from the project location (travelers) and viewsheds for viewers of the project location (neighbors).

2.2.10.1 Regulatory Setting

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

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

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

2.2.10.2 Affected Environment

The project is within an ecoregion termed Coastal Lowlands near the Coast Range. This region includes low marine terraces below 400 feet elevation with minimally sloped topography containing beaches, sand dunes, and spits. The project area is characterized by a high quality coastal scenic viewshed of the Coast Range, Humboldt Bay, and associated sloughs, wetlands and other natural features. The natural

elements of water, vegetation, mountain ranges, and coastal atmospheric conditions create a highly intact sense of place and landscape character. Although the project location is not designated as a Scenic Highway, it is within an Eligible California State Scenic Highway.

The AVE consists of two distinct areas with similar physical and geographic characteristics. The first area begins at the western edge of the Eureka Slough and extends eastward (Figure 42). This eastern portion of the project area is predominantly a natural and rural landscape with the bay, marshes, streams, and sloughs interspersed with residential, commercial, industrial, and recreational land uses in the foreground and distant background. The second distinct area, west of the Eureka Slough, is mostly suburban with one and two story residential and commercial developments as the dominant features (Figure 43). Natural elements are visible in the foreground including groupings of mature tree species, low growing vegetation, and waterways.



Figure 41. Visual Character Facing East



Figure 42. Visual Character Facing West

Viewers of the project include neighbors and travelers. Neighbors with views of the project include residential, recreational, retail, commercial, and industrial land users. Neighbors may be moderately sensitive to the visual quality of the project due to their proximity and longer exposure to the project viewshed as well as potential views from their home, work, or recreational activities. Neighbor awareness of the views would be routine as the project is on a highway used by residents, and because the locations function as a gateway at the northern entrance to the city of Eureka. Travelers of the project include commuters, tourists, recreational users, bicyclists, and pedestrians. Tourists and recreational users may have unique experiences of the project views, having had less exposure to the project area. Due to the project location in a highly scenic coastal environment, focus is usually on the surrounding natural features, decreasing awareness of the built environment while moving through the corridor.

Existing highway elements within the project area include the bridge structures, roadway surface and striping, guardrail and signage. Because these elements do not provide extraneous features and provide functionality while maintaining a minimal scale, they do not significantly contrast with the surrounding natural landscape. The corridor alignment form and line are harmonious with the landscape, with design features that do not distract from high quality views.

2.2.10.3 Environmental Consequences

All Build Alternatives

Under both Build Alternatives, the layout, height, and scale of the project is comparable to the existing elements being replaced. For viewers classified as neighbors of the project location, views of the project site would be predominantly unchanged, with moderate cumulative changes that have a low adverse impact. For travelers, the Build Alternatives would potentially decrease foreground views due to the additional width of the structures and the addition of standard inside and outside shoulders and bicycle/pedestrian lanes.

Existing northbound lanes are slightly elevated in relation to the southbound lanes. The proposed bridge layout removes the height discrepancy and has northbound and southbound lanes at equal elevation, potentially enhancing views for northbound bridge users. Existing bridge trusses installed on the southbound lanes would be removed in the new bridge design, potentially enhancing public views to and from the project corridor. For both proposed Build Alternatives, the AVE would remain visually intact with views of natural features remaining as the dominant visual element. Figures 43–53 provide existing views and post-construction simulations looking east and west, and from the Eureka Slough boat ramp.



Figure 43. Existing Highway View from Vehicle



Figure 44. Post-Construction Highway View from Vehicle



Figure 45. Existing Highway Facing West

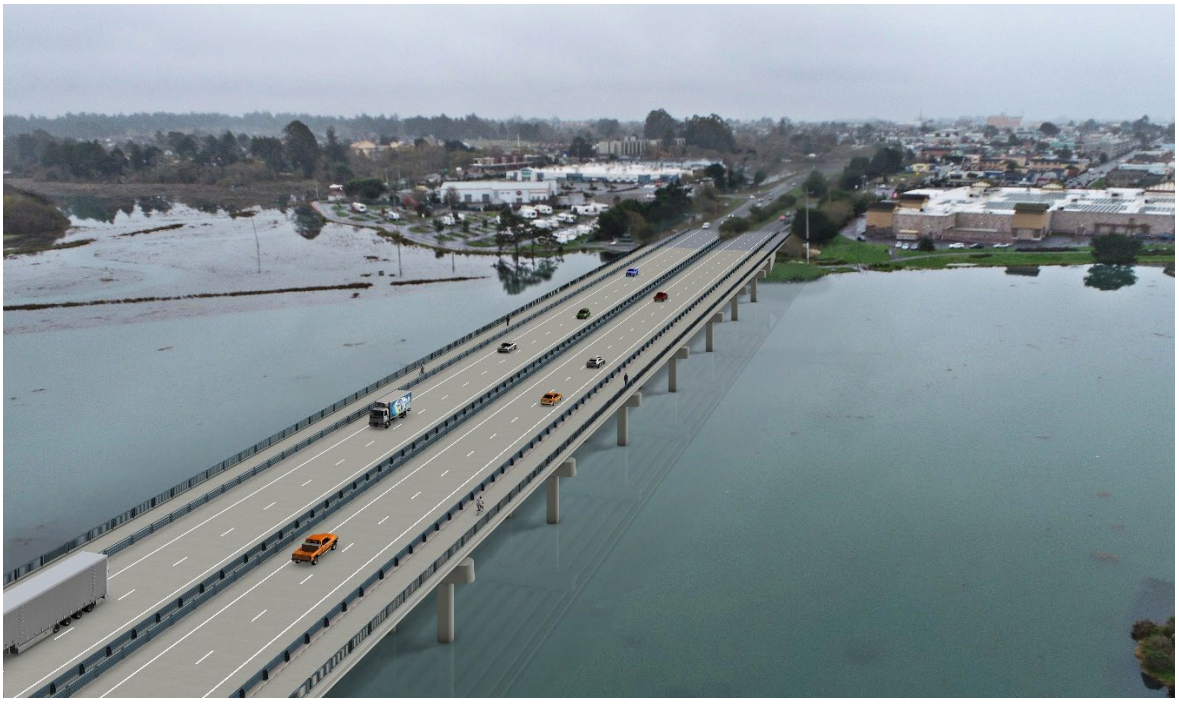


Figure 46. Post-Construction Simulation Alternative 2A Facing West



Figure 47. Post-Construction Simulation Alternative 2B Facing West



Figure 48. Existing Highway Facing East



Figure 49. Post-Construction Simulation Alternative 2A Facing East



Figure 50. Post-Construction Simulation Alternative 2B Facing East



Figure 51. Existing View from Eureka Slough Boat Ramp



Figure 52. Post-Construction Simulation Alternative 2A Eureka Slough Boat Ramp



Figure 53. Post-Construction Simulation Alternative 2B Eureka Slough Boat Ramp

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6), including **AR-1**, **AR-2**, **AR-3**, and **AR-4** to minimize impacts to visual and aesthetic resources.

No Build Alternative

Under the No Build Alternative, the visual and aesthetic conditions would remain as they exist currently. There would be no impact.

2.2.10.4 Avoidance, Minimization, and/or Mitigation Measures

The following additional measure would be included in the project to increase the project's compatibility with the surrounding environment:

Visual-1: Aesthetic treatment, such as color and pedestrian railing design, would be applied to the bridge railing to increase its visual compatibility. Bridge structures, such as retaining walls and wingwalls, would be aesthetically treated with color, texture, and/or patterns to increase the project's visual compatibility with the surrounding environment.

No mitigation measures are proposed.

2.2.11 Cultural Resources

This section is a summary of the *Eureka Slough Bridges Archaeological Survey Report* (ASR) (Caltrans 2022a). The preparation of the ASR included cultural resources studies for the project to disclose any effects or impacts on cultural resources, including the built environment, archaeological sites, and ethnographic sites. Consultation was also conducted with Native American tribes, stakeholders, and interested parties to identify potential concerns. The list of cultural resource studies and sources referenced in this section is included below in Section 2.2.11.2, *Affected Environment*.

2.2.11.1 Regulatory Setting

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

- The National Historic Preservation Act of 1966, as amended, sets forth national policy and procedures for historic properties that are included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council (36 CFR 800). Caltrans has entered into a Programmatic Agreement with FHWA, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the United States Army Corps of Engineers' Sacramento, San Francisco, and Los Angeles Districts, which streamlines and delegates certain responsibilities for Section 106 compliance to Caltrans for projects with FHWA involvement. The FHWA's responsibilities under the Programmatic Agreement have been further delegated to Caltrans under the NEPA Assignment Program.
- The California Environmental Quality Act (CEQA) requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. California Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j).

In 2014, Assembly Bill 52 (AB 52) added the term “tribal cultural resources” to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register-eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

- Public Resources Code Section 5024 requires state agencies to identify and protect state-owned historical resources that meet the National Register of Historic Places listing criteria. It further requires Caltrans to inventory state-owned structures in its rights of way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the National Register of Historic Places or are registered or eligible for registration as California Historical Landmarks. Caltrans entered into a Memorandum of Agreement with the State Historic Preservation Officer, which streamlines and delegates certain responsibilities for Public Resources Code 5024 to Caltrans for projects that involve state-owned resources.

2.2.11.2 Affected Environment

Areas that have the potential to be either directly or indirectly affected by the project's activities have been identified to evaluate historic architectural and archaeological resources. Cultural resource studies conducted for the Eureka Slough Bridges Replacement Project include:

- National Register of Historic Places Evaluation Report for the Eureka Slough Bridges Replacement Project - Bridge 04-0022R (Caltrans 2004)
- Section 106 Compliance - Screened Undertaking for the Eureka Slough Bridge Geoarchaeological Coring Project (Caltrans 2018)
- Geoarchaeological Assessment and Proposal for Extended Phase I Exploration for the Eureka Slough Bridges Replacement Project (Caltrans 2017)
- Archaeological Survey Report (Caltrans 2022a)
- Results of Extended Phase I Geoarchaeological Exploration for the Eureka Slough Bridges Replacement Project (Caltrans 2022b)
- Historic Property Survey Report HPSR (Caltrans 2022c)

List of sources/databases consulted:

- National Register of Historic Places (NRHP)
- California Register of Historic Resources (CRHR)
- California Inventory of Historic Resources (1976)
- Directory of Properties in the Historic Property Data File (HPDF)
- Archaeological Determinations of Eligibility (ADOE)
- Caltrans Bridge Inventory
- Historical Topographic Maps
- Local Inventories
- GLO and/or Rancho Plat Maps
- Government documents (Construction plans, Census records, Voter's Registers, etc.)
- On-line newspaper archives (California Digital Newspaper Collection, Newspapers.com, Newspaperarchive.com)

The Area of Potential Effects (APE) was established to include all areas that could potentially be used or disturbed as part of the project. The APE is defined by the extent of the horizontal and vertical footprint for proposed ground-disturbing activities. It is established to encompass the maximum limits of construction activities, including all areas where construction is planned to occur, construction easements, potential staging, storage, borrow, and disposal locations, and associated utility work.

The project APE encompasses the east-west segment of U.S. 101 from Post Miles 79.40 to 80.26 and adjacent right of way, and portions of the surrounding area including sections of the slough from the bridges northward approximately 700 feet and from the bridges southward approximately 600 feet (Figure 54). The project would require extensive ground disturbance to considerable depths. Construction of new abutments and piers for both bridges would extend to depths of 30 feet or more below the surface. Areas of mudflat and salt marsh adjacent to the slough channel on the east and west sides are also included in the APE. The APE would be revised if additional areas are identified during subsequent phases of project development. Any subsequent areas identified would be surveyed and evaluated and the results would be included in a Supplemental Archaeology Report.

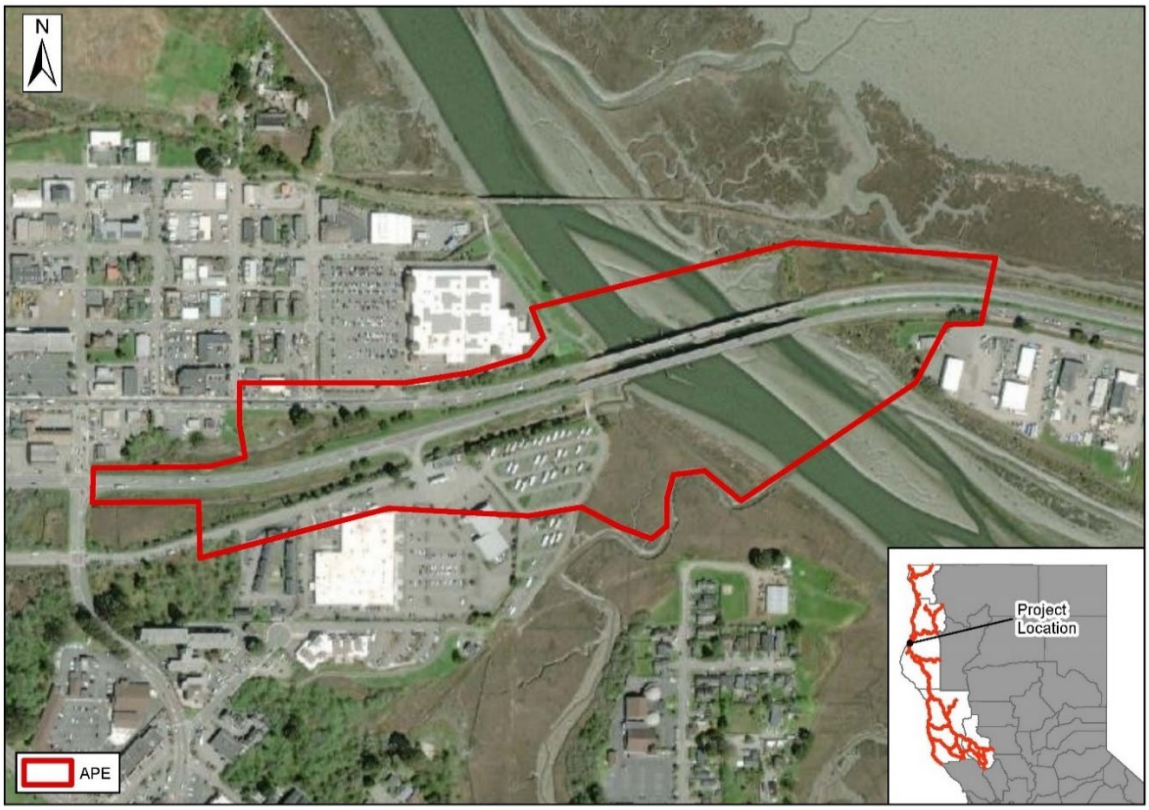


Figure 54. Area of Potential Effect

The entire APE has been surveyed multiple times, and no surface cultural materials have been found. Ground surface visibility is poor across the project APE due to a substantial amount of fill and thick vegetation. Because of the lack of visibility, and the overall geomorphology of Humboldt Bay, a geoarchaeological Extended Phase I investigation was conducted in 2020. The project would require extensive ground disturbance to considerable depths, and this exploratory study was conducted to determine if Native American sites extended into the project area and to assess the potential for unrecorded archaeological deposits to be buried within the project area. Geoarchaeological coring samples were collected to a depth of 20 to 40 feet below the ground surface. Most of the cores were located near the existing bridge abutments on both sides of Eureka Slough and the others were placed in open parts of the right of way along southbound U.S. 101, southwest of the bridge. Extracted samples were labeled to indicate location, depth, vertical orientation, and were uniquely designated using GPS location. Examination of the subsurface deposits from 15 cores indicates most of the project area is underlain natural wetland deposits covered by artificial fill.

Radiocarbon dates indicate the wetland deposits formed over the past 10,000 years and were not sufficiently stable or available for sustained human occupation during that time, and therefore do not have a significant potential to contain intact Native American archaeological materials. It is highly unlikely that the project-related earth disturbances would have any adverse effect on any potentially important cultural resources. No further archaeological identification efforts are recommended within the project area.

The Native American Heritage Commission (NAHC) was contacted in 2021 with a request for a consultation list of tribes, groups, and individuals who have expressed an interest in the project vicinity, and for a review of the Sacred Lands File for any potential sacred sites within the project vicinity. The NAHC responded indicating no sacred sites were identified within the project vicinity. A list of Native American tribes, groups, and individuals for consultation, pursuant to Section 106 of the National Preservation Act (NHPA), was provided. Tribal consultation and coordination have been initiated and is ongoing for the project. Consultation with the Wiyot, Blue Lake, Bear River, Big Lagoon, Cher'Ae, Karuk, Round Valley, and Yurok tribes would continue for the life of the project.

No Native American cultural materials or other archaeological remains were identified in any of the cores. As such, no artifact processing, analysis, or curation was required.

There are no Section 4(f) historic properties within the project limits. There are no historical built-environment elements within the project area. Therefore, Caltrans' finding for the undertaking in accordance with the Section 106 Programmatic Agreement is *No Historic Properties Affected*.

2.2.11.3 Environmental Consequences

All Build Alternatives

Based on the results of the cultural studies conducted for the project, there are no cultural and historical properties within the project area. However, the project is within an area of high sensitivity for buried archaeological deposits. For all Build Alternatives, the project would utilize Standard Measures and BMPs **CR-1** through **CR-4** to minimize potential impacts to cultural resources (Section 1.6).

No Build Alternative

Under the No-Build Alternative, the project would not be constructed and there would be no impacts on cultural resources.

2.2.11.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are proposed for cultural resources.

2.3 Physical Environment

This section discusses the affected environment, environmental consequences, and avoidance, minimization, and mitigation measures (AMMs) for resources that are part of the physical environment within the project area. The topics discussed in this section play vital roles in supporting humans, plants, and animals, and provide essential functions and services to the ecosystem.

2.3.1 Hydrology and Floodplain

A *Hydraulic Recommendations Repor*t (Caltrans 2023b), *Preliminary Hydraulics Report*, (Caltrans 2023c) and a *Water Quality Assessment Report* were prepared (Caltrans 2024d) for the Eureka Slough Bridges Replacement Project. Information from these studies is summarized in this section.

2.3.1.1 Regulatory Setting

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

To comply, the following must be analyzed:

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

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

2.3.1.2 Affected Environment

The project is located on the United States Geological survey (USGS) Eureka 7.5 minute topographical map (Figure 55). The Eureka Slough is in the Eureka Plain Hydrologic Unit within the Freshwater watershed. The drainage basin upstream of the project site is approximately 56.4 square miles with a mean annual precipitation of 51.7 inches. Eureka Slough drains into Humboldt Bay 0.5 miles downstream of the U.S. 101 Eureka Slough bridges crossing. Humboldt Bay then discharges into the Pacific Ocean.

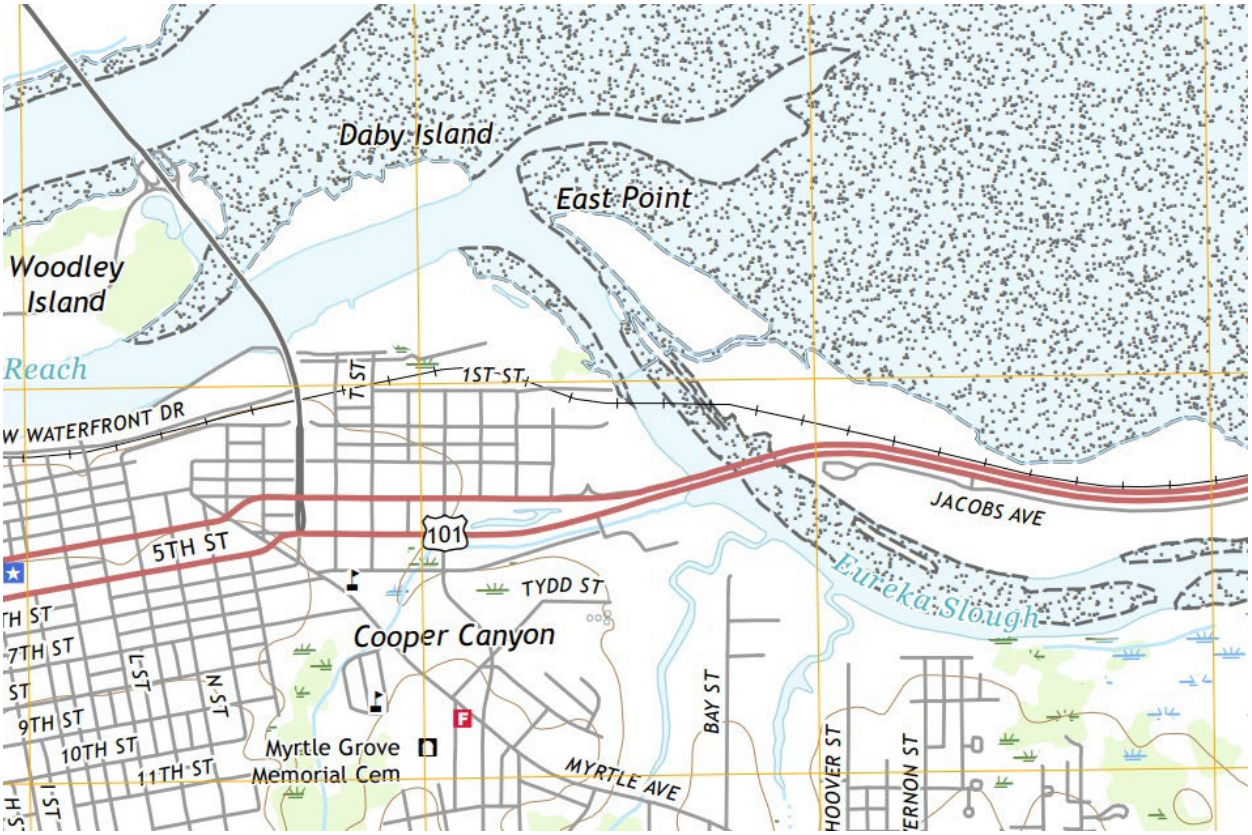


Figure 55. USGS Eureka 7.5 Minute Topographical Map

The NOAA Eureka Weather Forecast Office (WFO) Woodley Island, California station, has monthly climate summary data between the dates of 12/01/1886 to 06/09/2016. The Eureka WFO Woodley Island station shows that the project location has a mean annual precipitation of 39.45 inches. Rainfall occurs mainly in the months of November, December, January, February, and March.

Floodplains are defined using Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), which categorize floodplains into different areas. Within the project limits, the Eureka Slough bridges are located within a FEMA Zone VE floodplain (Figure 56, Map # 06023C0845G), which corresponds to the one percent annual chance (100-year flood) floodplains that have additional hazards associated with storm waves. The calculated 100-year peak flow at the Eureka Slough bridges location is 14,300 cubic feet per second (cfs).

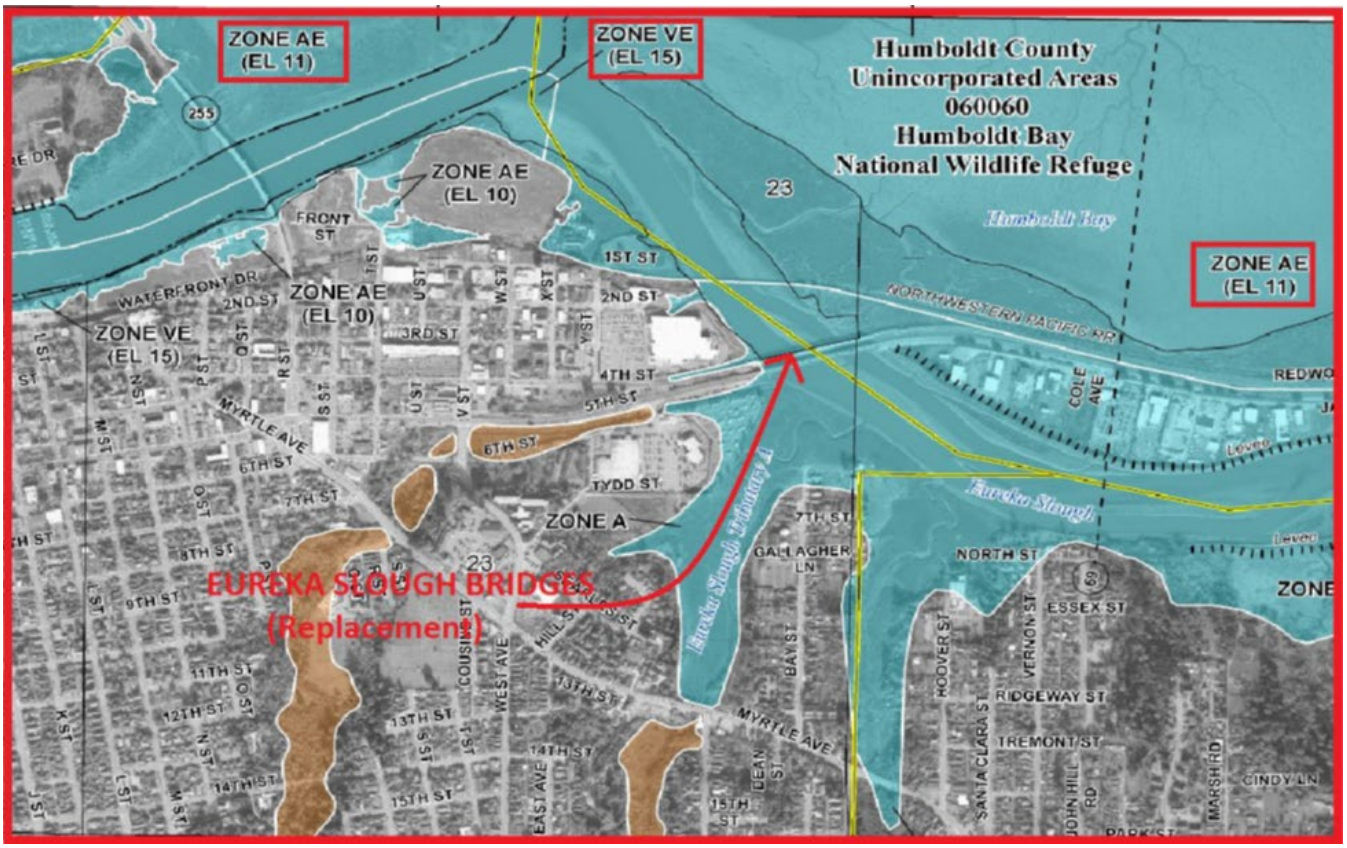


Figure 56. FEMA Flood Insurance Rate Map

Discharge estimates were analyzed for various flood flow frequencies including the 10-year, 50-year, 100-year, and 200-year flood events. For comparison purposes, estimated peak discharge was based on two available methods: the USGS StreamStats program and the FEMA flows, using Basin-Transfer Method (Table 15). The FEMA Basin-Transfer Method calculated discharge rates for the 10-year, 50-year, 100-year, and 200-year flood discharge at 8,795 cubic feet per second (cfs), 13,930 cfs, 16,160 cfs and 22,910 cfs respectively. The USGS StreamStats program estimated peak flows at the bridge site for the 10-year, 50-year, 100-year, and 200-year flood discharge at 8.020 cfs, 12,400 cfs, 14,300 cfs, and 16,100 cfs, respectively.

Table 15. Design Flood Discharges By Flood Event

Frequency Discharge	FEMA Basin-Transfer Method (cfs)	StreamStats Method (cfs)
10-Year	8,795	8,020
50-Year	13,930	12,400
100-Year	16,160	14,300
200-Year	22,910	16,100

Because the project location is near the coastline of the Pacific Ocean, it could be subject to potential tidal influence, sea level rise, and tsunami inundation. These coastal hazards could indirectly impact the waterway clearance of the replacement bridges. The Ocean Protection Counsel (OPC) has provided guidance for evaluating impact from potential sea level rise. There is a five step process for analyzing the potential impact from sea level rise. First, the nearest tide gauge location for the project is identified, then the design life of the project is determined, and a range of sea level rise projections are considered. The fourth step is to evaluate the ability of people, systems, and infrastructure to respond to potential impacts (adaptive capacity). The final step is to select a sea level rise projection based on risk tolerance and, if necessary, develop adaptation features that increase the project's resiliency to sea level rise.

Caltrans' Structure Technical Policy requires that the design of all new bridges and widening consider the effects of tsunami hazard for all site locations within five miles of the coast.

The Natural Hazards Risk and Resiliency Research Center, Tsunami Inundation Database web portal was used to determine the tsunami wave elevation and wave velocity for a tsunami at the project location. The results from the web portal reported a flow depth of 5.9 feet and a wave velocity of 4.5 feet per second. The resulting tsunami wave elevation is 8.60 NAVD 88 feet.

2.3.1.3 Environmental Consequences

All Build Alternatives

For the Build Alternatives, the project would not significantly encroach or impact the existing base floodplain and would not result in incompatible floodplain development. The replacement bridges would be designed in such a way so that the post-construction flows would not have any negative impact to the 100-year storm event elevations. The bridges replacement would not affect the existing FEMA base floodplain elevations. Roadway improvements included in the project scope would also have no impact to the base floodplain elevation. There are six culvert systems within the project area that are not included in the scope of work for the project and would have no impact on the hydrology or floodplain of the project area.

The nearest tide gauge to the Eureka Slough bridges is the North Spit tide gauge. According to the OPC guidance document, sea level is projected to rise 7.6 feet by the year 2100 for the North Spit tide gauge under a high emissions assumption (Table 16).

Table 16. Sea Level Rise Projection for North Spit Tide Gauge

	Likely Range	1-In-200 Chance	H++ Scenario
Risk Aversion	Low Risk	Medium-High	Extreme
2100 Low Emissions	3.1	6.3	10.9
2100 High Emissions	4.1	7.6	

Note: High Emission Scenario. Sea Level Rise based on a base year of 2000, NAVD 88 FT.

Tsunami depth was based on a Tsunami Inundation Database web portal analysis with a base year of 2020 and assuming sea level rise (SLR) from the above analysis. Adding the sea level rise projection of 7.6 feet to the current tsunami wave height of 8.60 feet results in a tsunami elevation depth of 16.2 feet, NAVD 88 (Table 17).

Table 17. Tsunami with Sea Level Rise over Eureka Slough Bridges

Tsunami Velocity (ft/s)	Tsunami Depth + SLR Depth* (feet)	Tsunami Elevation + SLR Depth* (feet)	Short-Term Scour Depth (Local Scour, Pier 2 through Pier 9) (feet)
4.5	13.5	16.2	8.0**

* SLR= 7.6 feet

** Pier Column Diameter = 5.0 feet, Per General Plan

** SLR depth+ Tsunami depth are used for local scour calculation.

The final bridge design would consider the FEMA water surface, sea level rise, and tidal influence for the minimum soffit elevation of the bridges. A Final Hydraulic Report, which would include field survey information and a more detailed hydraulic model with water surface elevations at the bridge site for 200-year, 100-year, and 50-year flood design frequency, would be completed during subsequent phases of project development. The proposed bridges would be designed with minimal impact to the floodplain and would not cause rise in the existing base flood elevation.

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6), including **HF-1** and **HF-2** to minimize impacts to hydrology and floodplains.

No Build Alternative

The No Build Alternative would have no impacts to hydrology and floodplains.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

The Build Alternatives would not result in adverse temporary or permanent impacts on floodplain values. No additional avoidance, minimization or mitigation measures are proposed.

2.3.2 Water Quality and Stormwater Runoff

A *Water Quality Assessment Report* (WQAR) was completed for the Eureka Slough Bridges Replacement Project (Caltrans 2024d). Information in the following section is a summary of the report.

2.3.2.1 Regulatory Setting

Federal Requirements: Clean Water Act

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

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

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

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

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (U.S. EPA) Section 404 (b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (Waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on Waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to Waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

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

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan.

In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues Water Board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs 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 (NPDES) Program

Municipal Separate Storm Sewer Systems (MS4)

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

The Caltrans' current MS4 Permit, 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 storm water and non-storm water discharges; and

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

To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities 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 SWMP 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 BMPs. The proposed project would be programmed to follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

Construction General Permit

Construction General Permit, Order No. 2022-0057-DWQ. The permit regulates stormwater discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity, as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

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

2.3.2.2 Affected Environment

The project is located within an undefined Hydrologic Sub-Area of an undefined Hydrologic Area and the Eureka Plain Hydrologic Unit (HU). The drainage basin upstream of the project site is approximately 56.4 square miles. A monthly climate summary for the project area reports the average total precipitation for a calendar year as 39.45 inches with most of the rainfall occurring between the months of November, December, January, February, and March. The average annual maximum temperature is 58.6 degrees Fahrenheit (F), and the average annual minimum temperature is 46.7 F.

The U.S. 101 northbound and southbound Eureka Slough bridges cross over the Eureka Slough approximately 0.5 miles upstream from where the Eureka Slough drains into Humboldt Bay. Humboldt Bay then discharges into the Pacific Ocean. The project is influenced by coastal tidal levels and, because the project location is near the coastline of the Pacific Ocean, subject to potential effects of sea level rise and tsunami inundation. Flood discharge estimates at the Eureka Slough bridge site were analyzed for various flood flow frequencies based on 10-year, 50-year, 100-year, and 200-year peak discharges. Flood discharges at the project site were shown to vary from approximately 8,795 cubic feet per second (cfs) to 22,910 cfs depending on modeled flood discharge (Preliminary Hydraulics Report, Caltrans 2023c). Section 2.3.1, Hydrology and Floodplain has additional information on flood discharges.

The project is located within the jurisdiction of the North Coast Regional Water Quality Control Board (RWQCB), Region 1. The North Coast RWQCB Basin Plan states goals and policies, and lists existing and potential beneficial uses for Humboldt Bay within the Eureka Plain HU. The North Coast RWQCB Basin Plan has also established Water Quality Objectives (WQOs) for surface waters for a variety of constituents to protect beneficial uses of receiving waters of the project area. The project is located within the Eureka Plain Groundwater Basin. Nearby monitoring well data indicates that groundwater elevations within the vicinity of the project range from 0.7 to 6.6 feet above mean sea level.

Existing beneficial uses for Humboldt Bay within the Eureka Plain HU include Municipal and Domestic Supply; Agricultural Supply; Freshwater Replenishment; Navigation; Water Contact Recreation; Non-Contact Water Recreation; Commercial and Sport Fishing; Cold Freshwater Habitat; Wildlife Habitat; Rare, Threatened, or Endangered Species; Marine Habitat; Migration of Aquatic Organisms; Spawning, Reproduction, and/or Early Development; Shellfish Harvesting; Estuarine Habitat; Aquaculture; and Native American Culture. Potential beneficial uses for Humboldt Bay include Industrial Process Supply and Hydropower Generation. For groundwater, the Basin Plan does not list uses for specific groundwater basins; however, it indicates that all groundwater within the North Coast Region has the following beneficial uses: Municipal and

Domestic Supply, Agricultural Supply, Industrial Service Supply, and Native American Culture.

Stormwater runoff from the bridge structures and within the project area discharge into the Eureka Slough through culverts, adjacent wetland areas, and other jurisdictional waters. The existing water quality of the Humboldt Bay (within the Eureka Plain HU) is listed as being pollutant-impaired with dioxins and polychlorinated biphenyls (PCBs)—toxic chemical pollutants that are persistent in the environment. The pollutant source is listed as unknown, industrial point sources, and waste storage/storage tank leaks (above ground). Caltrans is not a named stakeholder for the listed impairments.

The project is in the Coastal Zone within the State jurisdiction area and subject to the Coastal Zone policies in the California Coastal Act (CCA). The CCA regulates maintenance, protection, restoration, and enhancement of coastal resources including environmentally sensitive habitat areas (ESHA), marine resources, biological productivity, coastal access, and coastal agricultural lands. The project Biological Study Area (BSA) contains 14.95 acres of coastal wetlands.

2.3.2.3 Environmental Consequences

All Build Alternatives

Under all Build Alternatives, potential impacts on water quality could occur during construction activities, including bridge construction and removal, temporary trestle construction and removal, in-water pile driving, bicycle and pedestrian improvements, and work associated with drainage, landscaping, guardrail improvements, paving, and utility relocation. These activities have the potential to create short- and long-term impacts on water quality.

Impervious Surface and Disturbed Soil Areas

Impervious areas are hard surfaces that do not allow water to permeate into the ground. Impervious surfaces increase the rate and amount of stormwater discharges which contain greater sediment and pollution loads than stormwater allowed to permeate into the ground. Areas of disturbed soil are more susceptible to erosion. Soil erosion, especially during heavy rainfall, can increase the amount of suspended solids, dissolved solids, and organic pollutants in stormwater runoff, increasing turbidity of receiving waters. Other than the constructed fill slopes of the bridge approaches, there are no erosion-prone slopes within the project limits along U.S. 101. However, temporary increases in suspended particulates and turbidity during storm events may occur due to disturbed soil in close proximity to receiving waters and the potential for turbidity is specifically of concern from construction-related activities.

The Build Alternatives would result in increases in impervious area and disturbed soil. Preliminary analysis of the proposed project footprint for each alternative estimated the amount of new impervious surface (NIS) and disturbed soil area (DSA). The amount of required post-construction treatment area (PCTA) would be equal to the amount of NIS. In accordance with NPDES requirements, post-construction treatment is mandatory and subject to approval by the North Coast RWQCB. If the required PCTA cannot be treated onsite, then it would need to be treated offsite. While the NIS, DSA, and PCTA estimates for each build alternative would be further refined during subsequent phases of project development, the preliminary calculations are shown below (Table 18).

Table 18. DSA, NIS, and PCTA for the Build Alternatives

Build Alternative	DSA (acres)	NIS / PCTA (acres)
Alternative 2A	10.6	4.8
Alternative 2B	13.3	5.5

Alternative 2A is estimated to have a DSA of approximately 10.6 acres and would add and/or replace approximately 4.8 acres of impervious area, requiring 4.8 acres of PCTA.

Alternative 2B is estimated to have a DSA of approximately 13.3 acres and would add and/or replace approximately 5.5 acres of impervious area, requiring 5.5 acres of PCTA.

Erosion

The topography of the project limits is relatively flat with no natural slopes. The northern and southern approaches to both bridges consist of fill embankment ramps rising to approximately 14 feet in height over a distance of approximately 600 linear feet. Following construction of the project and stabilization of disturbed soils, the project drainage design features and stormwater PCTAs would not increase stormwater volumes and would not decrease the quality of stormwater discharge. Standard project measures and BMPs (Section 1.6) would be used to minimize impacts from erosion and stabilize disturbed soil during construction activities. The project does not propose any activities likely to permanently increase erosion within the project area.

Oil, Grease, and Chemical Pollutants

Under all Build Alternatives, there is potential for accidental release of oil, grease, wash water, solvents, cement, and other construction materials to receiving waters during construction. Materials and wastes could be tracked off-site by vehicles, deposited onto roads, and eventually picked up and transported into waterways. Temporary impacts to water quality could occur during roadway reconstruction and widening, drainage improvements, and paving activities. Standard project features and BMPs (Section 1.6) would be used to protect water quality. The project does not propose any activities likely to permanently impact water quality from oil, grease, chemicals, or other pollutants.

Temperature and Dissolved Oxygen

Under all Build Alternatives, temporary, short-term increases in temperature and decreases to dissolved oxygen in receiving waters could occur during construction. Soil erosion resulting from disturbed soil and construction activities can increase pollutants in stormwater runoff, which can increase temperature and decrease dissolved oxygen levels. Implementation of erosion control measures and routinely used project Standard Measures and BMPs (Section 1.6) would protect water quality from temperature and dissolved oxygen impacts. The project does not propose any activities likely to permanently impact water quality from changes in temperature and dissolved oxygen.

In-Water Activities

All Build Alternatives would require in-water construction. In-water activities would likely occur between June 15 and October 15. Final dates of in-water work would be determined through the consultation and permitting process with input and guidance from resource agencies.

In-water activities may include the following:

- Installation and removal of cofferdams
- Installation of new bridge pier foundations and removal of existing piers
- Installation and removal of temporary construction trestles

For Alternative 2A only, in-water construction would also include installation and removal of the temporary detour bridge.

Under all Build Alternatives, dewatering would be necessary during bridge demolition and construction activities. Dewatering would be necessary in areas where groundwater is encountered and during work requiring cofferdams, which are used to isolate some construction activities in areas with water. Water encountered within the project area would be collected during construction activities and could be used for dust control, or collected and then disposed in upland areas or at a publicly owned treatment works. An off-site disposal site would be approved prior to construction. The water would be pumped into a tanker truck at the point of construction or to a Baker tank for storage and later off-site disposal. The project contractor would be required to provide an approved *Construction Site Dewatering BMP Plan* to manage construction site dewatering activities. The plan would document and describe proposed non-stormwater discharges and the BMPs that would be implemented to eliminate or minimize potential water quality impacts on receiving waters.

See Section 1.4 for additional information regarding in-water activities during construction.

Temporary BMPs

Potential temporary impacts on water quality would be addressed by implementing standard water quality measures, including a requirement for the preparation of a stormwater plan to comply with the Construction General Permit, and routinely used project design Standard Measures and Construction Site BMPs to protect water quality. Temporary control BMPs that could be implemented include soil stabilization, sediment control, tracking control, wind control, non-stormwater management, job site management, waste management, and material pollution control.

Permanent BMPs

Common design features to address long-term impacts to water quality could include pollution prevention BMPs such as erosion control fabric to stabilize newly graded slopes, and climate-appropriate landscape that reduces the need for irrigation and runoff and promotes surface infiltration.

Under all Build Alternatives, the existing roadway and bridge drainage systems would be replaced to provide improved interception and treatment of stormwater discharges. Bioswales and /or biostrips would be installed in multiple locations to treat stormwater discharges post-construction.

Design details for post construction stormwater treatment would be further developed during the future phases of project development. Potential areas for post-construction stormwater treatment would be identified and developed for onsite treatment if possible or offsite, under alternative compliance, if appropriate locations are not available within the project area.

For all Build Alternatives, the project would include the Standard Measures and BMPs (Section 1.6) to minimize impacts to water quality during construction. WQ-1 and WQ-2 would ensure a Stormwater Plan would be in place and pollution prevention measures would be incorporated into the project.

No Build Alternative

The No Build alternative would have no impact on water quality and stormwater runoff.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance or minimization measures are anticipated. No mitigation measures are proposed.

2.3.3 Geology/Soils/Seismic/Topography

This section includes information summarized from the *Caltrans Structures Preliminary Geotechnical Report for Eureka Slough Bridges (*Caltrans 2023d). The project As-Built records and Log of Test Borings (LOTB) for the existing northbound and southbound bridges were also consulted to inform the report.

2.3.3.1 Regulatory Setting

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

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Caltrans Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway

bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Caltrans' Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

2.3.3.2 Affected Environment

Geology

The surface conditions of the Eureka Slough bridge site are located at the margin between the tidal mudflats at the eastern edge of the Humboldt Bay and the Holocene alluvial floodplain associated with the confluence of Freshwater and Ryan creeks. To the southwest of the site, the highway skirts the northern edge of a series of uplifted, gently sloping terrace surfaces that underly much of the city of Eureka. To the northeast, the highway is constructed on a fill embankment between the tidal mudflats of northern Humboldt Bay and the marshy floodplain dissected by a series of meandering slough channels. The northern and southern approaches to both bridges consist of fill embankment ramps rising to approximately 14-feet in height over a distance of approximately 600 linear feet. The Eureka Slough channel is tidal, with the northeastern half of the channel base consisting of exposed mudflats at low tide. Based on 2020 topo-bathometric digital elevation models from the NOAA Digital Coast Data Access Viewer website (NOAA 2023), the southeastern channel is shallow, extending only 6-feet below mean sea level.

The subsurface conditions of the Eureka Slough channel and the adjacent tidal marsh are underlain by soft to very soft clay locally containing layers of peat. This geologic unit, interpreted as tidal marsh deposits, is up to 53-feet in thickness across the mid-channel. Below this unit is a layer between 15 and 45-feet thick, dominated by sands described as compact to slightly compact. This layer was found to often contain decomposed wood fragments and locally clayey or containing a clay binder. Below this unit at a depth of between 35 and 100-feet, the borings extend into a basal unit characterized by dense to very dense sands locally containing hard clays. Fill embankments forming the bridge approaches are described as slightly compact to loose, tan, sandy silt to silty fine sand. Borings extending through the southern approach embankment encountered a layer of dense, coarse gravel and sand 2- to 3-feet thick at the base of the fill, described as a drainage blanket.

Soil

The site is underlain by Holocene alluvial deposits. These deposits are described as clay, silt, sand, and gravel deposited in stream beds, alluvial fans, terraces, floodplains and ponds, and the soils forming from these deposits.

Groundwater

Based on the 1955 LOTBs for the northbound bridge, the groundwater surface was measured between elevations +2.5 feet and +4.4 feet (during August of 1954). Subsurface information was also available on the GeoTracker website (California State Water Resources Control Board) for past environmental remediation projects located in the vicinity of the bridge site. The nearest two sites where groundwater was monitored are approximately 600-feet west of the southern abutment and 500-feet east of the northern abutment. In general, the groundwater was encountered in the upper 10-feet of the borings, within 5-feet of mean sea level.

Scour Data

Historical channel cross-sections for the existing bridges were plotted. The cross-sections suggest the bottom of the slough appeared to be stable, although the streambed has degraded more than 5-feet. This degradation trend, over a 75-year design life for the bridges, is considered minimal. According to the *January 2023 California Department of Transportation Bridge Inspection Report* for both structures, the bridges were coded “5” under the National Bridge Inspection Standard (NBIS) Item 113 for vulnerability to scour. The NBIS Item 113 code is used to identify the current status of the bridge regarding its scour vulnerability. Code 5 indicates that bridge foundations are determined to be stable for assessed or calculated scour condition and scour is determined to be within the limits of footing or piles.

Seismic Hazards

The site is susceptible to strong earthquake-induced ground motions during the design life of the bridges. Based on review of subsurface data obtained from the 1940s and 1950s investigations, the time-average shear wave velocity for the upper 100 feet of soil at the site was estimated to be 325 to 575 feet per second. Final determination of Soil Profile Type and Class would occur after the site investigation is completed.

The project is not located within an Alquist-Priolo Earthquake Fault Zone. According to the USGS Interactive Quaternary Faults Database (USGS 2022), the site is not located within 1,000 feet from any un-zoned fault with an age of Holocene or younger. Therefore, the site is not considered susceptible to surface fault rupture hazards. Based on existing As-Built LOTB, it is anticipated that some of the sediments in the upper 70-feet below ground surface may be susceptible to seismically induced

liquefaction. Although the ground surface in the area of the bridge is relatively flat, it is anticipated that the potential exists for bearing capacity failure and lateral spreading for the approach embankments. These potential hazards and other potential impacts from liquefaction would be evaluated as part of future exploration and analysis to support the project design and construction.

The bridge site crosses a tidal slough on the margin of a marine bay. Based on tsunami hazard maps generated by the California Department of Conservation, the entire site, (as well as adjacent sections of U.S. 101 extending west as far as "W" Street and east as far as the Caltrans Bracut Maintenance Station) is located within the Tsunami Inundation Zone. The anticipated run-up elevation at this location is approximately 15-feet, which would result in the inundation of the existing bridge and approach embankments.

For additional information regarding sea level rise, see Section 2.3.1, *Hydrology and Floodplain*, and Chapter 3.4, *Climate Change*, Section 3.4.5.4, Project Adaptation Analysis for Sea Level Rise.

2.3.3.3 Environmental Consequences

All Build Alternatives

The impact to geology, soils, seismic hazards, and topography would be the same under both Build Alternatives.

For all Build Alternatives, the project would be designed in accordance with Caltrans' Standard Specifications and current Seismic Design Criteria (SDC). Caltrans also requires additional geotechnical subsurface and design investigations to be performed during the final project design and engineering phase. These standards and requirements would avoid the potential for adverse impacts to the public from earthquakes, landslides, liquefaction, or other geologic hazards. The replacement bridges would be less vulnerable in a seismic event or other coastal hazard than the existing bridges. While channels are naturally dynamic and changes due to scour may occur over time, the replacement bridges would be appropriately designed for site conditions, and significant changes to scour are not anticipated under normal conditions. Operation of the project would not affect the geology, soils, seismicity, or topography of the project site.

The project is located in the Coastal Zone. Sea level rise and tsunami hazards would be considered throughout the development of the Build Alternatives. All Build Alternatives would be designed to withstand future sea level rise conditions. See Section 3.4, Climate Change, for more information on tsunamis and sea level rise.

Construction activities would have the same impacts under all Build Alternatives. Each Build Alternative would require grading and vegetation removal, which could result in soil compaction and exposure of bare soil. While there are no known faults within the project area, the project is within a seismically active region and construction activities could be affected indirectly by ground motion, liquefaction and lateral spreading, and potential ground deformation if a seismic event were to occur. Health and safety protocols that prescribe safe construction practices, emergency response procedures, and safety training requirements would be followed to protect workers and the public during construction and minimize construction-related seismic hazards.

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6) to minimize impacts to project area geology. **GS-1** would ensure project design and construction BMPs would reduce erosion potential at the project location.

No Build Alternative

Under the No Build Alternative, the Eureka Slough bridges would not be replaced. There would be no impact to geology, soils, seismic conditions, or topography within the project area.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance or minimization measures are anticipated. No mitigation measures are proposed.

2.3.4 Paleontology

This section is based on the *Paleontological Identification Report and Paleontological Evaluation Report* for the project (Caltrans 2024e).

2.3.4.1 Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils.

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

16 United States Code (USC) 431-433 (the “Antiquities Act”) prohibits appropriating, excavating, injuring, or destroying any object of antiquity situated on federal land without the permission of the Secretary of the Department of Government having jurisdiction over the land.

Fossils are considered “objects of antiquity” by the Bureau of Land Management, the National Park Service, the Forest Service, and other federal agencies.

- 16 United States Code (USC) 470aaa (the Paleontological Resources Preservation Act) prohibits the excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands.
- 23 United States Code (USC) 1.9(a) requires that the use of Federal-aid funds must be in conformity with all federal and state laws.
- 23 United States Code (USC) 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 USC 431-433 above and state law.

Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA).

2.3.4.2 Affected Environment

The project location was documented during the geotechnical investigation and observed during the paleontological site visit. The area is mapped as Holocene- to late Pleistocene-age alluvial deposits, Holocene- and Pleistocene-age undifferentiated nonmarine terrace deposits, and artificial fill (Figure 57). Artificial fill sediments could potentially contain fossil materials that were unintentionally introduced during earlier excavations. However, such fossil materials would be removed from their original geologic and stratigraphic contexts and would not be of paleontological interest or significance. Therefore, artificial fill deposits are considered to have a low sensitivity for paleontological resources.

The alluvial deposits are primarily mapped to the east of the Eureka Slough and consist of clay, silt, and sand deposited in stream beds and floodplains during the Holocene and late Pleistocene Epochs. Holocene-age deposits typically do not contain fossils at or near the surface due to their relatively young age (less than approximately 10,000 years old). Holocene-age remains may occasionally be of scientific interest; however, such discoveries are relatively rare and are addressed on a case-by-case basis. Although reworked or transported fossils may also be present, these types of fossils are out of context and are generally not considered to be significant. Therefore, Holocene-age layers of the alluvial deposits are considered to have a low paleontological sensitivity.

Older, Pleistocene-age portions of the alluvial deposits in the subsurface of the project area may contain significant paleontological resources and are considered to have a high sensitivity for paleontological resources. In addition, the two geotechnical boring logs recorded in areas mapped as Holocene- and late Pleistocene-age alluvial deposits report intermittent layers containing fragments of shells and wood starting at depths of 33 feet below the ground surface (bgs) and extending to the maximum depth explored (201.5 feet bgs). Based on the depth of discovery, it is likely that some of the shell and wood fragments are fossils from the Pleistocene-age portion of the alluvial deposits.

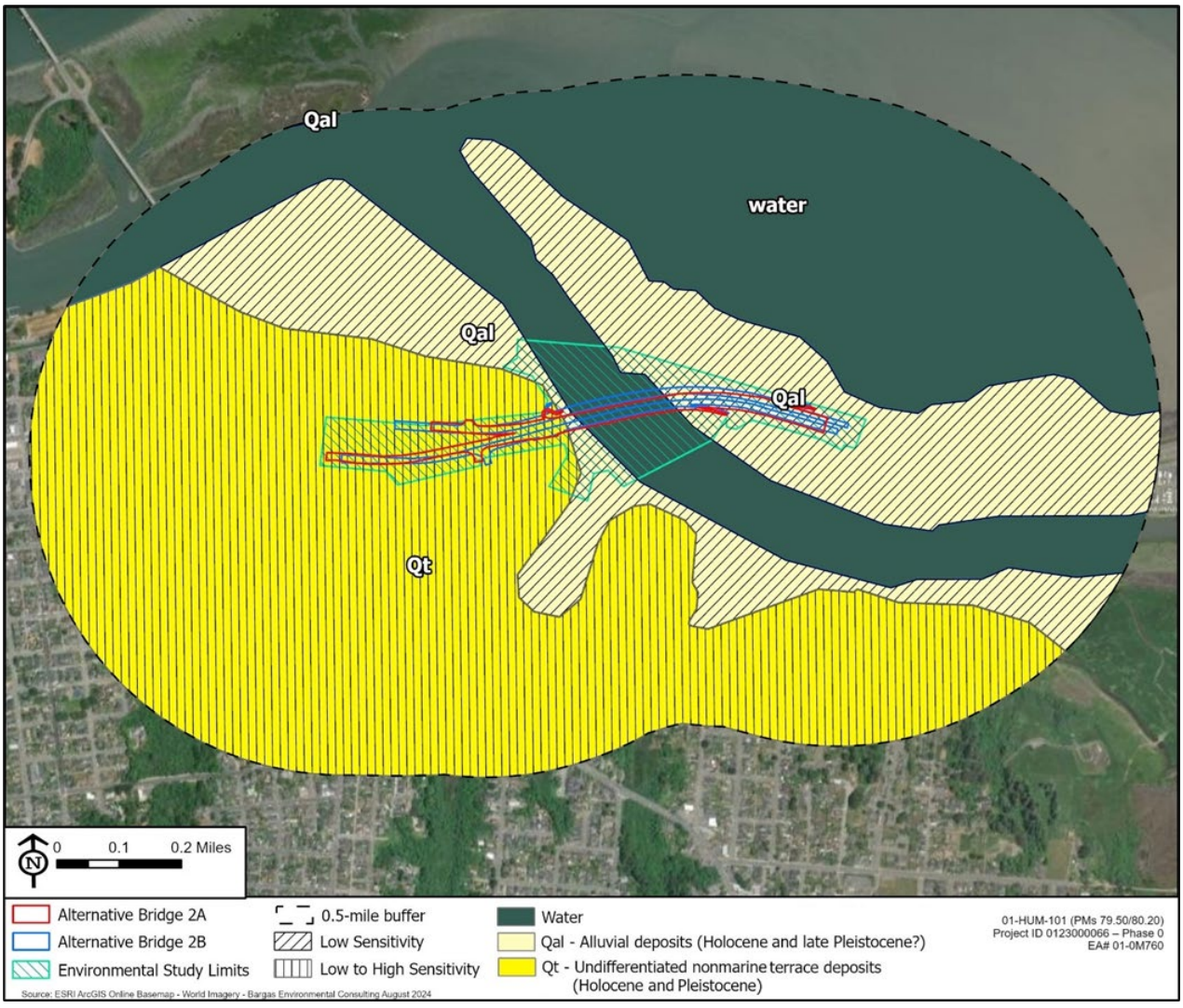


Figure 57. Geology and Paleontological Sensitivity Map

Undifferentiated nonmarine terrace deposits (Qt) are mapped to the west of the Eureka Slough. These terraces were deposited in fluvial environments during the Holocene and Pleistocene Epochs and consist of dissected and/or uplifted clay, silt, sand, and gravel that may contain minor shallow marine intertongues. Holocene-age deposits typically do not contain fossils at or near the surface. Therefore, Holocene-age nonmarine terrace deposits are considered to have a low sensitivity for paleontological resources. However, the older, Pleistocene-age nonmarine terrace deposits may contain significant paleontological resources and are considered to have a high sensitivity for paleontological resources.

2.3.4.3 Environmental Consequences

All Build Alternatives

Most proposed ground-disturbing activities for the Build Alternatives, such as earthwork and grading for temporary roadway sections, excavation during cofferdam removal, ground disturbance at staging areas, drilling and trenching for utility relocation, ground disturbance to install retaining walls, and excavation for abutment footings, are anticipated to be relatively shallow. These relatively shallow ground-disturbing activities are not anticipated to result in direct impacts on significant paleontological resources because they are expected to be entirely in artificial fill and Holocene-age deposits, which are assigned a low sensitivity for paleontological resources.

Deep pile driving activities for the trestle, cofferdam, and bridge construction proposed under both Build Alternatives have the potential to result in impacts on paleontological resources where Pleistocene-age sediments are encountered in the subsurface. Avoidance measures are not feasible because the proposed project cannot be relocated to avoid the Holocene- and late Pleistocene-age alluvial deposits and Holocene- and Pleistocene-age undifferentiated nonmarine terrace deposits, nor can the project be redesigned to exclude the installation of deep piles. Standard measures would be implemented to reduce direct impacts on paleontological resources.

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6) to minimize impacts to paleontological resources. **GS-2** would ensure that appropriate measures are taken in the event paleontological resources are encountered.

No Build Alternative

Under the No Build alternative, the project would not be implemented and there would be no ground-disturbing activities; therefore, no impacts would occur to paleontological resources.

2.3.4.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance or minimization measures are anticipated for the project. No mitigation measures are proposed.

2.3.5 Hazardous Waste/Materials

This section is based on the *Initial Site Assessment* that was prepared for the project (Caltrans 2023e). Additional reports completed for hazardous waste and materials at the project site are listed in Section 2.3.5.2, *Affected Environment*.

2.3.5.1 Regulatory Setting

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

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

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

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

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

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

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

2.3.5.2 Affected Environment

Technical memos and reports prepared for the project include:

- Initial Site Assessment Memos (Caltrans 2021a, 2022d, 2023e)
- Asbestos and Lead Survey Report (Caltrans 2000, 2010, 2020b)
- Aerially Deposited Lead Site Investigation Report (Caltrans 2020b)

The Initial Site Assessments (ISAs) conducted for the project area found that the proposed project has minor hazardous waste issues. Asbestos and Lead Survey Reports were completed in 2000, 2010, and 2020 and an Aerially Deposited Lead Site Investigation Report was completed in 2020. The objective of the surveys was to collect representative samples and have them analyzed for asbestos and lead, and to statistically evaluate whether there would be impacts due to aerially deposited lead

(ADL) in the surface and near-surface soil within the project area. It was determined that the project would disturb ADL, lead paint in thermoplastic traffic striping, asbestos in the existing bridge structures, and would generate treated wood waste.

An investigation was completed in March 2020, to evaluate levels of ADL within the unpaved shoulders and subaerial areas of the project. Project areas were found to have lead present in soils throughout the project limits but typically concentrated in the top two feet of soil.

Based on soil sampling conducted, soils excavated from the surface to a depth of 2.5 feet or shallower would be considered California hazardous. Based on the ADL Agreement, soil excavated from the surface to a depth of 2.5 feet or shallower can be reused in the Caltrans right of way if placed at least 5 feet above maximum historical water table elevation, covered with at least 1 foot of non-regulated material or pavement, and in compliance with the ADL Agreement. If soil excavated from the top 2.5 feet or shallower would not be reused within the Caltrans right of way, then the soil must be managed and disposed of as a California hazardous waste at an appropriately classed facility. If soil is excavated from the surface to a depth of 1 foot and managed as a California hazardous-regulated material disposed of at an approved facility, then the remaining soil from a depth of 1 foot to maximum depth of excavation would qualify for reuse within the Caltrans right of way with no cover requirement. Alternatively, this material may also be disposed of at an appropriately classed facility.

Asbestos Containing Materials (ACM) and Lead-Containing Paint (LCP) Surveys conducted in 2000, 2010, and 2020 for the northbound and southbound structures confirm presence of asbestos and lead-containing paint. Chrysotile asbestos was detected at a concentration of less than (<) 0.1% in a sample representing nonfriable concrete and in sheet packing materials and Transite pipe at concentrations of up to 60 percent. Lead was detected in a sample representing traffic striping applied to the bridge deck. Based on review of historical as-builts, existing thermoplastic traffic striping and pavement marker is likely non-hazardous. Traffic striping applied to the bridge deck would not be considered a California or Federal hazardous waste, based on lead content, if stripped, blasted, or otherwise separated from the substrate. Elevated concentrations of lead were identified in other bridge components as well. The red paint on the I-beams and the green paint in the trusses on the southbound Eureka Slough bridge would be considered California or Federal hazardous waste, based on lead content, if stripped, blasted, or otherwise separated from the substrate.

Initial Site Assessments determined that treated wood waste would be generated from sign post and guardrail removal. Chemical preservatives are often used to protect wood against decay. Caltrans frequently uses wood treated with chemical preservatives for guardrail supports or sign posts. Existing signs and guardrail within the project limits would be replaced with new posts and supports.

The 2023 ISA found that the project would be on or adjacent to a site listed on the Hazardous Waste and Substances Site List (Cortese List). The listed site is on the former Montgomery Wards /current Target property at 2525 Fourth Street. The site has a "Completed - Case Closed" status and received a No Further Action (NFA) letter from the California Regional Water Quality Control Board (North Coast Regional Water Quality Control Board [NCRWQCB]) in August of 2007. The NFA letter stated that no further action was required related to the cleanup of contaminant discharges and underground storage tanks at the site.

2.3.5.3 Environmental Consequences

All Build Alternatives

For all Build Alternatives, lead present from ADL in the soils within the project area would be disturbed during construction activities requiring ground disturbance. The contractor would be required to prepare a project-specific Lead Compliance Plan to minimize worker exposure to lead-containing soil. The plan would include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for handling of lead-containing soil. For soil disturbance and removal activities, ADL would be addressed with project contract specifications including standard special provisions for unregulated earth material containing lead, regulated materials containing ADL, and minimal disturbance of material containing regulated concentrations of ADL.

For all Build Alternatives, lead present in traffic striping applied to the bridge deck could be separated from the substrate during demolition activities. Although lead concentrations found in thermoplastic striping would not be considered California or Federal hazardous waste, some painted components of the bridge were determined to be considered California hazardous waste. All paints at the project site would be treated as lead-containing for purpose of determining the applicability of the Cal/OSHA lead standard during demolition activities. This determination is based on paint sample results and the fact that lead was a common ingredient of paints manufactured before 1978. Demolition activities would require project contract specifications including standard special provisions for disturbance of existing paint systems on bridges, removal of traffic stripes and pavement markings containing lead, and from paint and

thermoplastic containing lead during grinding activities. Additionally, a Lead Compliance Plan would be required as a contract item.

For all Build Alternatives, the NESHAP asbestos regulation protects the public and the environment by minimizing the release of asbestos fibers during renovation and demolition activities. NESHAP regulations do not require that materials containing 1% or less asbestos identified during the ACM Survey be removed prior to demolition or be treated as a hazardous waste. Some bridge components contain greater than 1% asbestos. Disturbance of any ACM by cutting, abrading, sanding, grinding, etc., would require compliance with the Cal/OSHA asbestos standard. Additionally, demolition activities would require project contract specifications including standard special provisions for asbestos containing construction material in bridges. Contractors would be notified of the presence of asbestos in the work area and would be required to inform landfills and recycling facilities of the intent to dispose of asbestos waste. An Asbestos NESHAP Notification would be submitted to the North Coast Unified Air Quality Management District. An Asbestos Compliance Plan would be required as a contract item.

For all Build Alternatives, treated wood waste would be generated from the removal of existing sign and guardrail posts. Project contract specifications and standard special provisions for treated wood waste management would address the handling, storing, transporting, and disposing of treated wood waste. Additionally, treated wood waste disposal would be included as a contract item.

For all Build Alternatives, a portion of the project bike path is proposed on a site listed on the Hazardous Waste and Substances Site List (Cortese List). The listing is a result of past contaminant discharges and underground storage tanks at the site. The site was cleaned of contaminant discharge and received a No Further Action (NFA) letter from the California Regional Water Quality Control Board (North Coast Regional Water Quality Control Board) in August of 2007 stating no further action was required related to the cleanup. Contaminate release and subsequent cleanup activities at the affected parcel are not within the area of the proposed bike path. It is unlikely that petroleum hydrocarbons would be encountered during construction of the bike path.

For all Build Alternatives, the project would include Standard Measures and BMPs (Section 1.6) to minimize impacts from hazardous waste or materials. HW-1 and HW-2 would address materials containing lead, HW-3 would outline requirements for generating or disposing of treated wood waste, and HW-4 would address asbestos containing materials.

No Build Alternative

Under the No Build Alternative, the existing Eureka Slough bridges would not be replaced and would therefore have no effect related to hazardous waste and materials.

2.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance or mitigation measures are anticipated for the project. No mitigation measures are proposed.

2.3.6 Air Quality

The information in this section is based on the *Air Quality, Greenhouse Gas and Climate Change Technical Memo* prepared for the project (Caltrans 2024f). The analysis evaluates the project's long-term effects to air quality from operational emissions and the short term effects to air quality from construction emissions.

2.3.6.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), Lead (Pb), and sulfur dioxide (SO_2). In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

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

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

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

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California), sulfur dioxide (SO_2). California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

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

2.3.6.2 Affected Environment

California is divided into 15 air basins with similar topography and meteorology to better manage 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 ambient air quality standards. The project is located in the city of Eureka in Humboldt County, which is within the North Coast Unified Air Quality Management District of the North Coast Air Basin.

Meteorology and Topography

The topography and meteorology of a region can substantially influence air quality. Certain weather parameters are highly correlated to air quality, including temperature, the amount of sunlight, and the type of winds at the surface and above the surface. Winds can transport ozone and ozone precursors from one region to another, contributing to air quality problems downwind of source regions. Mountains can act as a barrier, preventing ozone from dispersing.

In general, the climate of the project area is characterized by cool summers and mild winters with frequent fog and significant amounts of rain. The annual rainfall averages 38 inches with approximately 90 percent of the annual precipitation falling between the months of October and April. Higher rainfall in winter influences higher water levels in the area's creeks, sloughs, and rivers that drain into Humboldt Bay. The dry season is between May and September.

In coastal areas, the ocean helps to moderate temperatures year-round. Average temperatures within the project area range from the low 60s in the summer to the low 40s during the winter. Humboldt County commonly experiences two types of temperature inversions, vertical and horizontal, which affect the depth of the atmosphere through which pollutants can be mixed. Vertical air movement is important in dispersing pollutants through a thicker layer of air. Horizontal air movement is important in dispersing pollutants over a wider area. Dispersion of pollutants is hindered wherever the atmosphere is stable; that is, where warm air overlies cooler air below.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to drive the movement and dispersal of air pollutants. Winds control the rate and dispersion of local pollutant emissions. In the California North Coast Air Basin, dominant winds exhibit a seasonal pattern, especially in coastal areas. In the summer months, strong north to northwesterly winds are common. During the winter, storms from the South Pacific increase the percentage of days that winds arrive from southerly quadrants. Wind direction often assumes a daily pattern in the river canyons that empty into the Pacific. In the morning hours, cool air from higher elevations flows down the canyon while later in the day, as the lower elevation air heats up, this pattern is reversed, and the air flows up the canyon. Onshore flows frequently bring foggy, cool weather to the coast, while offshore flows often blow fog away from the coast and bring sunny warm days.

Sensitive Receptors

Children, the elderly, and people with illnesses are especially sensitive to the effects of air pollutants. Sensitive receptors are areas where groups sensitive to air pollutants could be located such as schools, hospitals, elderly-care facilities, and child-care facilities. Residential areas are also considered sensitive receptors because residents may include sensitive groups. Sensitive receptor locations have been identified within 500 feet of the project site and include a motel, two apartment complexes, a single family residence, and an RV park (Table 19). Figure 58 shows the locations of the sensitive receptors relative to the project site.

Table 19. Sensitive Receptors Located Within 500 Feet of the Project Site

Receptor	Description	Address	Distance Between Receptor and Project (feet)
Clarion Motel	Motel, over 40 units	2223 4th Street	450
Apartment	Apartment, 5-9 Units	309 “X” Street	450
Single Family Residence	Residential Home	2314 3rd Street	450
Shoreline RV Park	Hotel, RV Park	2600 6th Street	200
Apartment	Apartment, 5+ Units	2215 Tydd Street	250



Figure 58. Sensitive Receptors Located Near the Proposed Project.

Criteria Pollutants

The Clean Air Act requires the U.S. EPA to set National Ambient Air Quality Standards (NAAQS) for six criteria air contaminants: ozone, particulate matter, carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. It also permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain additional pollutants. Table (20) summarizes the sources and health effects of the six criteria pollutants, and visibility reducing particles, which is an additional pollutant regulated in the state of California.

Table 20. State and Federal Criteria Air Pollutant Effects and Sources

Pollutant	Principal Health and Atmospheric Effects	Typical Sources
Ozone (O3)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.

Pollutant	Principal Health and Atmospheric Effects	Typical Sources
Respirable Particulate Matter (PM_{10})	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke & vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.
Fine Particulate Matter ($PM_{2.5}$)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic and other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and ROG.
Carbon Monoxide (CO)	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Nitrogen Dioxide (NO_2)	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain and nitrate contamination of stormwater. Part of the “NOx” group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.
Sulfur Dioxide (SO_2)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.
Lead (Pb)	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also, a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.
Visibility-Reducing Particles (VRP)	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other “Class I” areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.

Asbestos

Asbestos is a term used for several types of fibrous minerals that are a human health hazard when airborne. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the California Air Resources Board in 1986. Naturally occurring asbestos can be present in serpentine and ultramafic rocks and can be released when the rock is broken or crushed. Naturally occurring asbestos is not known to be present within the project area.

Some components of the existing bridge structures were constructed with materials containing asbestos. Three separate Asbestos Containing Materials (ACM) and Lead Containing Paint (LCP) Surveys were conducted in July 2000, September 2010, and April 2020 for the northbound and southbound Eureka Slough bridges. The presence of asbestos in structures materials is discussed further in Section 2.3.5, *Hazardous Waste/Materials*.

Attainment Status

U.S. EPA classifies regions depending on whether the area's monitored air quality meets NAAQS for criterial pollutants. Areas that do not violate ambient air quality standards are considered to have attained the standard. Violations of ambient air quality standards are based on air pollutant monitoring data and are evaluated for each air pollutant. The location of air quality monitoring stations in the North Coast Air Basin are shown in Figure 59. The Eureka-Jacobs Air Quality Monitoring Station shows the air quality concentrations for the past five years measured at the monitoring station closest to the project location (Table 21). Table 22 lists the state and federal attainment status for all regulated pollutants within the project area. At the federal level, Humboldt County is listed as attainment or unclassified for all criteria pollutants. At the state level Humboldt County is listed as attainment or unclassified for all criteria pollutants except for the state 24-hour PM_{10} (fine particulate matter 10 micrometers in diameter or less) standard. Fugitive emissions as a result of vehicular traffic on unpaved roadways is the largest source of particulate matter emissions within the North Coast Unified AQMD.

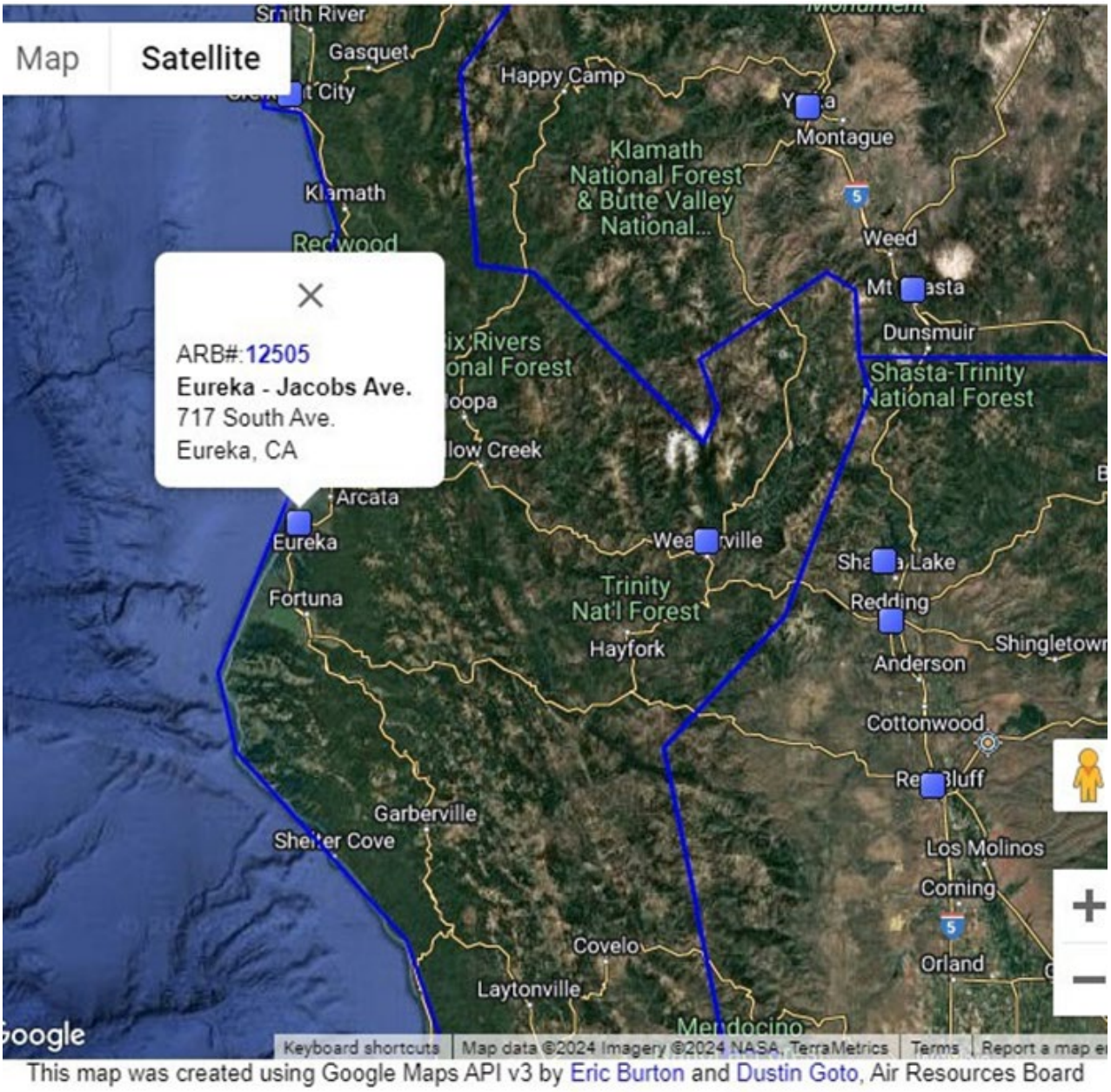


Figure 59. Map of Air Quality Monitoring Stations in the North Coast Air Basin

Table 21. Air Quality Concentrations Measured at Eureka-Jacobs Avenue Air Quality Monitoring Station.

Pollutant	Standard	2018	2019	2020	2021	2022
Ozone						
Max 1-hr concentration		0.075	0.066	0.088	0.073	0.059
No. days exceeded: State	0.09 ppm	0	0	0	0	0
Max 8-hr concentration		0.061	0.066	0.062	0.064	0.052
No. days exceeded: State	0.070 ppm	0	0	0	0	0
Federal	0.070 ppm	0	0	0	0	0
PM_{10}						
Max 24-hr concentration		278.6	86.6	196.2	61.9	59.4
No. days exceeded: State	50 µg/m^3	13	4	17	2	2
Federal	150 µg/m^3	2	0	2	0	0
Max annual concentration		19.3	15.1	21.3	20.3	17.3
$PM_{2.5}$						
Max 24-hr concentration		39.6	18.7	38.8	16.2	21.2
No. days exceeded: Federal	35 µg/m^3	6	0	*	0	0
Max annual concentration		7.7	6.7	8.8	6.9	6.8
No. days exceeded: State	12 µg/m^3	*	0	*	0	0
Federal	12.0 µg/m^3	*	0	*	0	0
Nitrogen Dioxide						
Max 1-hr concentration		58.1	27.9	20.9	20.2	27.3
No. days exceeded: State	0.18 ppm	0	0	0	0	0
Federal	100 ppb	0	0	0	0	0

* Indicates there was insufficient data to determine the value

Table 22. State and Federal Attainment Status

Pollutant	State Attainment Status	Federal Attainment Status
Ozone (O3)	Attainment	Attainment – Unclassified
Respirable Particulate Matter (PM_{10})	Nonattainment	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	Attainment	Attainment – Unclassified
Carbon Monoxide (CO)	Attainment	Attainment – Unclassified
Nitrogen Dioxide (NO_2)	Attainment	Attainment – Unclassified
Sulfur Dioxide (SO_2)	Attainment	Attainment – Unclassified
Lead (Pb)	Attainment	Attainment – Unclassified
Visibility-Reducing Particles	Unclassified	N/A
Sulfates	Attainment	N/A
Hydrogen Sulfide	Attainment	N/A

2.3.6.3 Environmental Consequences

All Build Alternatives

Impacts to air quality from long-term operational emissions and short-term construction emissions are shown to be the same under all Build Alternatives and do not need to be evaluated individually. The project is a non-capacity increasing project, and the Caltrans traffic volume data presented in this section applies to both Build Alternatives.

Sensitive receptors within the project area would not be impacted by long-term operations of the bridges because the project would not increase vehicle capacity of the roadway; therefore, the project would not increase the operational emissions of the roadway. Short-term construction emissions would be intermittent and would end upon completion of the project. Air quality impacts at the identified sensitive receptor locations, the motel/hotel/RV park, apartments, and residence, are expected to be low.

Transportation Conformity

Humboldt County is categorized as an attainment/unclassified area for all current National Ambient Air Quality Standards (NAAQS). Therefore, for all Build Alternatives, transportation conformity requirements do not apply.

Annual Average Daily Traffic

For all Build Alternatives, the project would not increase the capacity of the roadway. The project scope does not include congestion relief, and the project would not result in changes in traffic volumes or fleet mix. Table 23 shows the traffic volumes for base year (2019), opening year (2033), and design year (2053) under the Build and No Build alternatives.

Table 23. Summary of Traffic Conditions for the Build and No Build Alternatives

Scenario	Analysis Year	Annual ADT	% Truck Traffic
Base Year	2019	35,900	4.0
Opening Year, All Build Alternatives	2033	42,400	4.0
Opening Year, No Build Alternative	2033	42,400	4.0
Design Year, All Build Alternatives	2053	51,800	4.0
Design Year, No Build Alternative	2053	51,800	4.0

Under all Build Alternatives, annual average daily traffic (AADT) at the project location is expected to increase from 35,900 to 42,400 from the base year compared to the opening year. An increase in AADT is projected from 42,400 to 51,800 from the opening year to the design year. Truck percentages are expected to remain at a constant 4.0%. There is no expected difference in AADT between the Build Alternatives and the No Build Alternative under all scenarios. Traffic volume and fleet mix are expected to remain the same between the Build and No Build scenarios. Therefore, the project is not expected to directly increase AADT.

Operational Emissions (Long Term Effects)

Operational emissions take into account long-term changes in emissions due to the implementation of the project, excluding the construction phase. The operational emissions analysis compares forecasted emissions and baseline conditions under the Build and the No-Build Alternatives. The emissions modeling tool CT-EMFAC2021 was used to model operational emissions in the baseline year, opening year, and design year for the Build and No Build alternatives. Table 24 contains a summary of daily emission rates of long-term operational emissions associated with the project. There is no expected difference in emissions between the Build Alternatives scenario compared to the No Build Alternative scenario.

Table 24. Summary of Comparative Emissions Analysis

Scenario/Analysis Year	CO (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	NOx (surrogate for NO_2) (lbs/day)
Baseline (Existing Conditions) 2019	89.7	7.62	1.54	23.3
Build 2033	39.6	8.66	1.58	6.88
No-Build 2033	39.6	8.66	1.58	6.88
Build 2053	33.9	10.4	1.83	2.78
No-Build 2053	33.9	10.4	1.83	2.78

Carbon Monoxide

The California Project-Level Carbon Monoxide Protocol (CO Protocol) was used to analyze the CO impacts of the project. It was determined that under both the Build and No Build alternatives, the project would not change traffic patterns within the project area. Traffic volumes would be the same in the design year whether or not the project is implemented, and the project would not worsen traffic flow, or relieve or cause traffic congestion. Based on these determinations and the estimated emission rates in the design year, the project would not worsen CO concentrations within the project area under the Build or the No Build alternatives.

Particulate Matter

Table 23 shows that both the Build and the No Build alternatives would result in an increase in PM emissions over the baseline condition. PM emissions comprise exhaust from vehicles engines, tire wear, brake wear, and road dust. Modeling results show PM emissions from exhaust are expected to reduce while tire wear, break wear and road dust emission are expected to increase. The increase in PM emission rates is a result of an increase in forecasted transportation volumes, not as a result of the project being implemented or not. The estimated PM emission rates are the same for the Build and No Build scenarios. Therefore, the project is not anticipated to have an impact on PM emission rates.

Nitrogen Oxides

Currently there is no federal nitrogen dioxide (NO_2) analysis requirement. For project-level analysis, NO_2 assessment protocol is not available. However, CT-EMFAC2021 provides a NOx (combination of NO and NO_2) emissions estimate. Near-road NO_2 concentrations will likely be dominated by overall NOx emissions. As long as ozone is present at relatively low (background) concentrations, most of the directly emitted NO will convert to NO_2 within a few seconds. Therefore, NOx emissions overall can serve as a useful analysis surrogate for NO_2.

Table 25 shows daily NO_2 emissions would decrease from the baseline in both the build year and design year under the Build and No Build Alternatives. Additionally, there would be no difference in the amount of NO_2 emissions between the Build and No Build Alternatives. Therefore, the proposed project would have no impact on NO_2 emission rates.

Mobile Source Air Toxics

Mobile source air toxics (MSAT) are hazardous air pollutants emitted by cars and trucks, and include benzene and other hydrocarbons. Projects that have low potential MSAT effects are those that serve to improve highway, transit, or freight operations or movement without adding substantial new capacity or creating a facility that is likely to substantially increase emissions. The large majority of projects fall into this category. Under the Build and No Build alternatives, this project would not result in changes in traffic volumes, vehicle mix, roadway location, or any other factor that would cause a meaningful increase in MSAT. The project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any MSAT concerns.

Greenhouse Gas Emissions

Table 25 presents long-term operational CO_2e emissions for the baseline year (2019) existing conditions and the modeled CO_2e emissions for design years 2033 and 2053 for the Build and No Build alternatives. For the design years, there is no expected difference in emissions between the Build and No Build alternatives. Design year CO_2e emissions are expected to decrease from the baseline year emissions under all alternatives. This change is attributed to fleet turnover, which results in newer, more efficient vehicles entering the fleet while older less efficient vehicles are phased out. While these emission numbers are useful for comparing project alternatives, they do not necessarily accurately reflect what the true CO_2e emissions numbers will be because CO_2e emissions are dependent on other factors that are not part of the CT-EMFAC model, such as the fuel mix, rate of acceleration, and the aerodynamics and efficiency of the vehicles.

Table 25. Modeled Annual $CO2_e$ Emissions and Vehicle Miles Traveled

Alternative/Design Year	$CO2_e$ Emissions (Metric Tons/Year)	Difference Build vs No Build (VMT)	Change over Existing/ Baseline (VMT)
Baseline (Existing Conditions) 2019	3450	--	--
Build 2033	3013	--	-437
No-Build 2033	3013	0	-437
Build 2053	3062	--	-388
No-Build 2053	3062	0	-388

CO2e = carbon dioxide equivalent Source: CT-EMFAC2021

Construction Emissions (Short Term Effects)

Under all Build Alternatives, short term degradation of air quality is expected from construction activities. Air quality would be impacted from airborne dust during ground disturbing activities and emissions from construction equipment powered by gasoline and diesel engines. Construction activities are also expected to increase traffic congestion in the area, resulting in increases in emissions from traffic during the delays. Construction emissions would be temporary and limited to the immediate area surrounding the construction site; sensitive receptors within 500 feet of the construction site would have low susceptibility to the health effects listed in Table 19.

Fugitive Dust

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (fugitive dust) generated by excavation, grading, hauling, and other construction-related activities. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site. Sources of airborne dust include disturbed soils and trucks transporting 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. PM_{10} emissions may vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating.

Construction Equipment

Emissions from construction equipment would include carbon monoxide (CO), nitrogen oxides (NOx), volatile organic compounds (VOCs), directly emitted particulate matter (PM_{10} and $PM_{2.5}$), and toxic air contaminants such as diesel exhaust particulate matter. Construction emissions were estimated for the project Build Alternatives using the Caltrans Construction Emissions Tool (CAL-CET2021 v1.0.2). Estimated daily average, daily maximum, and annual average construction emissions throughout the duration of project construction are presented in Table 26. The emissions presented are based on the best information available at the time of calculations.

Table 26. Average Daily Construction Emissions for Construction

Construction Year	ROG (Reactive Organic Gases)	CO	NOx	PM_{10}	$PM_{2.5}$
Daily Average	2.5 lbs/day	10.2 lbs/day	14.7 lbs/day	1.4 lbs/day	0.98 lbs/day
Daily Maximum	3.4 lbs/day	17.7 lbs/day	21.0 lbs/day	8.3 lbs/day	1.8 lbs/day
Annual Average	0.25 tons/year	1.0 tons/year	1.5 tons/year	0.2 tons/year	0.1 tons/year

Construction is expected to begin in 2029 and last approximately 1,475 working days for Build Alternative 2A and 1,232 working days for Build Alternative 2B. The proposed project would result in generation of short-term, construction-related GHG emissions. Construction GHG emissions consist of emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays and detours due to construction. These emissions would be generated at different levels throughout the construction phase.

The Caltrans Construction Emission Tool (CAL-CET2021 v1.0.2) was used to estimate average carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), Black Carbon (BC), and hydrofluorocarbon-134a (HFC-134a) emissions from construction activities. Tables 27 and 28 summarize total estimated GHG emissions generated by on-site equipment for the project. The total CO_2e produced during construction is estimated to be 1,494 metric tons for Build Alternative 2A and 1,487 metric tons for Build Alternative 2B.

Table 27. Alternative 2A Estimates of Total GHG Emissions During Construction

Construction Year	CO_2 (Ton)	CH_4 (Ton)	N_2O (Ton)	BC (Ton)	HFC-134a (Ton)	CO_2e* (Metric Ton)
2029	235	0.006	0.012	0.006	0.005	226
2030	279	0.006	0.016	0.006	0.006	268
2031	321	0.007	0.017	0.009	0.007	309
2032	279	0.006	0.014	0.009	0.006	269
2033	172	0.003	0.010	0.006	0.003	166
2034	267	0.004	0.018	0.004	0.006	257
Total (rounded)	**1,553**	**0.031**	**0.088**	**0.041**	**0.033**	**1,494**

Table 28. Alternative 2B Estimates of Total GHG Emissions During Construction

Construction Year	CO2 (Ton)	CH4 (Ton)	N2O (Ton)	BC (Ton)	HFC- 134a (Ton)	CO2e* (Metric Ton)
2029	261	0.006	0.014	0.007	0.005	251
2030	386	0.008	0.023	0.008	0.009	371
2031	327	0.007	0.017	0.010	0.008	316
2032	274	0.005	0.015	0.009	0.006	264
2033	295	0.004	0.020	0.005	0.008	285
Total (rounded)	**1,543**	**0.030**	**0.090**	**0.039**	**0.036**	**1,487**

*GHG expressed as carbon dioxide equivalent (CO_2e) can be estimated by the sum after multiplying each amount of CO_2, CH_4, N_2O, BC and HFC134a by its global warming potential (GWP). Each GWP of CO_2, CH_4, N_2O, BC and HFC-134a is 1, 25, 298, 460 and 1,430, respectively. Totals may not add due to rounding.

Asbestos

The project is not in an area likely to contain naturally occurring asbestos. Asbestos Containing Material (ACM) was detected in various building materials on the northbound and southbound bridges. Because the project includes demolition to the existing structures, a National Emissions Standards for Hazardous Air Pollutant (NESHAP) notification to the North Coast Unified Air Quality Management District would be required. An Initial Site Investigation (ISA) was completed (Caltrans 2023e), and three separate Asbestos Containing Materials (ACM) and Lead Containing Paint (LCP) Surveys were conducted (Caltrans 2000; Caltrans 2010; Caltrans 2020c) for the northbound and southbound Eureka Slough bridges. See Section 2.3.5, *Hazardous Waste/Materials* for additional information regarding ACM in the bridge structures.

For all Build Alternatives, implementation of Standard Measures and BMPs (Section 1.6) including **AQ-1** through **AQ-4**, **TT-1** and **TT-2** and, **GHG-1** through **GHG-6**, would reduce air quality impacts resulting from construction activities. No long-term (operational) minimization measures are recommended because the project is not capacity increasing or for congestion relief.

No Build Alternative

Under the No Build Alternative, the Eureka Slough bridges would not be replaced. There would be no difference in traffic volumes or fleet mix between the Build and No-Build alternatives. The No Build Alternative would have no effects to air quality.

2.3.6.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance or minimization measures are anticipated. No mitigation measures are proposed.

2.3.7 Noise and Vibration

A *Noise Study Report* was completed for the project (Caltrans 2024g). The report analyzes the project area's existing and future noise environment, and provides information on the anticipated noise and vibration impacts from construction activities under each Build Alternative. Based on the results of the project's Noise Study Report, a Noise Abatement Decision Report is not required for the project. The analysis from the Noise Study Report is summarized in this section. Airborne noise and hydroacoustic impacts to animals are discussed in Section 2.4, *Biological Environment*.

2.3.7.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project 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/Title 23 Part 772 of the Code of Federal Regulations (23 CFR 772) noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with Federal Highway Administration (FHWA) involvement (and the Department, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis (Table 29). For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 29 below lists the noise abatement criteria for use in the NEPA/23 CFR 772 analysis and Figure 60 lists noise levels associated with common activities.

Table 29. Noise Abatement Criteria

Noise Abatement Criteria (NAC)		
Activity Category	**NAC, Hourly A-Weighted Noise Level, Leq(h)[2]**	**Description Of Activity Category**
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	67 (Exterior)	Residential.
C[1]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	No NAC—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No NAC—reporting only	Undeveloped lands that are not permitted.

[1] Includes undeveloped lands permitted for this activity category.

[2] Leq measures the average sound energy over a specific time interval, providing a single value for a varying sound source. Leq(h) refer to the hourly equivalent continuous sound level.

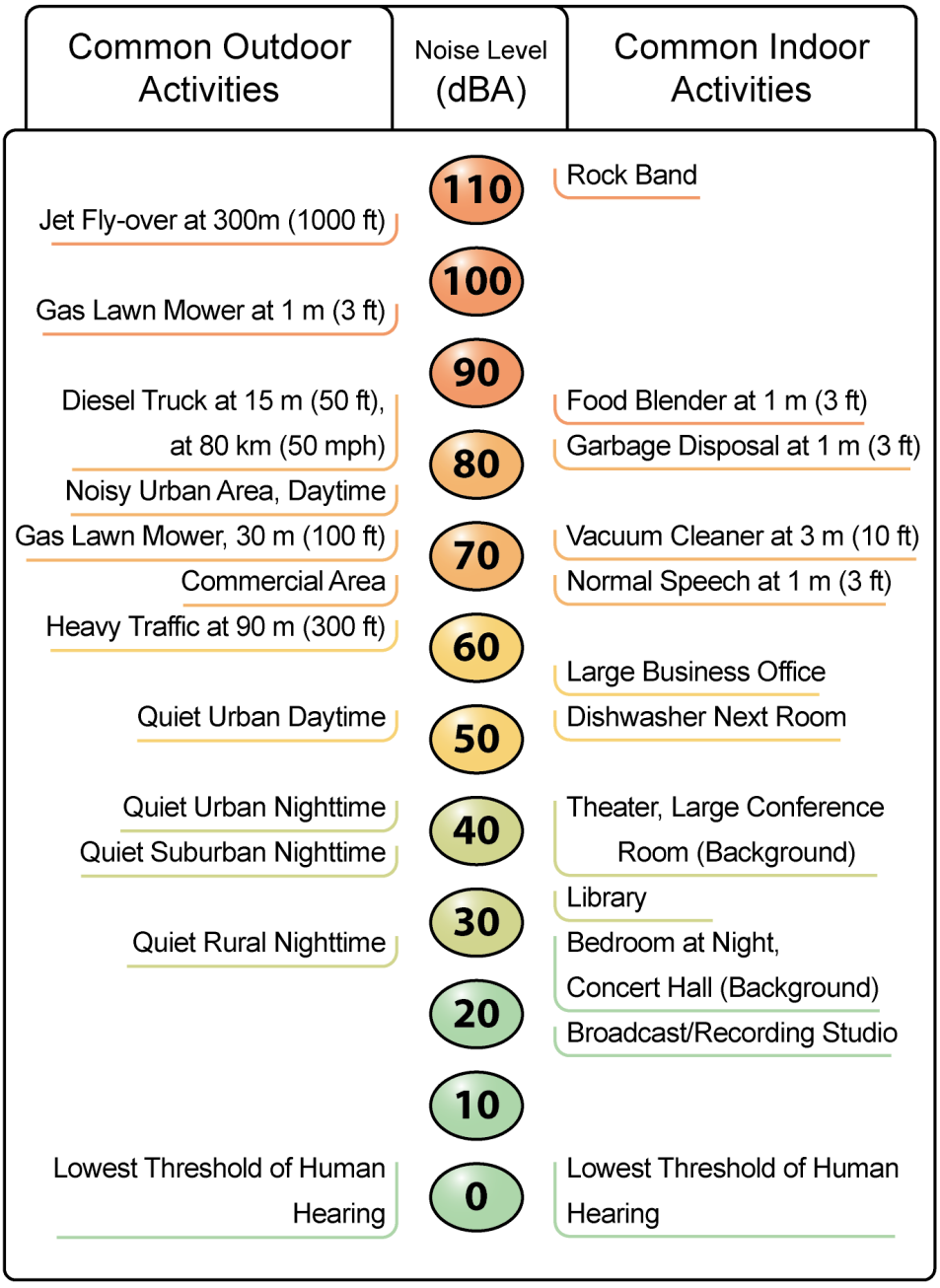


Figure 60. Noise Levels of Common Activities

According to the Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects* (Caltrans 2020e) a noise impact occurs when the predicted future noise level associated with the project substantially exceeds the existing noise level (defined as 12 dBA or more) or when the future noise level with the project approaches or exceeds the NAC. A noise level is considered to approach the NAC if it is within 1 dBA of the NAC.

If it is determined that the project 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.

The Department's Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. Noise abatement must be predicted to reduce noise by at least 5 dB at an impacted receptor to be considered feasible from an acoustical perspective. It must also be possible to design and construct the noise abatement measure for it to be considered feasible. Factors that affect the design and constructability of noise abatement include, but are not limited to, safety, barrier height, topography, drainage, access requirements for driveways, presence of local cross streets, underground utilities, other noise sources in the area, and maintenance of the abatement measure. The overall reasonableness of noise abatement is determined by the following three factors: 1) the noise reduction design goal of 7 dB at one or more impacted receptors; 2) the cost of noise abatement; and 3) the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

2.3.7.2 Affected Environment

Existing Noise Environment

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves to a hearing organ, such as a human ear. Sound pressure level (SPL) is described in terms of decibels (dB). The higher the decibel, the louder the sound. Predicted noise levels are shown in A-weighted decibels (dBA), which represent relative loudness as perceived by the human ear. Typical A-weighted noise levels are described in Table 30. Zero dBA is the lowest threshold of human hearing and a jet fly-over 1,000 feet would be about 110 dBA.

Noise in the daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. Equivalent Sound Level (L_{eq}) and Maximum Sound Level (L_{max}) are two commonly used descriptors for traffic noise analysis. L_{eq} represents an average of the sound energy occurring over a specified period and L_{max} is the highest instantaneous sound level measured during a specific period. Average weighted sound levels occurring during a one-hour period are expressed as the 1-hour A-weighted equivalent sound level (L_{eq}[h]).

Table 30. Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	**— 70 —**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**— 60 —**	
		Large business office
Quiet urban daytime	**— 50 —**	Dishwasher next room
Quiet urban nighttime	**— 40 —**	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	**— 0 —**	Lowest threshold of human hearing

Source: Caltrans 2013.

Highway traffic is a dominant source of noise within the project area. The project area has relatively high traffic volumes and, in addition to daily local traffic, accommodates heavy use by truck and tourist traffic. In 2023, the peak hour traffic volume was 4,200 vehicles per hour and the average annual daily traffic was 37,800 vehicles per day. In 2053, peak hour traffic volume is expected to be 5,750 vehicles per hour and average annual daily traffic is expected to be 51,800 vehicles per day (Table 14).

The project area is surrounded by a mix of industrial, vacant, commercial, and residential land uses. Sensitive receptors within the project area include a residential area at the northern end of Bay Street approximately 800 feet south of the bridges, and residential complexes located 0.25 mile (1,320 feet) southwest of the bridges, off of 6th Street and Tydd Street and 0.25 mile northwest of the bridges along "Y" Street. A retirement community (Silvercrest Retirement Community) is located 0.35 mile (1,848 feet) southwest of the bridges, situated between West Avenue and Tydd Street. The Shoreline RV Park is located along the south side of the proposed construction area. The nearest RV site is approximately 75 feet from the proposed roadway and bridge construction. West of the Shoreline RV Park, there is a gas station, commercial and government buildings, and an Open Door Community Health and Wellness Center (medical clinic). A Target store is located adjacent to the northwest side of the proposed construction area. The western Jacobs Avenue cul-de-sac is located about 500 feet east the bridges. While Jacobs Avenue is predominantly industrial businesses, Lazy J Mobile Home and RV Park is located at the eastern end of Jacobs Avenue, 0.75 mile (3,960 feet) east of the bridges.

Topography in the area is generally flat with no substantial natural acoustic shielding. There are large commercial buildings which provide some shielding to the residential areas northwest and southwest of the proposed construction area.

2.3.7.3 Environmental Consequences

All Build Alternatives

Future Noise Environment

For all Build Alternatives, the project meets the criteria for a Type III project as defined in 23 CFR 772. Type III projects do not involve added capacity, construction of new through lanes or auxiliary lanes, substantial changes in the horizontal or vertical alignment of the roadway, or exposure of noise sensitive land uses to a new highway noise source. Noise abatement does not need to be considered for Type III projects.

The profile for the new bridges had not been determined at the time of the Noise Study Report. However, the approaches and departures for the new bridges under all Build Alternatives are expected to tie in at similar elevations as the existing bridges and the maximum difference in elevation towards the middle of the bridge would be approximately five feet. The profile changes are not considered a substantial vertical alteration because the new profile would not change the line of sight between receptors and the traffic noise source.

For all Build Alternatives, traffic volumes, composition, and speeds would remain the same in the build and no build condition. Therefore, future long-term traffic noise impacts are not anticipated.

Alternative 2A Temporary Bridge

Future Noise Environment

For Alternative 2A, the new bridges would be constructed at the same location as the existing bridges. Therefore, there would be no consequences to the future noise environment from the project. Traffic would be shifted to a temporary detour bridge north of the existing southbound bridge during new bridge construction. Alternative 2A noise impacts from construction are discussed below in the Construction Noise section.

Alternative 2B Adjacent Southbound Bridge

Future Noise Environment

For Alternative 2B, a new northbound bridge would be constructed in the same location as the existing northbound bridge. The new southbound bridge would be built to the north of the existing southbound bridge. The southbound bridge alignment shift would not be considered a substantial horizontal alteration because the new bridge location would not decrease the distance between the traffic noise source and the closest noise sensitive receptor (a site at the Shoreline RV Park) by more than half. The new southbound bridge location would be farther from the noise sensitive receptor than the existing southbound bridge. No noise sensitive receptors were identified to the north of the southbound bridge. Alternative 2B noise impacts from construction are discussed below in the Construction Noise section.

No Build Alternative

Under the No Build Alternative, the project would not be constructed. No future additional operational noise would result, and no changes would be made to the project area that would generate additional noise compared to the existing noise environment.

All Build Alternatives

Construction Noise

Under all Build Alternatives, construction noise would be generated from similar equipment sources and work activities. This section provides typical construction noise information and identifies noise sensitive areas common to both Build Alternatives. The differences shown between Alternatives 2A and 2B in the predicted sound levels at various locations throughout the project area would be due to differences in bridge foundation design.

Bridge foundation design determines the amount and location of pile driving, affecting the amount and location of noise generated. Noise impacts anticipated for each alternative are discussed in detail in the specific build alternative section.

Noise generated by construction activities would depend on the specific construction activity being completed. Noise levels would be a result of the type and amount of equipment operating at any given time, the timing and duration of construction activities, and the proximity of nearby receptors. Construction noise levels would vary on a day-to-day basis during each phase of construction depending on the specific task being completed. Construction noise is grouped into three main categories: roadway construction, bridge construction (excluding pile driving), and pile driving. Construction noise would primarily result from the operation of heavy construction equipment and arrival and departure of heavy-duty trucks.

Table 31 summarizes noise levels produced by construction equipment that is commonly used on roadway and bridge construction projects. Construction equipment is expected to generate noise levels ranging from below 80 dBA to 101 dBA at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance.

Table 31. Construction Equipment by Phase

Construction Phase	Equipment	Maximum Noise Level (L_{max}, dBA at 50 feet)	Hourly Average Noise Level ($L_{eq[h]}$, dBA at 50 feet)
Roadway Construction	Excavator	85	77
	Heavy Truck	84	73
	Roller	80	73
	Pavement Scarifier	85	78
	Grader	85	81
	Concrete Saw	90	83
	Paver	77	74
Bridge Construction (excluding pile driving)	Bore/Drill Rig	84	77
	Crane	81	73
	Concrete Saw	90	83
	Excavator	85	77
	Heavy Truck	84	73
	Air Compressor	81	74
	Rough Terrain Forklift	84	79
	Hoe Ram	90	80

Construction Phase	Equipment	Maximum Noise Level (L_{max}, dBA at 50 feet)	Hourly Average Noise Level ($L_{eq[h]}$, dBA at 50 feet)
Pile Driving	Impact Pile Driver	101	94
	Vibratory Pile Driver	101	94

Source: FHWA 2006

Equipment anticipated during each phase of construction, except pile driving, were modeled to calculate the expected Lmax (maximum) and Leq (average) noise contours and sound levels throughout the project area. Modeling was conducted to calculate the expected loudest hour noise level during pile driving. The loudest hour assumes pile driving would occur continuously for a one hour period. During the loudest hour, the Lmax is equivalent to the Leq. The average hourly Leq shown in Table 32 assumes pile driving would occur approximately twelve minutes during a one-hour period.

Both Build Alternatives identified the same noise sensitive areas. Noise sensitive areas are characterized by proximity to the project location and land use, such as residential, schools, hospitals, or parks. Existing noise levels are also considered when identifying noise sensitive areas. Noise sensitive areas within the project area are located to the northwest of the project location near 3rd and "Y" streets, south of the western bridge abutments within the Shoreline RV Park, and to the south of the bridges near Bay Street. Figures showing the location of these noise sensitive areas, and the predicted sound levels near the noise sensitive areas, are presented below for the three categories of construction (roadway, bridge construction excluding pile driving, and pile driving) under Alternatives 2A and 2B.

The loudest noise-generating construction activity on the project would be pile driving. Pile driving would be required during construction of the new bridges and the temporary trestles. Pile driving typically occurs over short durations with breaks in between each pile. Typical pile driving can generate noise levels ranging between 94 and 101 dBA L_{max} at 50 feet. Under all Build Alternatives, abutments and piers for the new bridges would be supported by driven cast-in-steel-shell (CISS) piles. Temporary work trestles would be supported by driven steel pipe piles.

The nearest noise sensitive area to the pile driving operation is an RV space within the Shoreline RV Park, which would be approximately 75 feet from proposed roadway and bridge construction. Table 32 shows estimated noise levels at various distances from pile driving operations. At 75 feet from pile driving, typical Lmax would be 98 dBA and the average hourly Leq would be 96 dBA. At 800 feet from pile driving, typical Lmax would be 77 dBA and Leq would be 70 dBA.

Table 32. Typical Noise from Impact Pile Driving Operation

Distance from Pile Driving (feet)	Loudest Hour/ Maximum Noise Level ($L_{eq[h]}/L_{max}$, dBA)	Hourly Average Noise Level for a Single Pile Driver ($L_{eq[h]}$, dBA)
50	101	99
75	98	96
150	92	90
200	89	87
400	83	81
800	77	70

For Alternatives 2A and 2B, the Limit Line illustrates the boundary where noise levels are not expected to exceed the allowable limits in Caltrans' Standard Specifications, which is 86 dBA during nighttime construction activity. Under each Build Alternative discussed below, the Limit Line is shown in blue, and the noise sensitive areas are numbered with yellow circles. Associated with each numbered noise sensitive area are the Leq and Lmax levels expected to occur during the roadway and bridge construction and during the pile driving activities.

Alternative 2A Temporary Bridge

Construction Noise

Construction noise impacts for Alternative 2A are discussed in this section. Figure 61 illustrates the location of noise sensitive areas in relation to the nighttime noise Limit Line for roadway and bridge construction (excluding pile driving) activities. Under Alternative 2A, all identified noise sensitive areas are outside the Limit Line for expected Lmax and Leq noise levels during roadway and bridge construction. It is anticipated that noise sensitive areas would not be exposed to sound levels above 86 dBA Lmax during nighttime hours from roadway and bridge construction activities that do not include pile driving.

Figure 62 illustrates the location of noise sensitive areas in relation to the nighttime noise Limit Line for pile driving activities under Alternative 2A. For pile driving activities, location numbers 2, 3, 4, 5, and 8 at the Shoreline RV Park would be exposed to sound levels above 86 dBA Lmax. Area number 3, the area closest to anticipated pile driving activities and exposed to the highest noise levels, would experience Lmax of approximately 92 dBA during pile driving.

Figures 63 and 64 show the modeled Alternative 2A maximum noise level (Lmax) and the hourly average sound level (Leq) from bridge construction activities that do not include pile driving. Lmax levels in noise sensitive areas are expected to remain below 85 dBA. Areas that have not been identified as noise sensitive, including U.S. 101 between the west and east bridge abutments, areas of Eureka Slough below the bridges, portions of the rear Target store parking lot, the gas station adjacent to Shoreline RV Park, portions of the Eureka Waterfront Trail and the Humboldt Bay Trail South, and some businesses at the western end of Jacobs Avenue could also be exposed to Lmax levels up to 90 dBA.



Figure 61. Alternative 2A Nighttime Limit Map and Sensitive Noise Areas in Relation to Bridge Construction (Excluding Pile Driving)



Figure 62. Alternative 2A Nighttime Limit Map and Noise Sensitive Areas in Relation to Pile Driving Noise

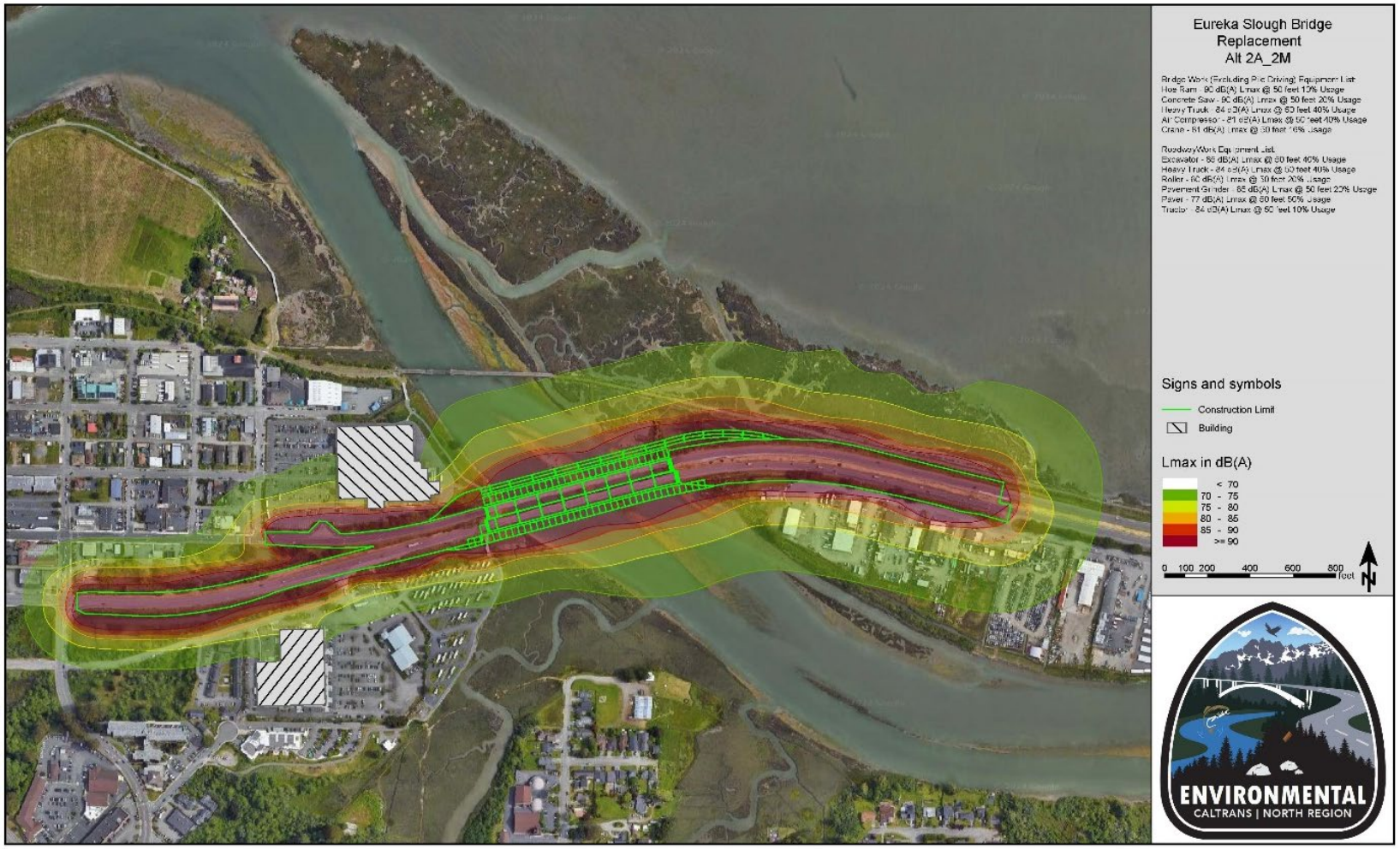


Figure 63. Alternative 2A Maximum Noise Levels (Excluding Pile Driving)

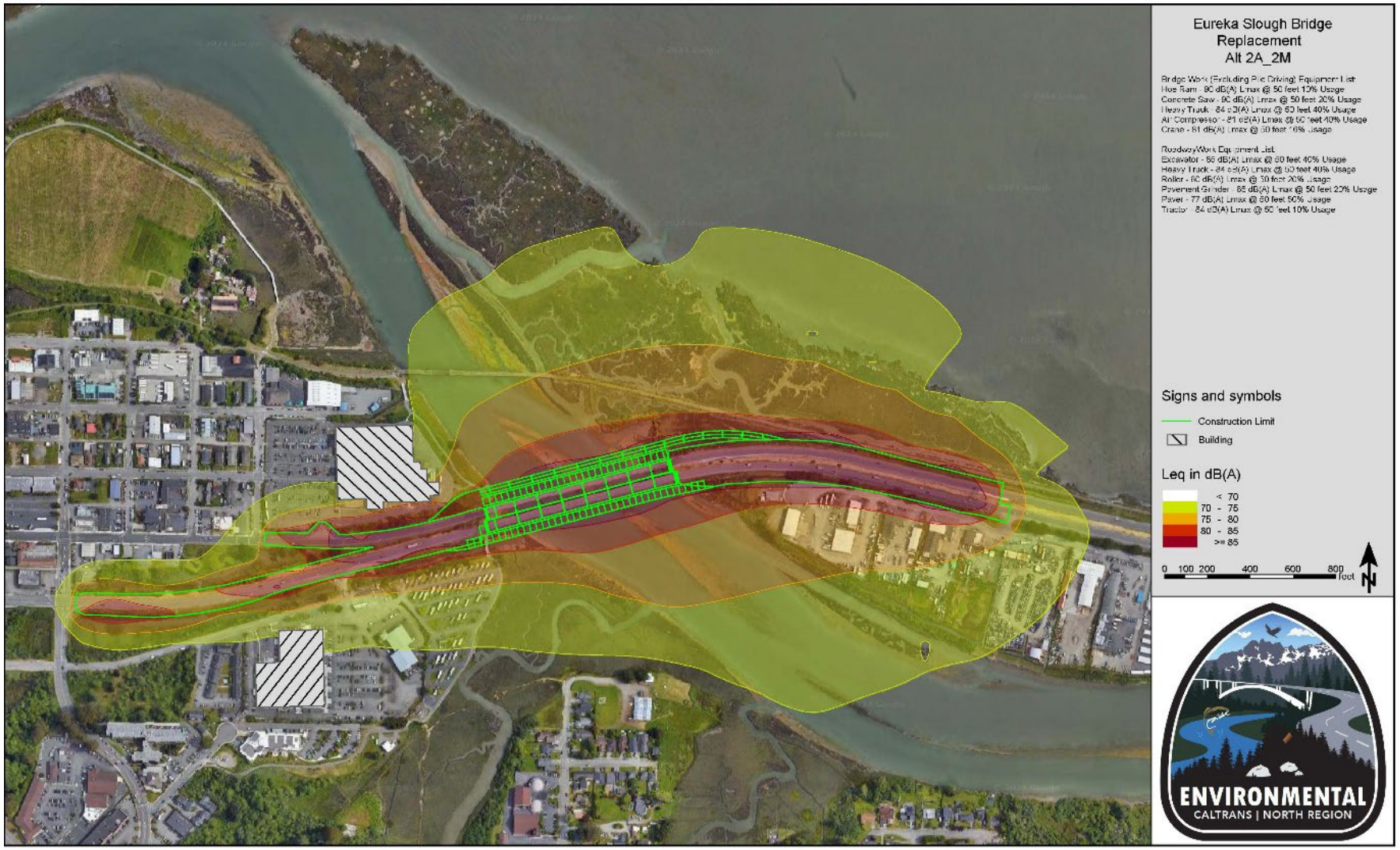


Figure 64. Alternative 2A Average Noise Levels During Construction Activities (Excluding Pile Driving)

Figure 65 below illustrates expected Lmax and Leq sound levels throughout the project area under Alternative 2A for activities involving pile driving. In addition to noise sensitive locations identified in Figure 65, maximum noise levels from pile driving activities could reach levels greater than 90 dBA at locations not identified as noise sensitive, such as along the Eureka Waterfront Trail where it passes under the bridges, on U.S. 101 between the west and east bridge abutments, areas of Eureka Slough below the bridges, and along portions of the Humboldt Bay Trail South. As distance from the pile driving activities increases, locations at the rear of the Target store, and broader areas of Eureka Slough, U.S. 101, and the Eureka Waterfront and Humboldt Bay Trail South trails could experience noise levels ranging from 85 dBA to 90 dBA. Noise levels could reach 85 dBA along the western edge of Jacobs Avenue. The larger commercial buildings to the west of the bridges provide some acoustic shielding to areas on the west side of the project area.



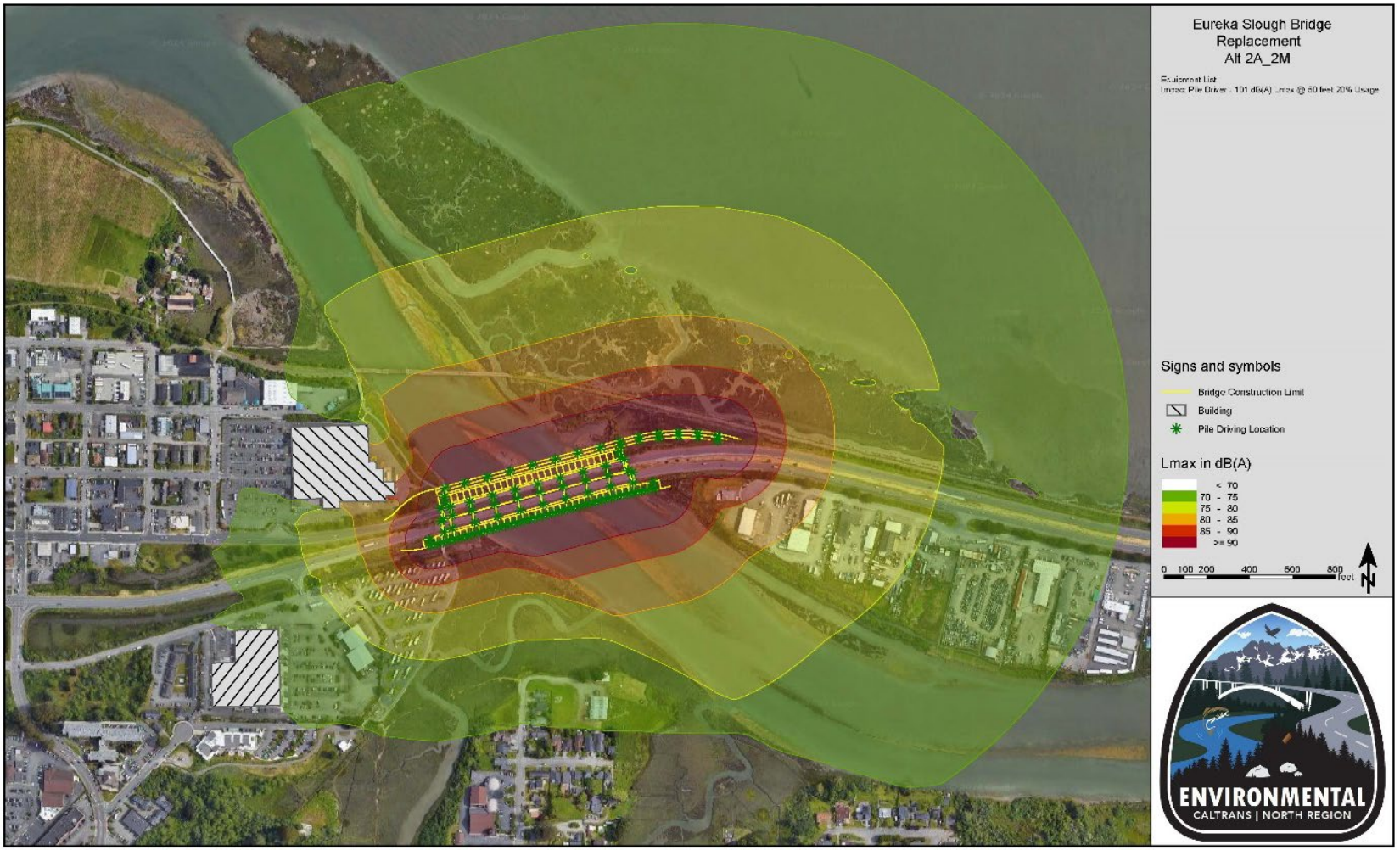


Figure 65. Alternative 2A Maximum Noise Levels During Pile Driving



Alternative 2B, Adjacent Southbound Bridge

Construction Noise

Construction noise impacts from Alternative 2B are discussed in this section.

Figure 66 illustrates the location of noise sensitive areas in relation to the nighttime noise Limit Line for roadway and bridge construction (excluding pile driving). Under Alternative 2B, all identified noise sensitive areas are outside the Limit Line for expected Lmax and Leq noise levels during roadway and bridge construction. It is anticipated that noise sensitive areas would not be exposed to sound levels above 86 dBA Lmax during nighttime hours from roadway and bridge construction activities that do not include pile driving.

Figure 67 illustrates the location of noise sensitive areas in relation to the nighttime noise Limit Line for pile driving activities under Alternative 2B. For pile driving activities, location number 10 (a residence on Bay Street) and all noise sensitive locations within the Shoreline RV Park would be exposed to sound levels above 86 dBA Lmax. Area number 3, the area closest to anticipated pile driving activities and exposed to the highest noise levels, would experience Lmax of approximately 91 dBA during pile driving.

Figure 68 depicts the modeled maximum noise level (Lmax) and Figure 69 models the average sound level (Leq) throughout the project area for roadway and bridge construction activities without pile driving. The figures show that in addition to noise sensitive areas identified in Figure 66, areas not identified as sensitive could be exposed to Lmax levels up to 90 dBA under Alternative 2B. These areas include U.S. 101 between the west and east bridge abutments, areas of Eureka Slough below the bridges, portions of the Target store parking lot, the gas station adjacent to Shoreline RV Park, and some businesses at the western end of Jacobs Avenue.

Figure 69 depicts the modeled maximum sound levels (Lmax) throughout the project area during pile driving under Alternative 2B. Figure 70 shows that in addition to noise sensitive areas identified in Figure 69, areas not identified as noise sensitive, including U.S. 101 between the west and east bridge abutments, areas of Eureka Slough below the bridges the parking area behind the Target store, portions of the Eureka Waterfront Trail and Humboldt Bay Trail South trails, and Ayres Family Cremation on Jacobs Avenue would be exposed to Lmax levels ranging from 85 dBA to greater than 95 dBA during pile driving.

No Build Alternative

The No Build Alternative would not construct the project, and no construction noise would result. Under the No Build Alternative, no changes would be made to the project area that would generate noise.



Figure 66. Alternative 2B Nighttime Limit Map and Sensitive Noise Areas in Relation to Bridge Construction (Excluding Pile Driving)



Figure 67. Alternative 2B Nighttime Limit Map and Noise Sensitive Areas in Relation to Pile Driving Noise

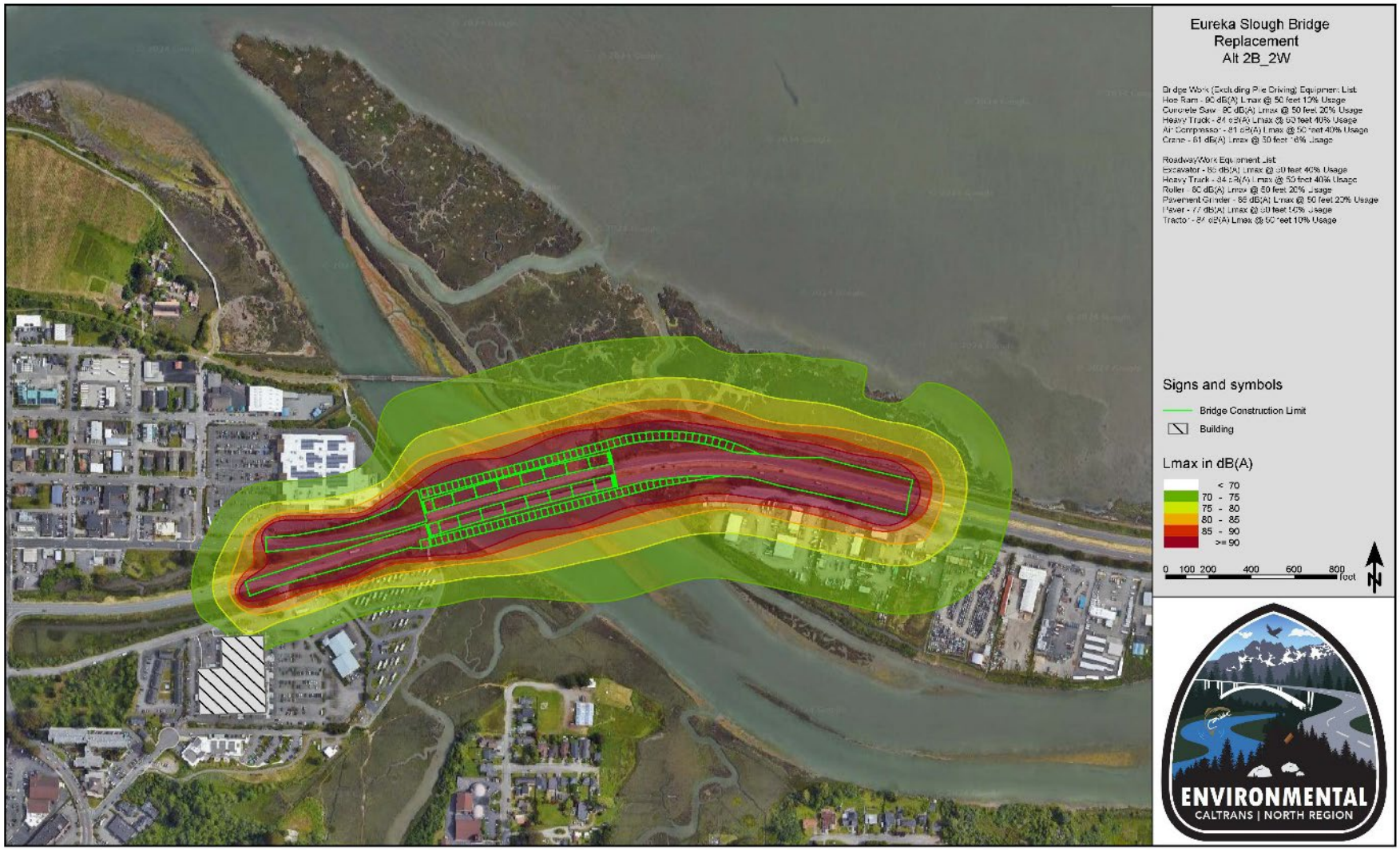


Figure 68. Alternative 2B Maximum Noise Levels (Excluding Pile Driving)

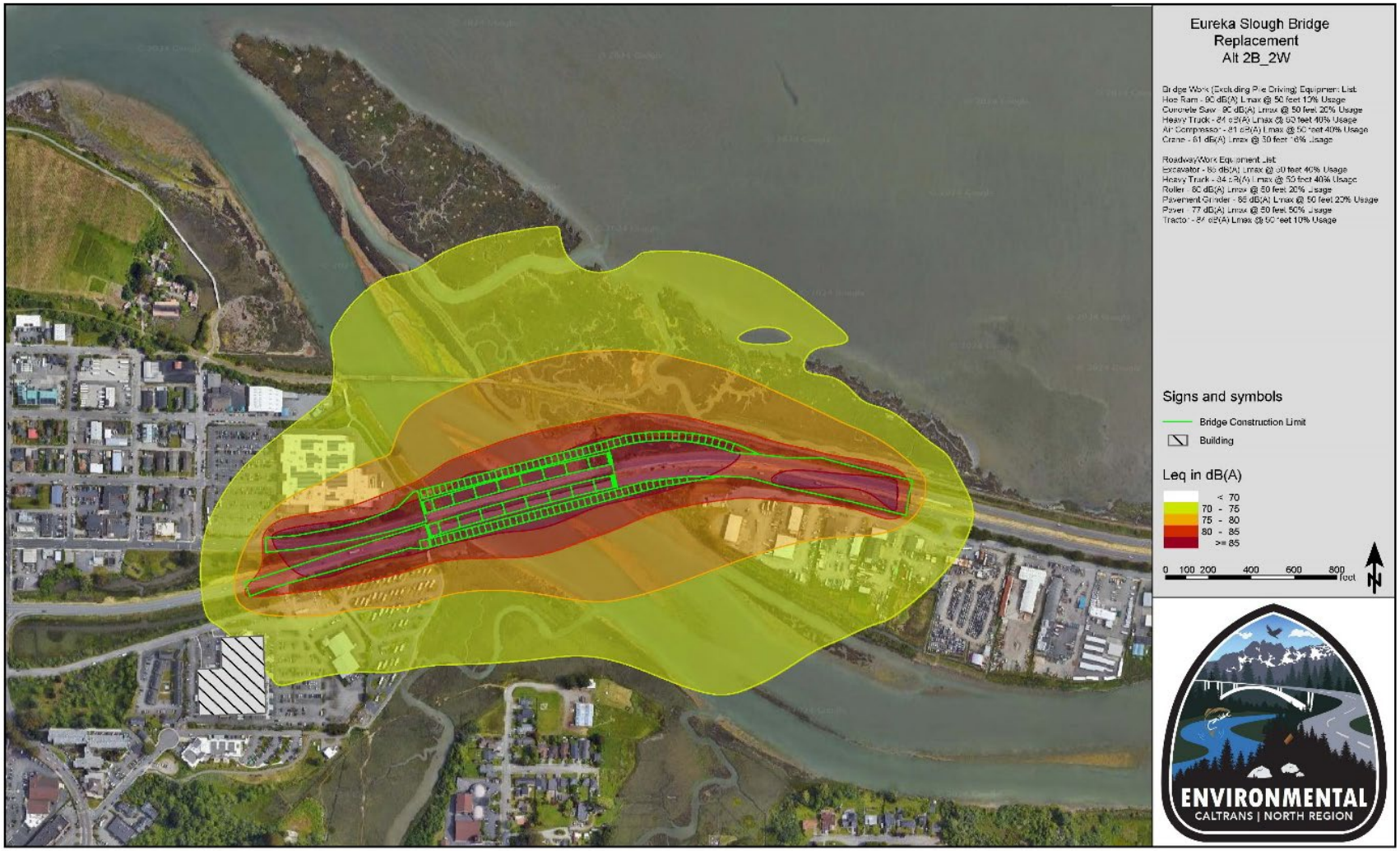


Figure 69. Alternative 2B Average Noise Levels During Construction Activities (Excluding Pile Driving)

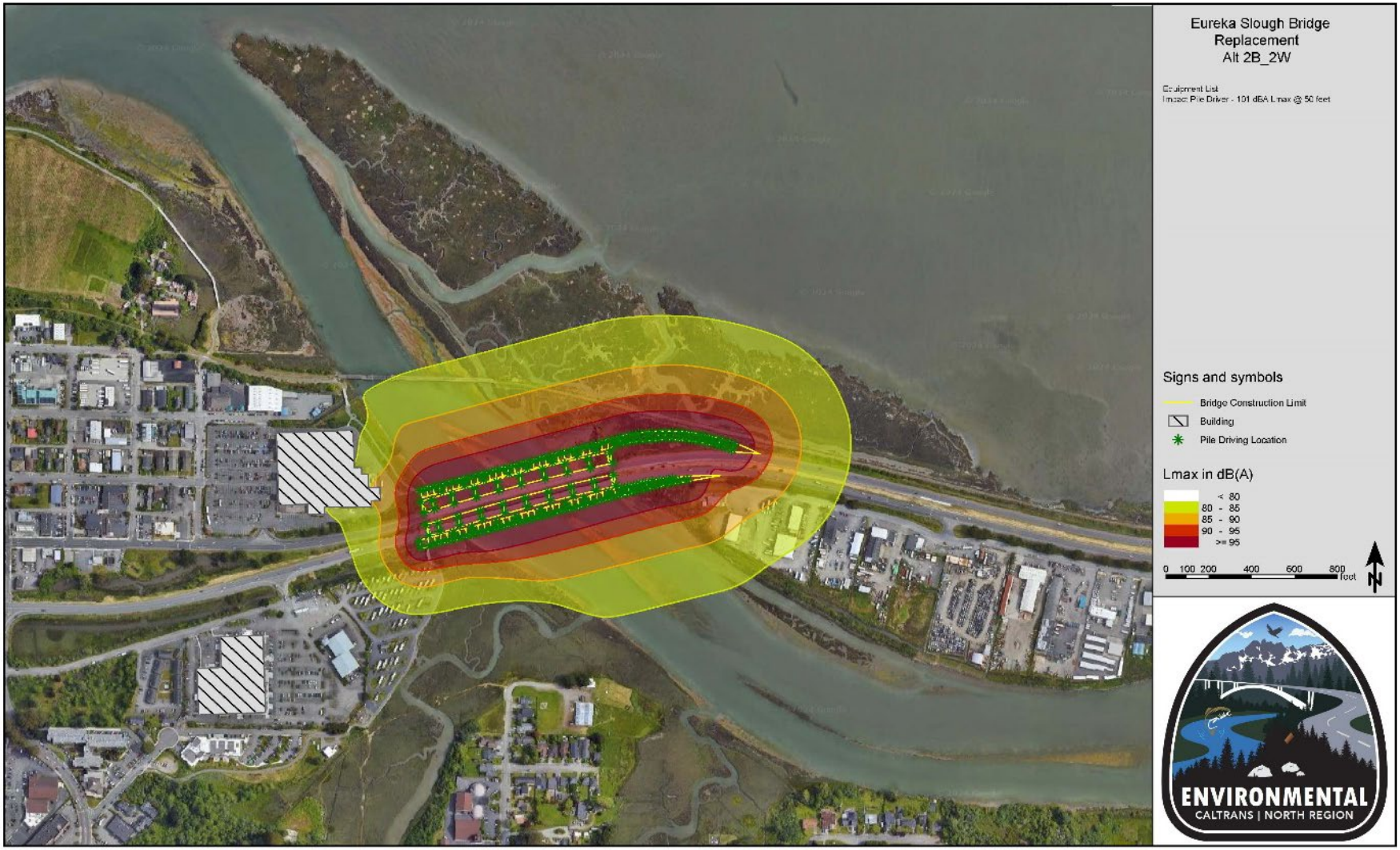


Figure 70. Alternative 2B Maximum Noise Levels During Pile Driving



All Build Alternatives

Construction Vibration

The project was assessed for potential construction-related vibration impacts. All Build Alternatives would produce the same potential construction vibration. Vibration is expressed in peak particle velocity (PPV), which is a measurement of the maximum rate of change of ground displacement used to monitor vibrations in inches per second. The greater the PPV number, the greater the level of vibration. Construction activities result in varying degrees and types of ground vibration, depending on the type of equipment, construction methods, the intensity and duration of the specific construction activity, and underlying soil types. The source of vibration can be transient, continuous, or a frequent intermittent source. A transient vibration source is a single, isolated vibration, such as a blasting. A continuous vibration source is generated by an activity that is sustained, such as continuous excavation. A frequent intermittent vibration would be generated by activities such as the operation of impact pile drivers.

Construction vibration has the potential to cause architectural or structural damage to buildings. Table 33 below summarizes the PPV levels at which potential damage could occur to modern industrial and commercial structures, new residential structures, older residential structures, and historic and some old structures. Modern industrial and commercial structures and new residential structures can withstand higher PPV levels than older residential and historic structures. All structure types are more susceptible to continuous or frequent intermittent vibration sources than transient vibration sources.

Table 33. Potential Damage from Vibration to Structures

Structure Condition	Maximum Velocity Level, PPV (in/sec)	
	Transient Source	Continuous or Frequent Intermittent Source
Modern Industrial/Commercial Structures	2.0	0.5
New Residential Structures	1.0	0.5
Older Residential Structures	0.5	0.3
Historic and some Old Structures	0.5	0.25

Source: Transportation and Construction Vibration Guidance Manual (Caltrans 2020f)

Ground vibration and ground-borne noise can also be a source of annoyance to residences near the vibration-generating activities. Table 34 below summarizes PPV levels that result in varying degrees of perception by humans.

Table 34. Guideline for Potential Annoyance from Continuous or Frequent Intermittent and Transient Vibration Levels

Human Response	Maximum Velocity Level, PPV (in/sec)	
	Transient Source	Continuous or Frequent Intermittent Source
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: Transportation and Construction Vibration Guidance Manual (Caltrans 2020f)

Table 35 below presents typical vibration levels that could be expected from representative construction equipment at a reference distance of 25 feet. Vibration levels are highest close to the source, and then attenuate with increasing distance depending on soil conditions.

Table 35. Vibration Levels from Construction Equipment

Equipment	Vibration Level (in/sec PPV)				
	25 feet	50 feet	75 feet	100 feet	200 feet
Vibratory Roller	0.210	0.098	0.063	0.046	0.021
Large Bulldozer	0.089	0.042	0.027	0.019	0.009
Drilling	0.089	0.042	0.027	0.019	0.009
Hoe Ram	0.244	0.114	0.073	0.053	0.025
Loaded Truck	0.076	0.035	0.023	0.017	0.008
Impact Pile Driver (typical)	0.650	0.303	0.194	0.141	0.066
Impact Pile Driver (upper limit)[1]	1.532	0.715	0.458	0.333	0.156
Vibratory Pile Driver	0.650	0.303	0.194	0.141	0.066

Source: Transportation and Construction Vibration Guidance Manual (Caltrans 2020f)

[1]Upper limit impact pile driving assumes maximum driving energy of 200,000 ft-lbs

Table 36 below shows the distance at which structure types could be exposed to potential damage from impact pile driving, vibratory pile driving, and other non-pile driving equipment. Impact pile driving that occurs within 130 feet of historic buildings, 110 feet of older residential buildings or 70 feet of new residential and commercial structures has the potential to cause damage. Vibratory pile driving that occurs within 60 feet of historic buildings, 50 feet of older residential buildings or 32 feet of new residential and commercial structures has the potential to cause damage. Hoe-rams have the highest PPV for other construction equipment. Hoe-rams operating within 25 feet of historic buildings, 21 feet of older residential buildings or 13 feet of new residential and commercial structures have the potential to cause damage.

Table 36. Distance to Potential Structure Damage

Structure Type	Distance to Threshold (feet)		
	Impact Pile Driving (upper limit)	Vibratory Pile Driving	Other Equipment
Modern Industrial/Commercial Structures	70	32	13
New Residential Structures	70	32	13
Older Residential Structures	110	50	21
Historic and some Old Structures	130	60	25

Table 37 below shows the distance to potential annoyance to nearby residences from vibration caused by impact pile driving, vibratory pile driving, and other non-pile driving equipment. Vibration from impact pile driving would be considered severe within 85 feet of the pile driving operation and would be barely perceptible beyond 2,500 feet. Vibratory pile driving would be considered severe at distances less than 40 feet from the pile driving activity and would be barely perceptible beyond 1,115 feet. Vibrations from a hoe-ram would be considered severe within 16 feet and would be barely perceptible beyond 455 feet.

Table 37. Distance to Potential Annoyance

Human Response	Distance to Threshold (feet)		
	Impact Pile Driving (upper limit)	Vibratory Pile Driving	Other Equipment
Barely perceptible	2,500	1,115	455
Distinctly perceptible	690	315	130
Strongly perceptible	300	140	55
Severe	85	40	16

The project would include Standard Measures and BMPs (Section 1.6) to minimize impacts from noise and vibration during construction. Standard measures from Section 1.6, including **NV-1**, **NV-2**, and **NV-3** would be included in the project.

No Build Alternative

The No Build Alternative would not construct the project and no future operational noise, construction noise, or construction vibration would result. Under the No Build Alternative, no changes would be made to the project area that would generate noise or vibration.

2.3.7.4 Avoidance, Minimization, and/or Abatement Measures

Future long-term traffic noise impacts are not anticipated from the project. No avoidance, minimization or abatement measures are proposed for long-term, operational impacts.

Construction noise would be generated from roadway and bridge construction and from pile driving activities. Construction activities would also produce construction vibration. In addition to Caltrans' Standard Measures and BMPs (Section 1.6), the following additional minimization measures would be included in the project:

Noise-1: Prior to nighttime pile installation or other activities that may cause elevated noise levels, public outreach and notifications would occur.

Noise-2: Where feasible, shielding would be provided around jackhammers, concrete saws, and pile installation hammer.

No abatement measures are required for the project.

2.3.8 Energy

An Energy Analysis Report (Caltrans 2024h) was completed for the Eureka Slough bridges replacement project. Information from the report is summarized in this section.

2.3.8.1 Regulatory Setting

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

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

2.3.8.2 Affected Environment

An Energy Analysis Report was completed for the project in September 2024 (Caltrans 2024h). Information from the report is summarized in this section. Energy in a resource context generally pertains to fossil fuels, which are a finite resource. Transportation energy is generally described in terms of direct energy or indirect energy. Direct energy involves all energy consumed by long-term vehicle operation on the highway and the short-term energy expenditure involved in constructing a project. Indirect energy is the long-term energy consumption required to operate and maintain the highway.

Existing and proposed traffic conditions are evaluated when analyzing transportation energy consumption for a project. The project is located on the primary north-south transportation route through Humboldt County on U.S. 101. Serving interregional and interstate traffic, this section of highway, located between the cities of Eureka and Arcata, is a four-lane separated highway that accommodates a relatively high traffic volume. Adjacent to the project area, land uses include a mix of commercial and industrial development with some residential buildings.

Direct energy use from long-term vehicle operation on the highway is analyzed by looking at base year, opening year, and design year average annual daily traffic (ADT) scenarios for the project location. Direct energy consumption from vehicle use of the project was quantified using an approved version of the emissions modeling tool CT-EMFAC. The average annual daily traffic ADT volumes for the project location are shown below in Table 38. ADT volumes in the base year (2019) are 35,900 with 4.0 percent truck traffic. ADT volumes in the opening year (2033) are projected to be 42,400 with 4.0 percent truck traffic. ADT volumes in the design year (2053) are projected to be 51,800 with 4.0 percent truck traffic.

The project does not increase vehicle capacity of the highway. The annual traffic volumes in the design year are expected to remain the same under the Build Alternatives and the No Build Alternative.

Table 38. Annual Daily Traffic Volumes -Caltrans Traffic Volume Data

Scenario	Analysis Year	Annual ADT	% Truck Traffic
Base Year	2019	35,900	4.0
Opening Year, All Build Alternatives	2033	42,400	4.0
Opening Year, No Build Alternative	2033	42,400	4.0
Design Year, All Build Alternatives	2053	51,800	4.0
Design Year, No Build Alternative	2053	51,800	4.0

Direct short-term energy use involved in constructing the project, which estimates the gasoline and diesel consumed by construction equipment and vehicles, was estimated using the Caltrans Construction Emission Tool v1.0.2 (CAL-CET).

Indirect energy use relates to the long-term operation and maintenance of the highway. The existing bridges do not have lighting, and highway lighting adjacent to the bridges is minimal. Highway lighting begins along the shoulder of northbound U.S. 101 at the Cole Avenue exit and onramp, east of the Eureka Slough bridges, and along the northbound and southbound shoulders near “V” Street, west of the Eureka Slough bridges. No traffic management systems, such as traffic signals or ramp meters, exist within the project limits.

2.3.8.3 Environmental Consequences

All Build Alternatives

The energy consumption expected from the project is the same for all Build Alternatives. Under all Build Alternatives, the project would not increase vehicle capacity or provide congestion relief, nor would the project influence the vehicle fleet mix; therefore, a qualitative energy analysis was used to analyze energy use. Projects are evaluated for short-term and long-term energy use impacts. Short-term impacts are those resulting from direct energy use during construction of the project. Long-term impacts are those resulting from direct energy use from vehicle operation on the highway and indirect energy use from ongoing maintenance of the highway.

Short Term Direct Energy Use, Construction Impacts

All Build Alternatives would result in a one-time expenditure of direct energy use to construct the project. There would be numerous construction phases, and energy use would be dependent on the construction equipment being used during a particular phase and the specific construction activity being performed. Construction of the project would primarily consume diesel and gasoline through operation of heavy-duty construction equipment, material deliveries, and debris hauling. To assess gasoline and diesel consumed by construction equipment and vehicles, Caltrans Construction Emission Tool v1.0.2 (CAL-CET), an emissions modeling tool, was used to estimate fuel consumption. For Alternatives 2A and 2B, Tables 39 and 40 summarize estimates of the fuel consumption that would be generated during a five-to-six-year construction scenario. Because construction activities are short term, the increased consumption of energy within the project area would also be short term. The use of construction Best Management Practices would minimize energy consumption from construction activities.

Table 39. Alternative 2A Construction Short-Term Fuel Consumption by Year

CONSTRUCTION YEAR	FUEL CONSUMPTION DIESEL (gallons)	FUEL CONSUMPTION GASOLINE (gallons)
2029	17,351	3,986
2030	19,771	5,783
2031	21,693	7,836
2032	18,590	7,209
2033	11,411	4,472
2034	15,283	9,742
PROJECT TOTAL	**104,099**	**39,028**

Table 40. Alternative 2B Construction Short-Term Fuel Consumption by Year

CONSTRUCTION YEAR	FUEL CONSUMPTION DIESEL (gallons)	FUEL CONSUMPTION GASOLINE (gallons)
2029	19,060	4,691
2030	27,059	8,306
2031	21,379	8,926
2032	17,881	7,442
2033	17,041	10,589
PROJECT TOTAL	**102,420**	**39,954**

Long-Term Direct Energy Use, Operational Impacts

All Build Alternatives propose to replace the two existing Eureka Slough bridges with two new bridges. The replacement bridges would not increase capacity or relieve congestion. The project would not result in changes in traffic volumes, vehicle mix, or any other factor that would cause an increase in long-term direct or indirect energy consumption compared to the No Build Alternative. To assess fuel consumed by vehicle operations, direct energy consumption was quantified using the California Air Resources Board's emissions modeling tool CT-EMFAC2021. The estimated fuel consumption is shown in Table 41.

Table 41. Annual Fuel Consumption (Direct Energy Use) for all Build Alternatives

Scenario/ Analysis Year	Energy Consumption Gasoline (gallons)	Energy Consumption Diesel (gallons)	Energy Consumption Electricity (kWh)	Total Energy Consumption (in 100,000 BTU)	Change from Base Year (in 100,000 BTU)	Change from No Build (in 100,000 BTU)
Base Year 2019	342078	50823	21473	481780		
Opening Year 2033						
Build	302773	44150	323984	435682	-46097	0
No Build	302773	44150	323984	435682	-46097	
Design Year 2053						
Build	319528	36887	701697	458735	-23045	0
No Build	319528	36887	701697	458735	-23045	

Note: Energy content of 120,214 BTU per gallon of gasoline, 137,381 BTU per gallon of diesel, and 3,412 BTU per kWh was used based on the conversion factors listed at: https://www.eia.gov/energyexplained/units-and-calculators/british- thermal-units.php, Date accessed January 29, 2024

Diesel and gas consumption are expected to decrease in the design year compared to the base year, while the anticipated increase in electric vehicles on the road is expected to result in higher energy consumption from electricity. However, total energy consumption from vehicle traffic is expected to decrease in the project design year (2053) compared to the base year (2019) due to fleet turnover. Fleet turnover results in newer, more fuel-efficient vehicles entering operation over the long term, resulting in an overall lower potential for an increase in energy consumption. Additionally, all Build Alternatives would include bicycle/pedestrian lanes on both bridges and connections to a regional trail network to accommodate multimodal transportation, a feature that could reduce energy consumption.

Long-Term Indirect Energy Use, Operation and Maintenance

Indirect energy use from long-term operation and maintenance of the new bridges is expected to be lower than the energy use for maintaining the existing bridges. In addition to reduced energy consumption from longer intervals between maintenance and rehabilitation, energy efficiencies are anticipated from innovations such as longer pavement life, improved construction materials, and improvements in traffic management. Lighting does not currently exist and would not be added to the bridges. However, existing lighting along U.S. 101 east and west of the bridges would be upgraded to more energy efficient fixtures.

The project would not result in wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources. Caltrans Standard Measures and BMPs (Section 1.6) EN-1 and EN-2 would be utilized to minimize energy consumption.

No Build Alternative

The No Build Alternative would not involve construction, and therefore would not result in short-term direct energy use from construction. The No Build Alternative would not impact existing operational energy use on the highway and would therefore not impact long-term direct energy use. Long-term indirect energy use from maintenance activities would not be improved under the No Build Alternative.

2.3.8.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance or minimization measures are anticipated. No mitigation measures are proposed.

2.4 Biological Environment

The information discussed in this section is based on information contained in the *Natural Environment Study* (NES) that was prepared for this project (Caltrans 2025b).

Eureka Slough is located within the 17,000-acre Humboldt Bay. Humboldt Bay is the second largest coastal estuary in California, and consists of three subbasins: South Bay, Entrance Bay, and Arcata Bay. Entrance Bay is a narrow, deeper channel used for shipping and boating; South Bay and Arcata Bay are much shallower and wider, containing mudflats interlaced with drainage channels surrounded by salt marshes.

Humboldt Bay's diverse habitats consist of intertidal mudflat, subtidal channels, eelgrass, salt marsh, and wetlands which support numerous species of resident and migratory shorebirds, waterfowl, marine mammals, fish, and invertebrate species. These diverse habitat types are present within Eureka Slough and the project area. Eureka Slough flows into the southeast corner of Arcata Bay.

The salt marsh on the north side of U.S. 101 is within the Humboldt Bay National Wildlife Refuge. The upland areas of the project adjacent to U.S. 101 consist of fill placed for highway construction and urban development, ruderal vegetation, and some low areas with wetlands.

Urban development adjacent to U.S. 101 within the project area include a Target store and parking lot, small commercial businesses, a gas station, and an RV park. The Eureka Waterfront Trail, a paved bicycle and pedestrian trail, passes under the Eureka Slough bridges along the west side of the slough. An inoperative railroad trestle crosses over Eureka Slough approximately 675 feet to the north of Eureka Slough bridges. The future Humboldt Bay Trail South would be aligned adjacent to the disused railroad line.

Climate within the project area is generally mild and wet during fall and winter and cool and dry during spring and summer. The nearest National Oceanic and Atmospheric Administration (NOAA) climate station is Eureka Weather Forecast Office, Woodley Island, California. A monthly climate summary for the period of record from December 1, 1886, to June 9, 2016, reports the average total precipitation for a calendar year is 39.45 inches. Most of the rainfall occurs between the months of October and May. The average annual maximum temperature is 58.6 degrees Fahrenheit (°F), and the average annual minimum temperature is 46.7°F.

Native soils within the project area consist mainly of very poorly drained saline and mucky silt loam that make up the tidal marshes and tidal flats of the project area. The terraces of urban land surrounding the tidal areas consist of moderately well drained fine sandy loam and gravels; these are human-altered soils as a result of cut and fill for the highway and surrounding urban development.

In addition to general biological information, the NES incorporated analysis from the project's Hydroacoustic Assessment, Airborne Noise Assessment for Marine Mammals, Eelgrass Survey Report, Aquatic Resources Report, and the Bat Survey Report. The information in the following Biological Environment sections is a summary of the NES. The NES uses the following terms when describing the project parameters:

Project Area: The general area where the project is located. This term is mainly used in the Environmental Setting section (e.g., watershed, climate type, etc.).

Project Limits: The beginning and ending post miles (PMs) of the project along the highway. In some cases, there may be areas associated with the project that are outside of the project limits, such as staging and disposal locations.

Project Footprint: The area within the Environmental Study Limits (ESL) that the project is anticipated to directly impact, both temporarily and permanently. This includes staging and disposal areas.

Environmental Study Limits: The ESL is the area *encompassing* the project footprint where there could be direct and indirect disturbance from the project. It is larger than the project footprint to accommodate any future scope changes. The ESL is used to help define the Biological Study Area.

Biological Study Area: The Biological Study Area (BSA) encompasses the ESL plus any areas outside of the ESL that contain biological resources (special-status plants and animals, sensitive habitats, etc.) that could be directly or indirectly impacted by the project. The BSA considers elements of construction that reach beyond the construction footprint. For example, sensitive animal species beyond the construction footprint could be disturbed by construction noise or vibration. Likewise, sensitive plant species could be impacted by changes in solar exposure or surface and subsurface hydrology. The project has several resources with different sensitivities outside of the ESL; therefore, the project has two BSAs.

- Coastal BSA – the project footprint plus a minimum of 100-foot buffer around the project footprint (except for some paved areas) to evaluate potential impacts to coastal biological resources. The Coastal BSA was used to evaluate impacts on jurisdictional wetlands and waters, sensitive natural communities, Environmentally Sensitive Habitat Areas, rare plants, and terrestrial animal species (birds, terrestrial mammals, and invertebrates).
- Aquatic Species BSA – the ESL plus the area that sensitive fish species, marbled murrelet, and marine mammals could be affected by underwater noise, as defined by the preliminary hydroacoustic assessment (Caltrans 2024i).

Action Area: The action area, as defined under the Federal Endangered Species Act (FESA), includes those areas that would be affected directly or indirectly by the federal action and not merely the immediate area involved in the action [50 Code of Federal Regulations [CFR] § 402.02]. The action area is determined, in part, by the activities associated with the proposed project and the site geography, topography, and hydrology, along with an understanding of the distribution, habitat requirements, phenology, and vulnerability of federally listed species potentially occurring near the proposed project.

The ESL and the Coastal and Aquatic BSAs are shown below in Figure 71. For the purposes of this project, the ESL includes the 100-foot Coastal Buffer.

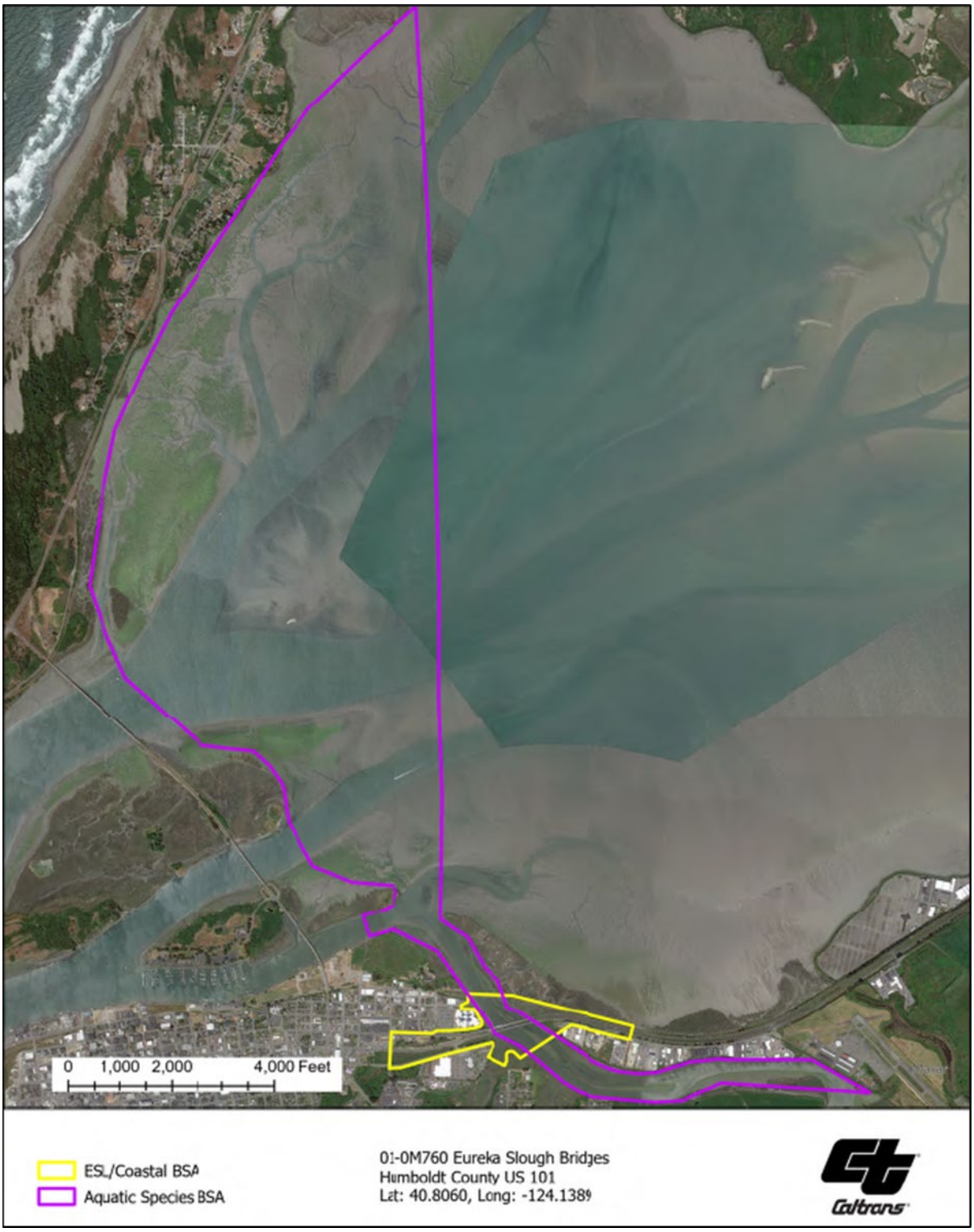


Figure 71. Environmental Study Limits/Coastal BSA and Aquatic Species BSA

2.4.1 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. This section also 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.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species, Section 2.4.5. Wetlands and other waters are also discussed below in Section 2.4.2.

2.4.1.1 Regulatory Setting

Sensitive Natural Communities

The CDFW inventories sensitive vegetation alliances (natural communities) in the California Natural Diversity Database (CNDDB). A vegetation alliance assigned with global ranking codes of G1 through G3 means that all the vegetation associations within that alliance are considered high inventory priority by CDFW. Vegetation alliances identified by CNDDB as sensitive would be avoided to the maximum extent possible.

Environmentally Sensitive Habitat Areas

The California Coastal Act (CCA) established the California Coastal Commission (CCC) to protect the coastline; policies include protection, enhancement, and restoration of natural resources. The CCA also delegates to local governments the power to enact and implement their own Local Coastal Programs (LCPs) upon formal certification by the CCC. Any development within the Coastal Zone requires a Coastal Development Permit from either the CCC or the local government if an LCP is in place. Refer to Section 3.2.3, Coastal Zone, for further discussion of relevant policies.

Environmentally Sensitive Habitat Areas (ESHAs) are protected under Section 30240 of the CCA, and are defined under CCA Section 30107.5 as "…any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments." There are two parts to this definition. The first is whether a species or habitat is rare or especially valuable. The second is whether the species or habitat could easily be disturbed or degraded by human activities or developments.

Eelgrass Mitigation Policy

There are multiple policies and agencies that protect eelgrass. The California Eelgrass Mitigation Policy (CEMP) outlines relevant policies, definitions, and standards for assessing and mitigating impacts to eelgrass. National Marine Fisheries Service (NMFS) recommends no net loss of eelgrass function and recognizes eelgrass beds as a Habitat Area of Particular Concern (HAPC) for providing Essential Fish Habitat (EFH). Eelgrass, as a form of submerged aquatic vegetation, is protected by the Clean Water Act. Under the California Environmental Quality Act (CEQA), CDFW recommends avoidance of eelgrass habitat where possible and mitigation for loss of eelgrass function associated with projects. Under the CCA, the CCC is required to consult with CDFW to evaluate projects where mitigation is required and, because eelgrass beds are considered an ESHA, potential impacts need to be evaluated and minimized to obtain a Coastal Development Permit.

Habitat Connectivity

The California Essential Habitat Connectivity Project (CEHC) identifies and describes wildlife movement corridors in California so that these can be considered during transportation and land use planning decisions. The project identifies large parcels of intact habitat or natural landscape that support native biodiversity and areas essential for ecological connectivity between them (Essential Connectivity Areas [ECAs]), and models linkages between the ECAs that need to be maintained for use as wildlife corridors. Similarly, the CDFW Areas of Conservation Emphasis (ACE) is a tool that compiles statewide spatial information to rank items such as biodiversity, rarity, significant habitats, and connectivity to highlight important areas for connectivity, enhancement, or protection.

Essential Fish Habitat

EFH is defined by the Magnuson-Stevens Fishery Conservation and Management Act, as amended, for federally managed species as "those waters and substrate necessary for fish for spawning, breeding, feeding, or growth to maturity". Elements of EFH include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions. Waters include aquatic areas and their associated physical, chemical, and biological properties. Within EFH, there are HAPCs which are a subset of EFH considered high priority areas for conservation, management, or research. The EFH provisions are designed to protect habitat for commercially managed fish species from disturbance and degradation. Federal agencies are required to consult with NMFS on activities that may adversely affect EFH.

2.4.1.2 Affected Environment

The project area is located approximately 0.5 mile upstream from the location where Eureka Slough drains into Humboldt Bay. The project area is within the Coastal Zone in an area of original permit jurisdiction that has been retained by the California Coastal Commission (CCC). The project site is surrounded by a mix of development on upland fill, the slough channel, mudflats, and salt marsh. The project area provides habitat connectivity and potential ESHAs exist within the project area.

Sensitive Natural Communities

There are three Sensitive Natural Communities (SNCs) within the project area (Figure 72). The BSA supports two terrestrial SNCs (Pickleweed Mats and Salal-Berry Brambles/Thimbleberry) and one aquatic SNC (Eelgrass Beds) (Figure 72).

Pickleweed Mats Alliance

Approximately 9.97 acres of Pickleweed (*Sarcocornia pacifica*) Mats Alliance (G4 S3) were mapped throughout the estuarine marsh within the Coastal BSA. Pickleweed is the dominant species with other dominant or co-dominant herbaceous species including salt grass (*Distichlis spicata*), marsh jaumea (*Jaumea carnosa*), marsh dodder (*Cuscuta* sp.), and common arrow-grass (*Triglochin maritima*). The pickleweed mats contain sparse to moderate amounts of dense-flowered cordgrass (S*partina densiflorus*).

Salal-Berry Brambles Alliance/Thimbleberry Association

A 0.06-acre patch of Salal (*Gaultheria shallon*)–Berry (*Rubus ursinus*) Brambles Alliance / Thimbleberry (*Rubus parviflora*) Association (G2 S3) is present within the Coastal BSA. This alliance includes dominant species California blackberry, thimbleberry, and salmonberry (*Rubus spectabilis*) with co-dominant species sword fern (*Polystichum munitum*), and bracken fern (*Pteridium aquilinum*). This alliance is common around Humboldt Bay in riparian areas bordering the numerous streams that feed into the bay.

Eelgrass Beds Pacific Aquatic Alliance/Eelgrass Beds Association

Eelgrass Beds (*Zostera [marina, pacifica]*) Pacific Aquatic Alliance / Eelgrass Beds (*Zostera marina*) Association (GNR S3) is considered an aquatic SNC. Eelgrass is considered one of the most ecologically valuable and productive habitats in the coastal environment because they provide cover from predators for fish and invertebrates, rearing habitat for juvenile fish and invertebrates, and add to local habitat complexity. Caltrans conducted preliminary eelgrass surveys in 2021 and 2023 within the Coastal BSA.

Approximately 3.32 acres of Eelgrass Beds were mapped within the Coastal BSA. It occurs in patchy, long, narrow bands along the bathymetric contours of the sloped channels and mudflats and is absent in the deeper channels and higher mudflats. The Coastal BSA hosts a miniscule proportion of the eelgrass present within Humboldt Bay; the bay has an estimated 4,700 acres of eelgrass and the Coastal BSA contains only 3.32 acres or 0.07%.

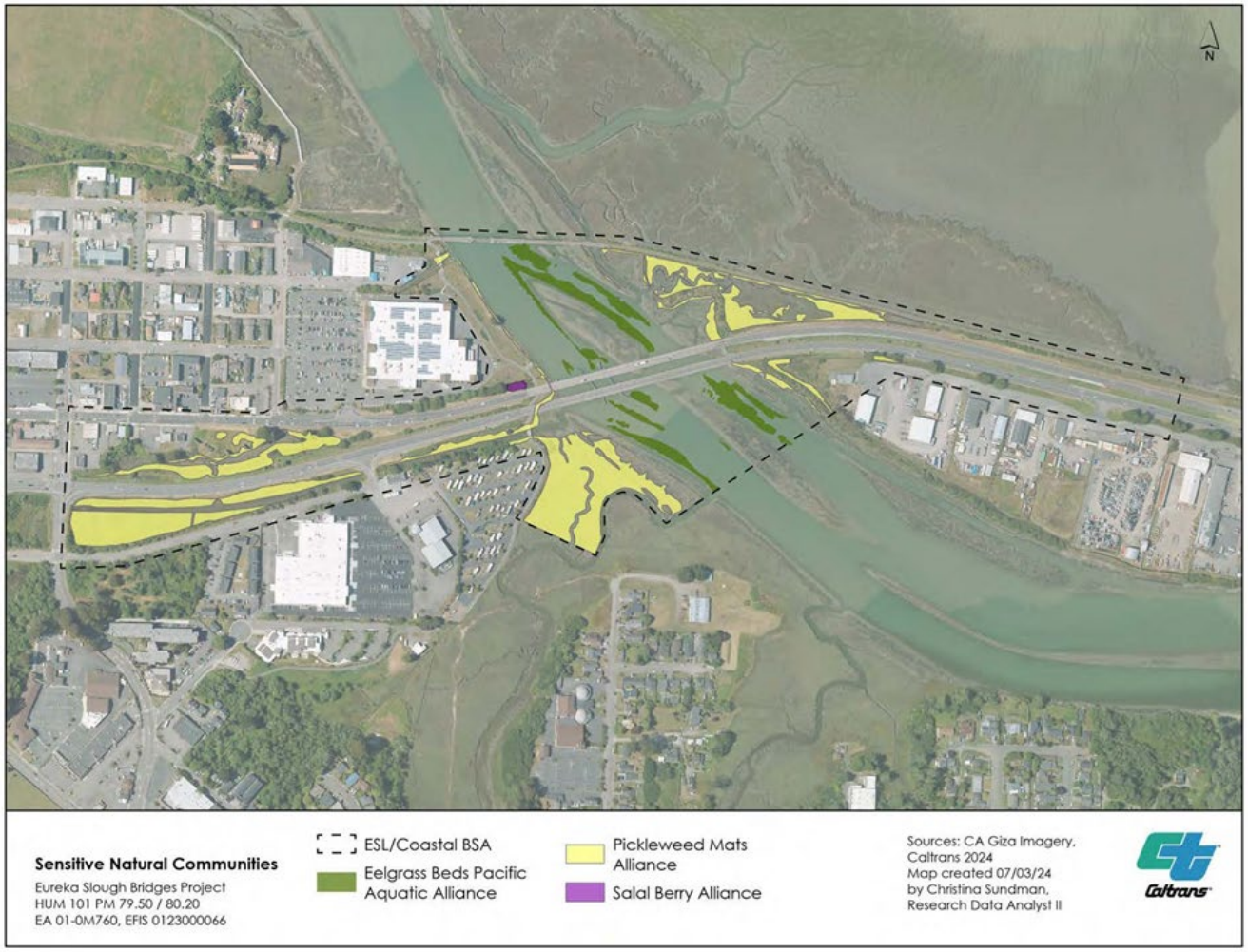


Figure 72. Sensitive Natural Communities within the project area.



Eelgrass distribution fluctuates, and can expand, contract, disappear, and recolonize areas within suitable environments within seasons and between years. Vegetated eelgrass areas can expand by as much as 16.4 feet (5 meters) and contract by as much as 13.1 feet (4 meters) annually. To capture these potential fluctuations and obtain a more accurate impact area for mitigation purposes, eelgrass surveys were conducted across multiple years. Additionally, pre-construction surveys immediately prior to construction, and post-construction surveys upon project completion, would also be required. The comprehensive surveying would ensure that actual impacts can be calculated to verify that eelgrass mitigation for the project is adequate.

Environmentally Sensitive Habitat Areas

The Coastal and Aquatic BSAs contain habitats and resources that are considered ESHAs:

- SNCs: Pickleweed Mats Alliance and Eelgrass Beds
- Wetlands and Other Waters of the State
- EFH for Pacific Coast Salmon (Chinook and coho salmon), Pacific Coast Groundfish, and Coastal Pelagic Species
- California Rare Plant Rank (CRPR) 1 and 2 occurrences:
    - Humboldt Bay owl's-clover (*Castilleja ambigua* var. *humboldtiensis)*
    - Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*)

The Salal-Berry Brambles Alliance/Thimbleberry Association found within the coastal BSA, while considered a SNC would not be considered an ESHA. This community is widespread in this region, tolerant of disturbance, and regrows quickly after disturbance.

Habitat Connectivity

Wildlife corridors are areas used by wildlife for seasonal or daily migration. Eureka Slough connects Humboldt Bay to Freshwater Creek, providing important habitat connectivity for anadromous fish that use the creek for spawning and rearing. No natural landscape blocks or Essential Connectivity Areas (ECAs) were identified by the CEHC Project in or adjacent to the Coastal BSA. Humboldt Bay mudflats provide important wintering grounds for migratory shorebirds. The project's Coastal BSA has an ACE rank of 1 for its terrestrial limited connectivity opportunity but has a rank of 5 for its high aquatic biodiversity.

Essential Fish Habitat

Essential Fish Habitat (EFH) for Pacific Coast Salmon (Chinook and coho salmon), Pacific Coast Groundfish, and Coastal Pelagic Species, and HAPCs (estuary and eelgrass) for Pacific Coast Salmon and Pacific Coast Groundfish were determined to be within the Aquatic Species BSA.

2.4.1.3 Environmental Consequences

Build Alternatives

This section evaluates potential effects of Alternative 2A and Alternative 2B on sensitive biological resources within the BSAs. Habitats are considered to be of special concern based on (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status plants or animals occurring on-site.

This discussion divides project impacts into two categories: permanent and temporary. Permanent impacts are those areas that would be permanently altered by the project. Temporary impacts are those areas that can be returned to preexisting or improved conditions upon completion of the project.

Sensitive Natural Communities

Permanent and temporary impacts to SNCs would vary by alternative. Impacts to SNCs within the BSAs are shown below in Table 42. Anticipated permanent and temporary impacts to each SNC in the BSA is evaluated according to each alternative below.

Table 42. Estimated Impacts on Sensitive Natural Communities within the BSA

SNC	Rank	Area within Coastal BSA (Acres)	Estimated Impacts (Acres)			
			Alternative 2A		Alternative 2B	
			Temporary	Permanent	Temporary	Permanent
Pickleweed Mats Alliance[1]	G4 S3	9.97	0.021	0.03	0.145	0.2
Total Temporary and Permanent Impacts (rounded)			**0.05**		**0.34**	
Salal – Berry Brambles Alliance / Thimbleberry Association	G2 S3	0.06	0.0005	0.002	0	0.06
Total Temporary and Permanent Impacts (rounded)			**0.002**		**0.06**	
Eelgrass Beds Pacific Aquatic Alliance / Eelgrass Beds Association	GNR S3	3.32	0.211	0.0002	0.153	0.112
Total Temporary and Permanent Impacts (rounded)			**0.211**		**0.265**	

[1] Four communities within the Pickleweed Mats Alliance were detected; however, since all pickleweed mat communities are considered "sensitive" (G4 S3), they were calculated together for this evaluation.

Effects Unique to Alternative 2A

Pickleweed Mats Alliance

Temporary impacts of approximately 0.021 acres of Pickleweed Mats are anticipated for Alternative 2A from installation of the temporary trestles which includes earthwork and fill required for the approach and access, and a 15 foot construction buffer to facilitate construction of road retaining walls. Alternative 2A would result in permanent impacts of 0.03 acres of Pickleweed Mats from construction of the new bridges, which includes earthwork and fill for the approaches, abutments, piles, and other permanent project components.

Standard Measure BR-4B requires a Revegetation Plan for temporary impacts to SNCs (Section 1.6); therefore, all temporary impacts would be restored on-site. Additionally Standard Measure BR-4C would require Temporary High Visibility Fencing (THVF) and/or flagging around sensitive communities prior to construction to protect those SNCs adjacent to construction. Pickleweed Mat is the most common vegetation

community within the 905 acres of tidal salt marsh present within Humboldt Bay, and this alternative would impact approximately 0.00006% of this area. Therefore, impacts to this community from Alternative 2A would be minor.

Salal - Berry Brambles Alliance / Thimbleberry Association

For Alternative 2A, 0.0005 acre of Salal – Berry Brambles Alliance / Thimbleberry Association is anticipated to be temporarily impacted for installation of the temporary trestles, which includes earthwork and fill required for the approach and access. Alternative 2A would result in 0.002 acre of permanent impact of Salal – Berry Brambles Alliance / Thimbleberry Association SNC. As per Standard Measure BR-4B (Section 1.6), a Revegetation Plan for temporary impacts to this SNC would be developed and all temporary impacts would be restored on-site. Additionally, Standard Measure BR-4C would require Temporary High Visibility Fencing (THVF) and/or flagging around sensitive communities prior to construction to protect those SNCs adjacent to construction. Given the size of the area impacted, and the abundance of this alliance around Humboldt Bay, impacts from Alternative 2A are expected to be minimal.

Eelgrass Beds

Alternative 2A is anticipated to result in 0.211 acre of temporary impact to eelgrass beds. These impacts would be from temporary construction activities that install temporary piles (0.0015 acre) and shading from the temporary detour bridge and construction trestles (0.21 acre). It is anticipated that upon completion of construction, when the temporary infrastructure is removed, eelgrass would recover. With the implementation of Standard Measures and Best Management Practices to protect water quality (Section 1.6 – WQ-1 and WQ-2), impacts from temporary increases in turbidity during construction would be minor.

Under Alternative 2A, the size, shape, and location of the piles for the new permanent bridges would differ from the existing bridge piers that would be removed during demolition. Changes in scour and sedimentation from bridge replacement would be minimal due to tidal influence, which maintains a state of equilibrium in sediment transport within the channel. Therefore, it is anticipated that the distribution of tidal mudflats and the eelgrass beds that surround would not be substantially changed by the project. The very minimal permanent impacts that would result from the additional shading from the wider bridges would be approximately 0.0002 acres.

Effects Unique to Alternative 2B

Temporary and permanent impacts to SNCs under Alternative 2B would be similar to impacts under Alternative 2A. The source and nature of impacts would be the same, however the area of impact would differ due to differences in project footprint and method of construction staging.

Pickleweed Mats Alliance

Alternative 2B would result in 0.145 acres of temporary impact to Pickleweed Mats from installation of the temporary trestles, which includes earthwork and fill required for the approach and access and a 15-foot construction buffer to facilitate construction of road retaining walls. Alternative 2B would result in 0.2 acres of permanent impact to Pickleweed mats from construction of the new bridges, which includes earthwork and fill for the approaches, abutments, and permanent other project components.

Standard Measure BR-4B would require a Revegetation Plan for temporary impacts to SNCs; therefore, all temporary impacts would be restored on-site. Additionally, Standard Measure BR-4C would require Temporary High Visibility Fencing (THVF) and/or flagging around sensitive communities prior to construction to protect those SNCs adjacent to construction. Pickleweed Mat is the most common vegetation community within the 905 acres of tidal salt marsh present within Humboldt Bay, and this alternative would impact approximately 0.0003% of this area. Therefore, impacts to this community from Alternative 2B would be minor.

Salal - Berry Brambles Alliance / Thimbleberry Association

Construction of the new bridges, including earthwork and fill for the approach, abutments, and other project components for Alternative 2B, would permanently impact the 0.06 acre patch of Salal- Berry Brambles. There would be no temporary impacts from Alternative 2B. Standard Measure BR-4C would require Temporary High Visibility Fencing (THVF) and/or flagging around sensitive communities prior to construction to protect those SNCs adjacent to construction. Given the small size of the area impacted and the abundance of this alliance around Humboldt Bay and in the region, impacts from Alternatives 2B are expected to be minimal.

Eelgrass Beds

Alternative 2B is anticipated to result in 0.153 acres of temporary and 0.112 acres of permanent impact to eelgrass beds. As with Alternative 2A, temporary impacts under Alternative 2B would be from temporary construction activities that result in increases in turbidity, from the installation of temporary trestles (0.003) acres, and shading from the temporary construction trestles (0.15 acres). Permanent impacts of 0.112 acres under Alternative 2B would be caused by shading caused by the new realigned bridge (0.11 acres and the installation of permanent piles (0.002 acres).

Under Alternative 2B, changes in scour and sedimentation from bridge replacement would be minimal and it is anticipated that the distribution of tidal mudflats and the eelgrass beds that surround would not be substantially changed by the project. With implementation of Standard Measures and Best Management Practices (Section 1.6) to protect water quality (WQ-1 and WQ-2), impacts from temporary increases in turbidity during construction would be minor.

Conclusion

The Standard Measures and Best Management Practices outlined above would minimize impacts to SNCs. Additionally, the impact areas are small relative to the abundance of these communities in and around Humboldt Bay. As a result, for both Alternatives 2A and 2B, impacts to SNCs would be minor.

Environmentally Sensitive Habitat Areas

Environmental consequences to SNCs Pickleweed Mats Alliance and Eelgrass Beds are discussed in the section above. Environmental consequences to wetlands and other waters are discussed in Section 2.4.2.3 and to special-status plant species in Section 2.4.3.3. EFH for Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species is discussed in the EFH section below.

Habitat Connectivity

Common Features of Alternatives 2A and 2B Affecting Habitat Connectivity

Under Alternatives 2A and 2B, the project could temporarily impact habitat connectivity. In-water construction and associated water quality impacts, hydroacoustic noise, artificial lighting, and general disturbance could affect the ability of fish to move through Eureka Slough. Eureka Slough connects Humboldt Bay to Freshwater Creek, providing important connectivity for anadromous fish that use the creek for spawning and rearing habitat. The Standard Measures and BMPs described in Section 1.6, such as BR-2 (items B, C, D, E), BR-5, WQ-1, and WQ-2, would be implemented to avoid and minimize impacts on habitat connectivity. These measures include a June 15 to October 15 in-water work window, thereby avoiding the peak migration seasons for fish, measures to protect water quality, and a Hydroacoustic Monitoring Plan.

Conclusion

The Standard Measures and Best Management Practices outlined above would avoid and minimize impacts on habitat connectivity and minimize exposure of fish to stressors. As a result, for both alternatives, the temporary impacts to habitat connectivity would be minimal.

Essential Fish Habitat

Common Features of Alternatives 2A and 2B Affecting EFH

For both Alternatives 2A and 2B, the project could temporally impact elements of EFH, including water quality, foraging, safe passage, benthic habitat, and aquatic vegetation. The project would have no measurable long-term, permanent effects on EFH.

Water Quality

Potential water quality impacts associated with project construction that could affect EFH include increased suspended sediment and turbidity and accidental releases of contaminants into the waterway. Implementation of Caltrans Standard Measures and Best Management Practices (Section 1.6), such as BR-2E, which restricts the in-water work period to between June 15 and October 15, and WQ-1 and WQ-2, which require a Stormwater Pollution Prevention Plan be prepared and pollution prevention measures be incorporated, would limit potential impacts to water quality.

Noise and Visual Disturbance

Noise and visual disturbances from project construction could impact foraging, and safe passage of fish by causing avoidance behaviors and temporarily disrupting feeding, delaying migration, or flushing fish from suitable habitat, potentially making them more vulnerable to predation. The effects of hydroacoustic noise on salmon and other fishes are described in detail in Section 2.4.4.3. A Hydroacoustic Monitoring Plan would be prepared that would include measures to minimize the exposure of listed fish species to potentially harmful underwater sounds from the project (BR-2B).

Visual disturbances that may occur include shadows over the water from equipment operation and artificial light at night. With incorporation of the Standard Measures designed to limit disturbance (such as restricting artificial light to the minimum needed (BR-2D) and implementing the in-water work window (BR-2E), and given that available cover/shelter, foraging potential, and safe passage conditions would be restored to baseline once construction is complete, it is expected there would only be minor, localized, and/or short-term effects on these elements of EFH.

Habitat Alteration

Habitat alteration from the project that could affect EFH include temporary and permanent losses of estuarine benthic habitat from fill (piles), permanent shading of estuarine habitat from the bridges, and temporary shading of estuarine habitat from temporary trestles and temporary bridge.

Small temporary losses of estuarine benthic habitat would occur from the placement of temporary piles for the temporary bridge and construction trestles. These temporary losses of habitat are miniscule relative to the available existing habitat throughout the 17,000-acre bay (i.e., less than 0.001% of the total area) and are not likely to have effects on the overall quantity or quality of available foraging or rearing habitat for groundfish in Eureka Slough. Permanent loss of estuarine benthic habitat is not anticipated. Although permanent piers and abutments would be placed in these habitats for the new bridges, the piers and abutments from the old bridges would be removed; hence, there would not be a net increase in fill in the slough.

Installation of the temporary trestles and temporary bridge would result in a temporary increase in shading over the slough during construction. However, it is unlikely that the changes in light levels associated with the temporary structures would have any measurable effect on water temperature, primary production, or habitat for EFH fish because of the temporary nature and small scale of these effects.

The slightly wider bridge configurations would result in a small increase of permanent shading over the water (less than 0.35-acre total). The scale of these impacts would result in no measurable decrease in the quality of the estuarine foraging or rearing habitat for EFH species or migration corridors. No measurable, long-term adverse changes to waters, substrates, food production and availability, and cover conditions from increased shading is anticipated.

Conclusion

Temporary project impacts would be short-term and would be restored once construction is complete. Standard Measures and Best Management Practices (Section 1.6) incorporated in the project would protect water quality, and limit fish exposure to noise, vibration, and visual disturbance during construction. The project would have no measurable long-term, permanent effects on EFH.

It is anticipated the project ***may adversely affect*** EFH for Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species. Section 7 consultation would be conducted with NMFS to address potential effects on EFH.

No Build Alternative

The No Build Alternative would have no impact on SNC, ESHA, Habitat Connectivity, or Essential Fish Habitat because construction activities would not occur.

2.4.1.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance, minimization, or mitigation measures are needed for Salal-Berry Brambles/Thimbleberry SNC, habitat connectivity or Essential Fish Habitat. Avoidance, minimization, or mitigation measures for the following types of ESHAs:

Sensitive Natural Communities

While the Standard Measures and BMPs that would be implemented as part of the project would avoid and minimize effects to SNCs, Caltrans anticipates permit-driven compensation for impacts to pickleweed mats and eelgrass beds, as described below in Bio-1 and Bio-2.

> **Bio-1:** To compensate for impacts on Sensitive Natural Communities (SNC), such as Pickleweed mats and rare plant species Humboldt Bay owl's-clover and Point Reyes bird's-beak, Caltrans may implement a combination of on- and off-site restoration efforts and/or preservation of existing habitat through purchase. Seeds of Humboldt Bay owl's-clover and Point Reyes bird's-beak may be salvaged prior to construction and saved for future on-site or off-site transplanting. Caltrans would also implement a Revegetation Plan as a standard measure which would include on-site revegetation and restoration after construction. Given the spatial overlap with estuarine marsh wetlands, Pickleweed mats, Humboldt Bay owl's-clover and Point Reyes bird's-beak, offsite measures will likely be combined with the compensation measures detailed in **Bio-3** (Section 2.4.2.4).
>
> **Bio-2:** To compensate for eelgrass impacts, Caltrans would conduct off-site compensation measures in Humboldt Bay. Offsite measures would be either through a cooperative agreement with the Humboldt Bay Harbor District or through another eelgrass restoration project. Ratios may range from 1:1 to 4:1, depending on whether an impact is temporary or permanent, and on the timing of the compensation measures (in advance or delayed).

ESHAs relative to Wetlands and Other Waters are discussed in Section 2.4.2.3 and to special-status plant species in Section 2.4.3.3.

2.4.2 Wetlands and Other Waters

2.4.2.1 Regulatory Setting

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

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

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

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (Waters of the U.S.) only if there is no practicable alternative which would have less adverse effects.

The Guidelines state that the USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" (LEDPA) to the proposed discharge that would have lesser effects on Waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

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

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

2.4.2.2 Affected Environment

The information in this section is based on the NES (Caltrans 2025b). In addition, Caltrans conducted a wetland delineation with the findings in the Aquatic Resources Report (Appendix G of the NES).

The Coastal BSA was surveyed for aquatic resources that may be impacted by the project. This included an assessment for the following:

- Wetland or non-wetland Waters of the U.S. (WOTUS) subject to jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the CWA
- "Navigable Waters" subject to the ebb and flow of the ocean tide pursuant to Section 10 of the Rivers and Harbors Act (RHA)
- Wetland or non-wetland Waters of the State subject to the jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to the Porter-Cologne Water Quality Control Act and Section 401 of the CWA
- Coastal wetlands within the Coastal Zone subject to the jurisdiction of the California Coastal Commission (CCC) pursuant to the CCA
- Aquatic resources with a defined bed, bank, channel, or riparian habitats subject to the jurisdiction of the CDFW pursuant to California Fish and Game Code Section 1602.

The ordinary high-water mark (OHWM) defines the lateral limits of non-tidal waters for federal, state, and local regulatory purposes and is identified by physical characteristics such as a clear, natural line on the bank, presence of litter and debris, or vegetation patterns. The USACE has developed standards and procedures for delineating OHWM. The boundaries of non-wetland WOTUS or Waters of the State were delineated at the OHWM in accordance with the *USACE Regulatory Guidance Letter 05-05* (USACE 2005) and *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar, 2014).

Mean high water (MHW) is the average of all the high water heights observed over time. The boundaries of "navigable waters" subject to Section 10 of the RHA were determined based on the elevation of the MHW line (where the land intersects with the water surface). The MHW was primarily determined using bathymetric survey data provided by Caltrans engineers and confirmed on-site based on the location of wrack, watermarks on hardscape, and/or other identifying characteristics.

A wetland delineation was conducted using the methods described in *USACE Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE 2010). The USACE methodology relies on a three-parameter approach in which criteria for hydrophytic vegetation, hydric soils, and wetland hydrology must each be met to conclude an area qualifies as a wetland.

Coastal wetlands regulated by the CCC under the CCA include one- and two-parameter wetlands, in addition to the three-parameter wetlands regulated as WOTUS. Coastal wetlands require the presence of wetland hydrology. Coastal wetlands were evaluated as part of the routine on-site determination for WOTUS. If a potential aquatic feature met only the hydrology parameter or hydrology plus one other parameter, the feature was mapped as a potential coastal wetland. Wetlands and waters within the Coastal BSA are illustrated below in Figure 73.

The USACE considers Aquatic Resources Delineation Reports to expire after five years, even if the project or project area has not substantially changed. For this reason, new mapping of wetlands may be necessary depending on when project construction is scheduled to begin.

There are approximately 14.95 acres of potentially jurisdictional three-parameter wetlands within the Coastal BSA (Table 43). This includes 13.52 acres of Estuarine Marsh (E2EM1N) wetlands dominated by invasive dense-flowered cordgrass (*Spartina densiflora*) with numerous patches of typical native salt marsh vegetation including pickleweed (*Sarcocornia pacifica*) and salt grass (*Distichlis spicata*). There are also 1.43 acres of Roadside Ditch wetlands (PEM1x) along the highway and in the median, as well as other disturbed areas; these mixed communities contained numerous grass species, rushes, sedges, and patches of Arroyo willows (*Salix lasiolepis*) and cattails in deeper water areas.

Within the Coastal BSA, there are approximately 31.85 acres of potentially jurisdictional waters (Table 43), which consist of estuarine subtidal waters (31.82 acres) and six culverts that convey potentially jurisdictional waters (0.03 acres/707 linear feet). The estuarine subtidal waters within the project area are classified under the following Cowardin types: Estuarine and Marine Deepwater (E1UBL; 20.30 acres), Estuarine Channel (E1UB2L; 2.52 acres), Eelgrass Beds (E1AB3L; 3.32 acres), and Tidal Mud Flats (E1UB3L; 5.68 acres). These waters were observed from the mean high tide (MHT) line into the open waters in the bay and adjacent sloughs and inlets. Vegetation within the Estuarine and Marine Deepwater is restricted to eelgrass and other submerged vegetation. Eelgrass Beds generally occur around the periphery of the Tidal Mud Flats.

There is 0.86 acre of Riparian wetlands (PSS1) that occurs along the estuarine inlet in the Coastal BSA (Table 43). Vegetation consisted of Arroyo willow (*Salix lasiolepis*) and other willow species and patchy red alders (*Alnus rubra*). This riparian area meets two of the three wetland parameters and is therefore classified as a wetland under CCC jurisdiction. The area is not classified as a wetland by USACE or NCRWQCB.

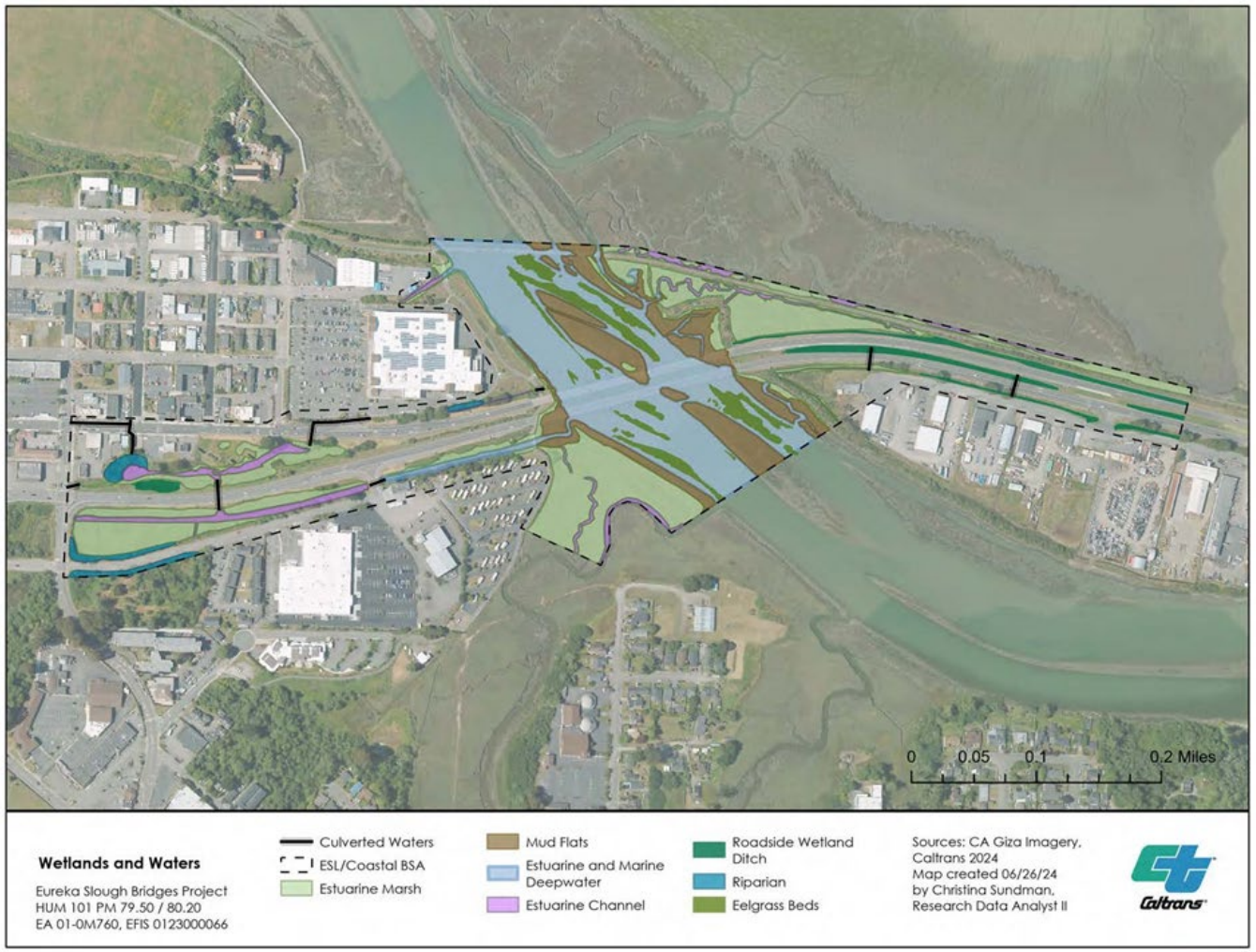


Figure 73. Wetlands and Waters within the Coastal BSA



2.4.2.3 Environmental Consequences

Build Alternatives

Caltrans considered various alternatives to address the project purpose and need, as documented in Section 1.5, Alternatives Considered but Eliminated from Further Discussion. All of the alternatives considered, except Alternatives 2A and 2B, were deemed infeasible for engineering and/or cost reasons, and/or for having greater environmental impacts, including to wetlands.

Both Alternatives 2A and 2B were reviewed and refined to minimize effects on environmental resources, including wetlands and other waters. However, both alternatives would still affect aquatic resources.

Under all Build Alternatives, permanent and temporary impacts to Wetlands and Waters of the U.S. and State are anticipated for construction of bridge piers and abutments, temporary trestles for equipment access, cut and fill areas for the approach, access, and roadway realignment and widening. Permanent impacts would occur at locations where new project components are permanently constructed. Temporary impacts refer to those areas that would be restored on-site and in-kind upon completion of construction. Table 43 below identifies potential permanent and temporary impacts for jurisdictional Wetlands and Waters of the U.S. and State.

Table 43. Potential Impacts to Jurisdictional Wetlands and Waters of the U.S. and State within the Coastal BSA

Aquatic Resource Type	Cowardin Type	Area within Coastal BSA (acres)	Estimated Impact Area (acres)			
			Alternative 2A		Alternative 2B	
			Temporary	Permanent	Temporary	Permanent
WETLANDS (Section 401/404, CCA)						
Estuarine Marsh	E2EM1N	13.52	0.029	0.039	0.297	0.224
Roadside Ditch Wetland	PEM1x	1.43	0.240	0.090	0.145	0.300
Total (rounded)		**14.95**	**0.27**	**0.13**	**0.44**	**0.52**
OTHER WATERS (Section 404/401, Section 10, CCA)						
Estuarine and Marine Deepwater	E1UBL	20.30	0.007	0.016	0.013	0.013
Estuarine Channel	E1UB2L	2.52	0.0003	0.011	0.010	0.019
Eelgrass Beds	E1AB3L	3.32	0.0015	0.0002	0.003	0.002
Tidal Mud Flats	E1UB3L	5.68	0.004	0.003	0.005	0.005
Culverted Waters	--	0.03	0.020	0	0.007	0
Total (rounded)		**31.85**	**0.033**	**0.03**	**0.04**	**0.04**
COASTAL WETLANDS (CCA)						
Riparian	PSS1	0.86	0	0	0.040	0.040
Total Impacts on Jurisdictional Aquatic Resources (rounded)			**0.30**	**0.16**	**0.52**	**0.60**

For both build Alternatives the following Standard Measures and Best Management Practices (Section 1.6)would minimize and avoid impacts to wetlands and waters.

- BR-2E and BR-5A which limits the operating period to between June 15 and October 15 for all in-stream work would project water quality and habitats.
- Standard measure BR-4C which would protect adjacent wetlands and waters by installing THVF around them.
- Measure BR-5B would call for the use of protection mats if allowed, to minimize impacts to wetlands. After construction all temporary structures would be removed, including bridge trestles and fill, and landform and topography would be restored back to preexisting conditions. Existing bridge abutments and piers would be cut off at or below grade.

- As per measure BR-4B, Caltrans would prepare a Revegetation Plan that would require revegetation of wetlands and areas adjacent to waters that are temporarily impacted.

Effects Unique to Alternative 2A

Figures 74 and 75 illustrate the temporary and permanent impacts from Alternative 2A to Wetlands and Waters within the project footprint. Figure 74 provides detail for the west side of the project and Figure 75 shows detail for the east side. Table 43 above summarizes the temporary and permanent impacts from Alternative 2A to aquatic resources.

Wetlands

Temporary impacts to 0.029 acre of Estuarine Marsh wetlands are anticipated for Alternative 2A. Temporary impacts would occur where temporary fill would be placed to build an approach for equipment access to the trestles and to construct the bridges. These impacts would be in place for up to 2-3 years, and the area would be restored after the trestles are removed and construction is complete. For Alternative 2A, permanent impacts to Estuarine Marsh wetlands are anticipated to be 0.039 acre for construction of the new bridge approach and abutments.

Alternative 2A is anticipated to temporarily impact approximately 0.24 acre of Roadside Ditch wetlands where temporary fill would be placed to build an approach for equipment access to the trestles and to construct the bridges, as well as facilitate north- and southbound bridge shift during construction. Roadway construction under Alternative 2A would result in approximately 0.09 acres of permanent impacts to Roadside Ditch wetlands.

Other Waters of the U.S. and State

Under Alternative 2A, temporary impacts to Estuarine and Marine Deepwater (0.007 acre), Estuarine Channel (0.0003 acre), Eelgrass Beds (0.0015 acre), Tidal Mud Flats (0.004 acre), and culverted waters (0.020 acre) are anticipated from construction of the temporary bridge structure and placement of temporary trestle piles in the channel. Temporary trestle piles are expected to be in the channel for up to three years, and the impacted area would restore itself after the piles and temporary structure are removed. In total 0.033 acre of waters would be temporarily impacted by Alternative 2A.

For Alternative 2A, permanent impacts to Estuarine and Marine Deepwater (0.016 acre), Estuarine Channel (0.011 acre), Eelgrass Beds (0.0002 acre), and Tidal Mud Flats (0.003 acre) is anticipated where piles would be placed in the channel for the permanent replacement bridges. In total, approximately 0.03 acre of waters would be permanently impacted by Alternative 2A. These permanent impacts would be largely

offset by approximately 0.07 acre of fill that would be removed when the existing bridge piers and wooden timber bumper are removed from the channel.

Coastal Wetlands

No temporary or permanent impacts to coastal wetland would occur from Alternative 2A.

Effects Unique to Alternative 2B

Figures 76 and 77 illustrate the temporary and permanent impacts from Alternative 2B to Wetlands and Waters within the project footprint. Figure 76 provides detail for the west side of the project and Figure 77 shows the east side detail. Table 43 above summarizes the temporary and permanent impacts from Alternative 2B to aquatic resources.

Wetlands

Temporary impacts to 0.297 acre of Estuarine Marsh wetlands are anticipated for Alternative 2B. Temporary impacts would occur where temporary fill would be placed to build an approach for equipment access to the trestles and to construct the bridges. These impacts would be in place for up to 2-3 years, and the area would be restored after the trestles are removed and construction is complete. For Alternative 2B, permanent impacts to Estuarine Marsh wetlands are anticipated to be 0.224 acre for construction of the new bridge approach and abutments.

Under Alternative 2B there would be 0.145 acres of temporary impacts to Roadside Ditch wetlands to construct the bridges as well as facilitate north- and southbound bridge shift during construction. Permanent impacts of 0.3 acre to Roadside Ditch wetlands would result from roadway construction.

Other Waters of the U.S. and State

Under Alternative 2B, temporary impacts to Estuarine and Marine Deepwater (0.013 acre), Estuarine Channel (0.010 acres),Eelgrass Beds (0.003 acre), Tidal Mud Flats (0.005 acre), and culverted waters (0.007 acre) are anticipated from construction of the temporary bridge structure and placement of temporary trestle piles in the channel. Temporary trestle piles are expected to be in the channel for up to three years, and the impacted area would restore itself after the piles and temporary structure are removed. In total 0.04 acres of waters would be temporarily impacted by Alternative 2B. For Alternative 2B, permanent impacts to Estuarine and Marine Deepwater (0.013 acre), Estuarine Channel (0.019 acres), Eelgrass Beds (0.002 acre),and Tidal Mud Flats (0.005 acre) is anticipated where piles would be placed in the channel for the permanent replacement bridges. In total, approximately 0.04 acre of waters would be permanently impacted by Alternative 2B. These permanent impacts would be largely offset by approximately 0.07 acre of fill that would be removed when the existing bridge piers and wooden timber bumper are removed from the channel.

Coastal Wetlands

For Alternative 2B, temporary impacts of 0.04 acres and permanent impacts of 0.04 acre of Riparian Wetland would occur for construction of the southbound bridge.

Conclusion

Aquatic resources such as estuarine marsh and estuarine channel are restricted to bay and estuary locations and are therefore naturally uncommon and highly valuable habitats. Estuarine marsh function includes acting as natural filters, removing pollutants and sediments from water flowing into the ocean, providing important habitat for diverse wildlife, stabilizing shorelines, and acting as a buffer against coastal flooding and storm surges. Permanent impacts to estuarine channel for both alternatives are less than 0.02 acres. Alternative 2A would permanently impact 0.039 acres of estuarine marsh. Alternative 2B would permanently impact 0.224 acres of estuarine marsh. Alternative 2B would have a larger impact on tidal wetlands. As a result, it is anticipated that Alternatives 2B would have greater impacts on estuarine marsh. Both Alternatives would impact generally less than 0.1 acre (Table 43) of estuarine and marine deepwater, estuarine channel, eelgrass beds, tidal mud flats, riparian, and culverted waters. Therefore, impacts to these waters would be minor. Both alternatives would impact (permanent and temporary impacts combined) less than 0.5 acres of roadside ditch wetland. These wetlands are of lower quality and common and therefore the impact would be minor.



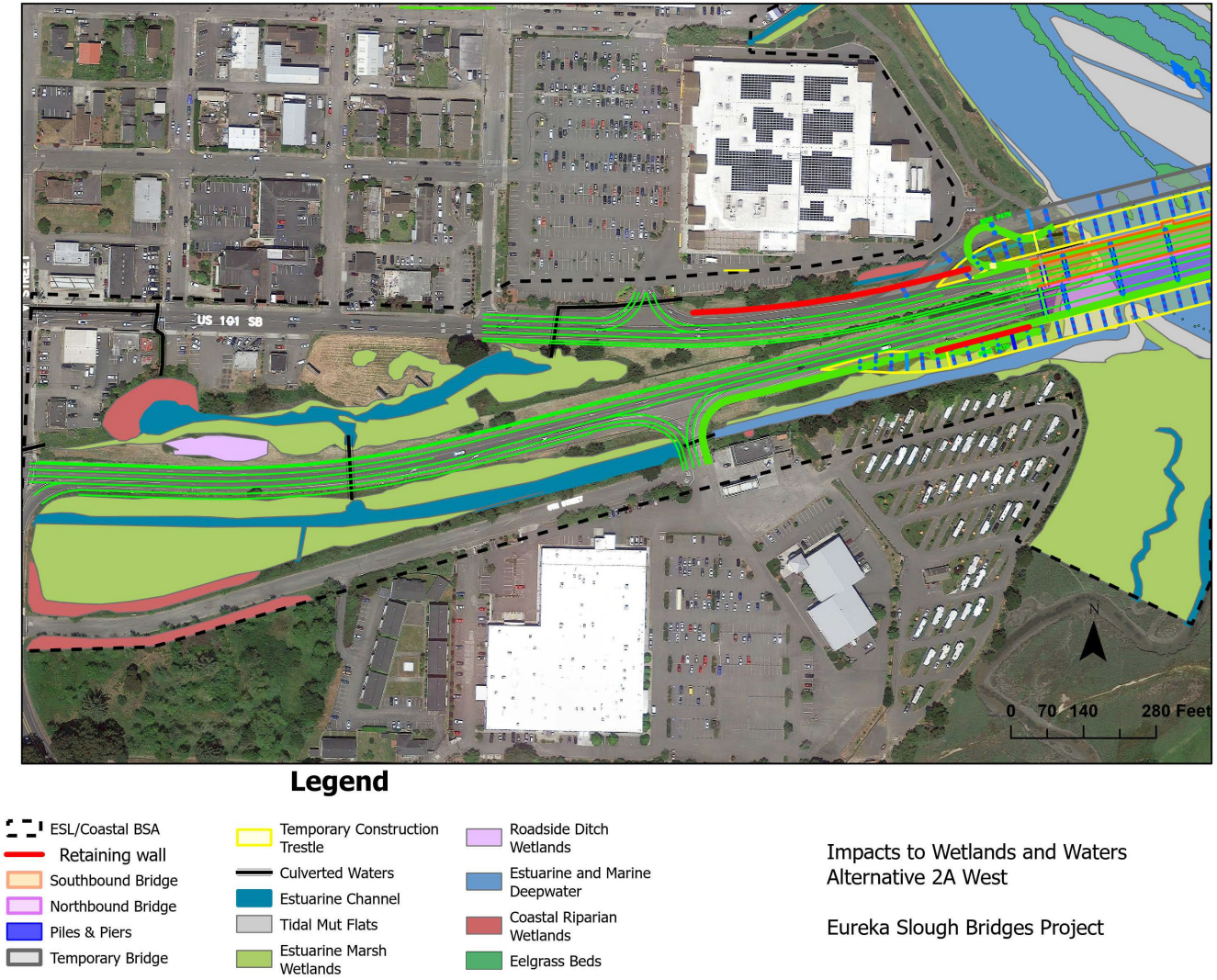


Figure 74. Alternative 2A Wetlands/Waters Impacts West Side

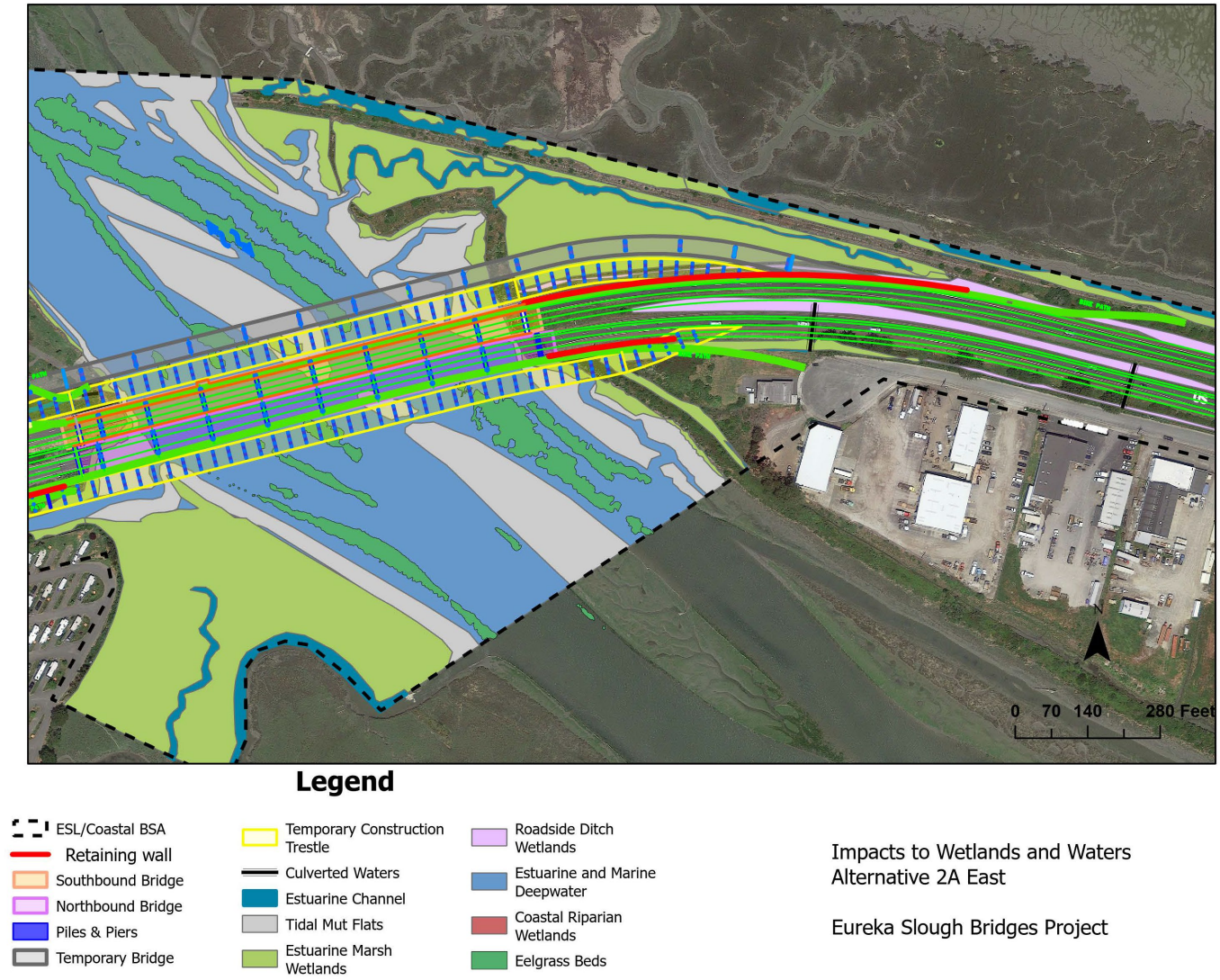


Figure 75. Alternative 2A Wetlands/Waters Impacts East Side

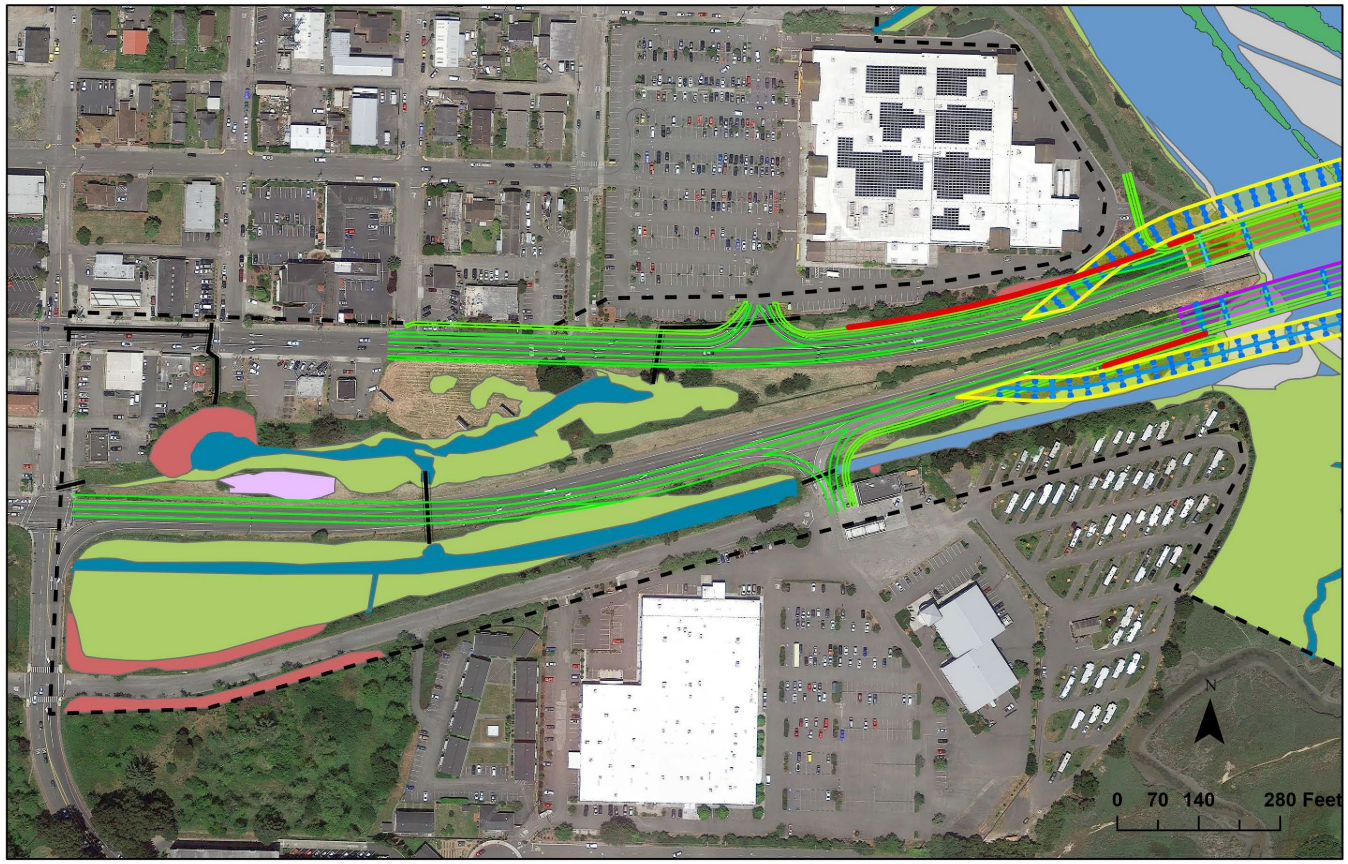


Figure 76. Alternative 2B Wetlands/Waters Impacts West Side

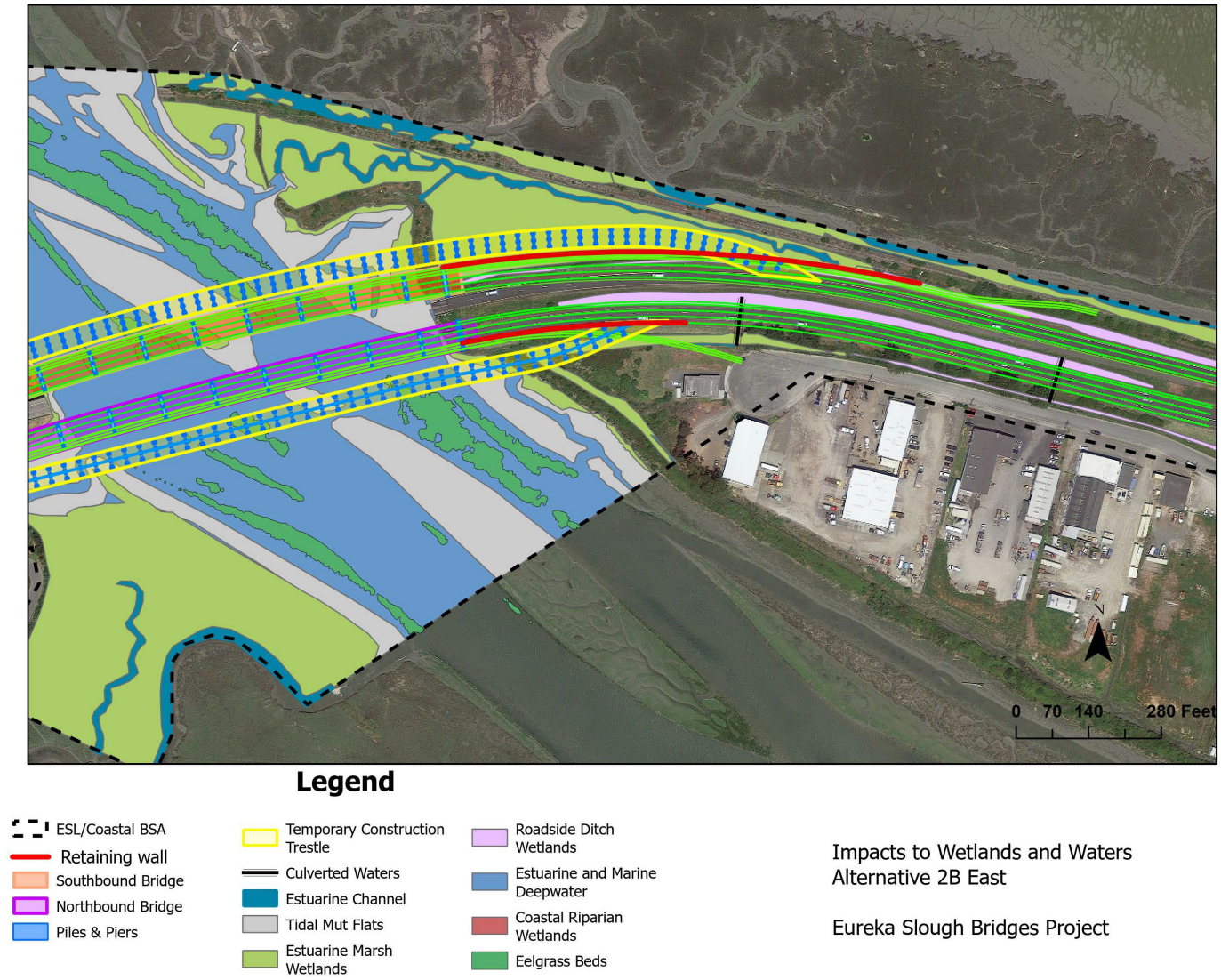


Figure 77. Alternative 2B Wetlands/Waters Impacts East Side

No Build Alternative

Under the No Build Alternative, the existing bridges would not be replaced. There would be no impact to wetlands or other waters.

2.4.2.4 Avoidance, Minimization, and/or Mitigation Measures

While Standard Measures and BMPs that would be implemented as part of the project would help to avoid and minimize effects to wetlands, Caltrans anticipates adverse impacts to estuarine marsh from Alternative 2B. If Alternative 2B is selected to offset and mitigate for impacts to estuarine marsh, **Bio-3** (below) would be implemented.

> **Bio-3:** Estuarine Marsh: To compensate for impacts to estuarine marshes, Caltrans would focus on measures that provide overlapping benefits to these resources and the biological communities that depend upon these resources. Compensation may include a combination of on- and off-site restoration efforts, and/or preservation of existing habitat through purchase. Compensation efforts and appropriate ratios would be determined in coordination with the permitting agencies. Ratios may range from 1:1 to 4:1, depending on the quality of the resource impacted, whether an impact is temporary or permanent, and on the timing of the compensation measures (in advance or delayed).

While the Standard Measures and BMPs that would be implemented as part of the project would avoid and minimize effects on the following aquatic resources (estuarine marsh, roadside ditch wetland, estuarine and estuarine marine deepwater, estuarine channel, eelgrass beds, tidal mud flats, culverted waters, and coastal riparian), Caltrans anticipates permit-driven compensation for impacts to these resources, as described below in **Bio-4**.

> **Bio-4:** Wetlands and Other Waters: Caltrans would conduct permit-driven compensation for impacts to estuarine marsh, roadside ditch wetlands, estuarine marine deepwater, estuarine channel, tidal mud flats, culverted waters, and coastal riparian wetlands. Compensation would focus on measures that provide overlapping benefits to these resources and the biological communities that depend upon these resources, such as fish and invertebrates. Compensation may include a combination of on- and off-site restoration efforts, and/or preservation of existing habitat through purchase. Compensation efforts and appropriate ratios would be determined in coordination with the permitting agencies. Ratios may range from 1:1 to 4:1, depending on the quality of the resource impacted, whether an impact is temporary or permanent, and on the timing of the measures (in advance or delayed).

2.4.3 Plant Species

2.4.3.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special-status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species–Section 2.4.5 in this document for detailed information about these species.

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

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

2.4.3.2 Affected Environment

USFWS, CNDDB, and CNPS databases of special-status plant species were queried to determine the special-status plant species previously documented within the Coastal BSA. Special-status plant species are those designated as federally endangered, threatened, or candidate (FE, FT, FC) under FESA, designated state endangered, threatened, or candidate (SE, ST, SC) under CESA, listed as rare under the California Native Plant Protection Act, or having a California Rare Plant Rank (CRPR) of 1, 2, 3, or 4. Plants that are not rare from a statewide perspective but are rare or uncommon in a local context, such as within a county or region or are designated in local or regional plans, policies, or ordinances, may also be evaluated under CEQA. To determine which special-status plant species may be impacted by the project, seasonally appropriate floristic botanical surveys were conducted within the Coastal BSA. CDFW considers some botanical surveys to expire after five years, even if the project or project area has

not substantially changed. For this reason, additional protocol-level surveys for plants may be necessary depending on when project construction is scheduled to begin.

Two special-status plant species, Humboldt Bay owl's-clover (*Castilleja ambigua* var. *humboldtiensis*) and Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*), were found to be present within the Coastal BSA (Figure 78). Both species occur in a patchy distribution within the high estuarine marsh areas surrounding Eureka Slough, often found in close proximity to each other. All total, there is approximately 0.09 acre of Humboldt Bay owl's-clover, 0.17 acre of Point Reyes bird's-beak, and 0.07 acre of where both species occur within the BSA.

Humboldt Bay Owl's-Clover

Humboldt Bay owl's-clover has a California Rare Plant Rank (CRPR) of 1B.2. It is a subspecies of Johnny-nip (*Castilleja ambigua*), an annual herb traditionally placed in the snapdragon family (Scrophulariaceae), but recently realigned with the parasitic broomrape family (Orobanchaceae). Endemic (limited) to California, it is only known to occur in coastal salt marshes around Humboldt Bay, Mendocino County, and Marin County. The plants are hemiparasitic, sometimes obtaining moisture and nutrients from the roots of their host plants. It grows mainly in higher areas of salt marshes but also in coastal grasslands. The flowering period is from May to August. Threats to this species include diking and draining of marshes for development, off-road vehicle use, foot traffic, road/trail construction and maintenance, and invasion of non-native plants, particularly of dense-flowered cordgrass (*Spartina densiflora*).

Point Reyes Bird's-Beak

Point Reyes bird's-beak has a CRPR of 1B.2. It is an annual hemiparasitic herb, and member of the broomrape family (Orobanchaceae). It occurs along the coast from Tillamook County, Oregon, south to Santa Clara County, California. It is a branched annual herb that bears spikes of bee-pollinated flowers. It grows in the higher reaches of coastal salt marshes to intertidal and brackish areas influenced by freshwater input. Point Reyes bird's-beak habitat overlaps with that for Humboldt Bay owl's-clover and is vulnerable to many of the same threats.

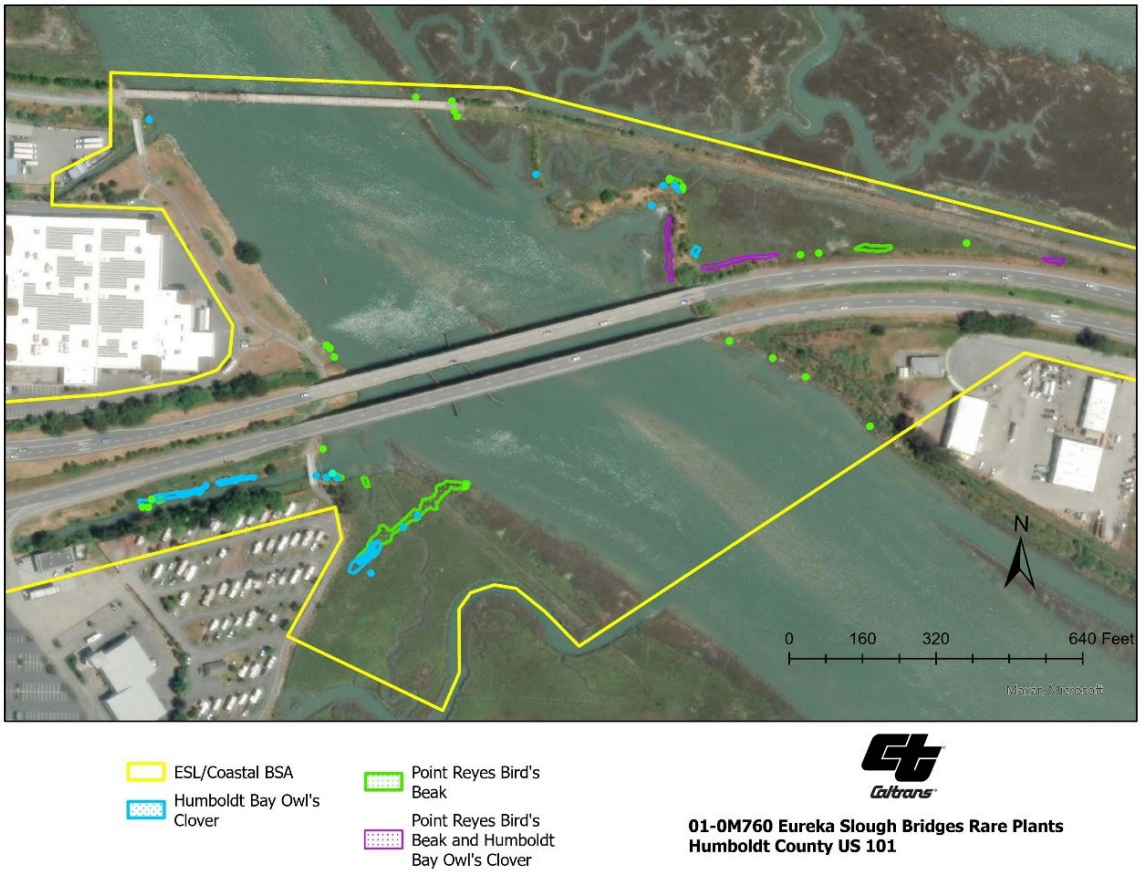


Figure 78. Humboldt Bay Owl's-Clover and Point Reyes Bird's-Beak Locations

2.4.3.3 Environmental Consequences

Build Alternatives

Humboldt Bay owl's-clover and Point Reyes bird's-beak occur in numerous locations within the Coastal BSA (Figure 78). Focused and comprehensive botanical surveys were completed in 2020 and 2021. These surveys are considered by agencies to have a "shelf-life" of 3 to 5 years. In compliance with Standard Measure BR-4A, botanical surveys would be updated by a qualified biologist prior to construction.

Temporary and permanent impacts to Humboldt Bay owl's-clover and Point Reyes bird's-beak are anticipated for both Build Alternatives. Temporary impacts would occur at areas where piles are placed to support the construction trestles and temporary bridge (for Alternative 2A), as well as within the 15-foot construction buffer. These impacts would be in place for up to three years and then the piles would be removed. After the trestles are removed and construction is complete, the areas would be

restored. For Alternative 2B, permanent impacts to Humboldt Bay owl's-clover and Point Reyes bird's-beak would occur from construction of the new bridge approach and abutments.

Effects Unique to Alternative 2A

Alterative 2A would temporarily impact 165 square feet of Humboldt Bay owl's-clover and 157 square feet of Point Reyes bird's-beak. Standard measure BR-4B would require a Revegetation Plan be prepared and all temporarily impacted areas would be replanted. Alternative 2A would have no permanent impacts to Humboldt Bay owl's-clover or Point Reyes bird's-beak. Standard measure BR-4C would protect any occurrences of these species adjacent to construction by installing THVF around them. As Alternative 2A would have no permanent impact to these species, with implementation of Standard Measures and Best Management Practices (Section 1.6), impacts would be minor.

Effects Unique to Alternative 2B

Alterative 2B would temporarily impact 174 square feet of Humboldt Bay owl's-clover and 218 square feet of Point Reyes bird's-beak. Standard measure BR-4B would require a Revegetation Plan be prepared and all temporarily impacted areas would be replanted.

Alternative 2B would permanently impact 218 square feet of Humboldt Bay owl's-clover and 1,089 square feet of Point Reyes bird's-beak. Standard measure BR-4C would protect any occurrences of these species adjacent to construction by installing THVF around them. Although rare across their ranges, both species are locally abundant and widely distributed throughout the estuarine marshes of Humboldt Bay. With implementation of Standard Measures and Best Management Practices (Section 1.6), impacts would be minor.

Conclusions

Both Alternatives would temporarily impact occurrences of Humboldt Bay owl's-clover and Point Reyes bird's-beak. These areas would be restored on site (BR-4B). Only Alternative 2B would have permanent impacts to Humboldt Bay owl's-clover and Point Reyes bird's-beak. The size of the permanently impacted areas are relatively small compared to the occurrences within the salt marsh surrounding Humboldt Bay. With implementation of Standard Measures and Best Management Practices (Section 1.6), impacts to these species would be minor.

No Build Alternative

Under the No Build Alternative, the existing bridges would not be replaced. There would be no impact to plant species.

2.4.3.4 Avoidance, Minimization, and/or Mitigation Measures

While the Standard Measures and BMPs that would be implemented as part of the project would avoid and minimize effects on Humboldt Bay owl's-clover and Point Reyes bird's-beak, Caltrans anticipates permit-driven compensation for impacts to these resources. **Bio-1** would be implemented as permit-driven mitigation minimization for Humboldt Bay owl's-clover and Point Reyes bird's-beak.

> **Bio-1:** To compensate for impacts on Sensitive Natural Communities (SNC), such as Pickleweed mats and rare plant species Humboldt Bay owl's-clover and Point Reyes bird's-beak, Caltrans may implement a combination of on- and off-site restoration efforts and/or preservation of existing habitat through purchase. Seeds of Humboldt Bay owl's-clover and Point Reyes bird's-beak may be salvaged prior to construction and saved for future on-site or off-site transplanting. Caltrans would also implement a Revegetation Plan as a standard measure which would include on-site revegetation and restoration after construction. Given the spatial overlap with estuarine marsh wetlands, Pickleweed mats, Humboldt Bay owl's-clover, and Point Reyes bird's-beak, offsite measures will likely be combined with the compensation measures detailed in **Bio-3** (Section 2.4.2.4).

2.4.4 Animal Species

This section discusses the project's potential impacts on non-listed animal species and Species of Special Concern (SSC) in the project's BSAs. Species that are listed as both SSC and federally or state threatened or endangered are discussed in Section 2.4.5– Threatened and Endangered Species.

2.4.4.1 Regulatory Setting

Many federal and state laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA/NMFS), and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. *Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species Section 2.4.5 below.* All other special-status animal species are discussed here, including USFWS or NMFS candidate species and CDFW fully protected species and 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
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

2.4.4.2 Affected Environment

Non-listed Species

Record searches[2] and habitat assessments were conducted to determine whether special-status wildlife species have the potential to occur within the project area.

Based on the record searches, habitat assessments, and field surveys, 14 special-status animals could potentially occur or would have suitable habitat within the BSAs. These species are discussed below. See Appendix For the full list of special-status wildlife species that are known to occur or have the potential to occur in the project vicinity, and the rationale for habitat presence or absence. Species with no habitat present within the project area are not discussed further.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) protects migratory birds, their occupied nests, and their eggs from disturbance or destruction. There is suitable nesting habitat for various bird species on the ground and in shrubs and trees within upland areas of the Coastal BSA.

[2] Record searches for special-status animal species were determined by reviewing natural resource agency databases, literature, and other relevant sources; these included official lists from the CNDDB (CDFW 2025).

Marine Mammals

Marine mammals are protected by the Marine Mammal Protection Act (MMPA), under which it is illegal to "take" a marine mammal without prior authorization from NMFS. The MMPA (16 United States Code [USC] 1362) defines "take" as any act of pursuit, torment or annoyance that has the potential to injure a marine mammal (Level A harassment) or could disturb or disrupt behavioral patterns (Level B harassment). California sea lion (*Zalophus californianus*), harbor porpoise (*Phocoena phocoena*), and harbor seal (*Phoca vitulina*) are protected by the MMPA, are known to occur in Humboldt Bay, and have the potential to occur within the project area. These species are not federally or state listed.

California sea lions breed mainly on offshore islands, ranging from southern California's Channel Islands to Mexico, although a few pups have been born on islands in central California. Foraging habitat consists of shallow coastal waters where they often forage in upwelling areas on a diet consisting of squid, anchovies, mackerel, rockfish and sardines. They prefer sandy beaches or rocky coves both for breeding and haul-out sites, but may also haul-out on marina docks, jetties, and buoys. California sea lions do not breed in northern California; however, non-breeding or migrating individuals occur in Humboldt Bay year-round. There are no known haul-out sites in the Aquatic Species BSA; however, they could occasionally occur in the Aquatic Species BSA to forage.

Harbor porpoises are commonly found in bays, estuaries, harbors, and fjords less than 650 feet deep. They do not make long migrations, but exhibit seasonal inshore-offshore movements, likely in response to prey availability. They mainly forage on schooling fish like herring and mackerel. Because they prefer coastal habitats, harbor porpoises are particularly vulnerable to gillnets and fishing traps, pollution, and other types of human disturbance, such as underwater noise, as underwater sound pollution interrupts the normal behavior of harbor porpoises and interferes with their communication. Harbor porpoises have been observed throughout the year at the entrance to, and within, Humboldt Bay, usually as single individuals but sometimes in small groups (Goetz 1983). They could occur within the Aquatic Species BSA to forage.

Harbor seals range throughout the northern Atlantic and Pacific oceans, and occur in coastal waters, river mouths, and estuaries. They often haul-out on rocky islets and mudflats in estuaries and rocky and sandy beaches for resting, molting, giving birth, and rearing of young. They feed on schooling fish, shellfish, and crustaceans in nearshore habitats. Harbor seals are commonly seen around Humboldt Bay and known to haul-out on tidal mudflats in the bay (Loughlin 1974; Sullivan 1979; Ougzin 2013). There are haul-outs within the Aquatic Species BSA, reported on mudflats where Eureka Slough joins Humboldt Bay, approximately 0.7 mile from the bridge (CDFW 2005). Numbers within the bay peak between May and October during flood tides. They are known to occur within the Aquatic Species BSA.

Bats

The Coastal BSA is within the range of the Townsend's big-eared bat (*Corynorhinus townsendii*), which is a State SSC, and the long-eared myotis (*Myotis evotis*) which has no state or federal designation.

A bat assessment of the northbound and southbound bridges was conducted on June 8, 2021. There were signs that the southbound bridge is occasionally used for night roosting of small numbers of bats (species unknown), but there was no evidence that either bridge is used for roosting in large numbers or as a maternity colony.

Obscure Bumble Bee

The obscure bumble bee (*Bombus caliginosus*), while not listed as a special-status species, is on the CDFW list of *California Terrestrial and Vernal Pool Invertebrates of Conservation Priority.* Obscure bumble bee inhabits open grassy coastal prairies and Coast Range meadows. There have been five recent observations within a 5-mile radius of the Coastal BSA in 2022 and 2023, with the closest about 2 miles away (The Xerces Society 2024). Protocol-level botanical surveys were conducted and several potential food plant species for the obscure bumble bee were reported within the Coastal BSA such as blue blossom (*Ceanothus thyrsiflorus* var. *thyrsiflorus*), sweet pea (*Lathyrus latifolius*), Lupine spp (*Lupinus* spp.)., coastal bramble (*Rubus* spp.), clover (*Trifolium spp.),* and evergreen huckleberry (*Vaccinium ovatum*).

The Coastal BSA may provide some suitable foraging habitat for obscure bumble bees given the presence of food plant species. However, the Coastal BSA is unlikely to contain nesting habitat given that most upland habitat and grassy areas within the BSA consist of compacted fill slope adjacent to the highway, landscaped or disturbed/ruderal, and generally lacking rodent holes, brush piles, or dense thatch. The Coastal BSA also does not likely contain overwintering habitat given a lack of accumulated litter and loose soils.

Black Brant

Black brant (*Branta bericla nigricans*) is a State Species of Special Concern (SSC). They breed in the Arctic, Alaska, and Russia, and winter along the eastern Pacific coast from Alaska to Mexico. During the non-breeding season, they congregate in bays and estuaries, and eelgrass is their principal food source. Humboldt Bay eelgrass beds support the majority of brant in California during spring staging prior to northward migration (Moore et al., 2004), occurring from late October to late May and peaking in March and April (Davis and Deuel, 2008). They mostly occur in extensive tidal flats of Arcata Bay and South Bay (99% of observations), with only 1% of observations in the narrow channel between the two sections of the bay (Barnhart et al., 1992; Moore and Black, 2006). They have not been reported in the eelgrass beds of Eureka Slough.

Bryant's Savannah Sparrow

Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus*) is a State SSC that could occur within the project area year-round. Bryant's savannah sparrows range from Humboldt County to Morro Bay. They occupy tidal marshes and coastal grasslands in the coastal fog belt. While generally found within a narrow strip along the coast they have been documented 40 kilometers (kms) inland, including in Willow Creek and the Bald Hills. This species occupies low tidally influenced habitats, adjacent ruderal areas, moist grasslands within and just above the fog belt, and, infrequently, drier grasslands. Bay-shore habitats are composed primarily of broad expanses of higher parts of Pickleweed marsh, 1.5 to 3 meters (m) above mean sea level, above cord grass stands, and where the Pickleweed community merges into grassland (Shuford and Gardalki, 2008). Adjacent to salt marshes, this sparrow also occupies weedy spoil areas, canal banks, and bottomland pastures.

Currently within Humboldt Bay, Bryant's savannah sparrow appears to rarely nest within salt marsh. This may be due to the widespread conversion of salt marsh vegetation from Pickleweed (*Salcornia virginica*) to cord grass (*Spartina* spp.) (Shuford and Gardalki, 2008). Around Humboldt Bay, nesting generally takes place in dairy pastures (especially in the taller grasses and rushes along roads and fences) and water conveyance canals. There is foraging and nesting habitat for this species within the Coastal BSA. Pickleweed mats within the Coastal BSA contain sparse to moderate amounts of dense-flowered cordgrass (*Spartina densiflorus*).

Black-Capped Chickadee

The black-capped chickadee (*Poecile atricapillus*) is a CDFW Watch List species that could occur within the project area year-round. They are widespread throughout California and the U.S. in forests, willow thickets, groves, and parks. They nest in tree cavities and stumps. They forage mostly by hopping among twigs and branches and gleaning food from surface; their diet consists mainly of insects, seeds, and berries. While there is potential foraging habitat present within the Coastal BSA, there is no suitable nesting habitat.

Cooper's Hawk

Cooper's hawk (*Accipiter cooperii*) is a CDFW Watch List species that could occur within the project area. Cooper's hawk is found throughout the United States in forests and open woodlands. Generally, Cooper's hawk nests in tall trees with openings or edge habitat nearby. Diet consists of mostly birds and small mammals.

Cooper's hawk may nest and forage around Humboldt Bay. Within the Coastal BSA there are no large trees to provide nesting habitat. There is potential for Cooper's hawk to forage within the Coastal BSA.

Double-Crested Cormorant

The double-crested cormorant (*Phalacrocorax auritus*) is a CDFW Watch List species. They nest from southern British Columbia, Canada, to Mexico, on islands, sea stacks, cliffs, trees, and manmade structures. They dive to capture fish in nearshore shallow waters, but also eat insects, crustaceans, and amphibians. They spend a substantial amount of time resting perched on rocks, branches, or other exposed spots with wings spread out for drying.

In Humboldt Bay, double-crested cormorants have been reported to nest on Sand Island, Teal Island, and the old Arcata wharf (Capitolo et al., 2019). They occur in Humboldt Bay year-round. While they could occur as individuals or in small numbers on occasion foraging in the estuarine channel or resting on the mudflats within the Coastal BSA, there is no nesting habitat within the Coastal BSA.

Long-billed Curlew

The long-billed curlew (*Numenius americanus*) is a CDFW Watch List species. They occur in intertidal habitats, coastal pastures, agricultural fields, and freshwater wetlands along the Pacific west coast from Washington to Mexico during the nonbreeding season and migrate to the grasslands of the Great Plains and Great Basin during summer to breed. Humboldt Bay is the northernmost wintering area for large numbers of curlews, and they occur in the bay in fall, winter, and spring (Mathis et al., 2006). They tend to forage alone and not in flocks. They feed on bivalves, shrimp, polychaetae worms, crabs, and small fishes in intertidal mud.

Long-billed curlew have been reported in fall through spring in intertidal areas throughout Humboldt Bay. The Coastal BSA is not reported as a common roost location suggesting it does not contain high quality or important foraging habitat for the species (Mathis et al., 2006). Thus, individual curlew could occasionally forage on the mudflats within the Coastal BSA; however, there is no suitable nesting habitat within the Coastal BSA for this species.

Merlin

Merlin (*Falco columbarius*) is a small compact falcon on the CDFW Watch List. Merlin's generally reuse old crow or hawk nests in trees in semi-open habitats. Merlin's generally prey on small birds, catching them in midair. Merlins spend the winter months around Humboldt Bay. They could potentially forage over the Coastal BSA; however, there is no suitable nesting habitat within the Coastal BSA for this species.

Northern Harrier

The northern harrier (*Circus hudsonius*) is a State SSC that could occur within the project area year-round. They are widespread throughout California and occur in open habitats such as marshes, meadows, grasslands and agricultural fields. They nest on the ground in tall vegetation.

The Coastal BSA contains potentially suitable foraging habitat for northern harrier but does not contain suitable nesting habitat for this species. Although northern harrier is commonly observed foraging over marshes and fields around Humboldt Bay in habitats similar to those found within the Coastal BSA, this species has not been observed in the Coastal BSA during numerous field visits by Caltrans biologists since the year 2020.

Olive-Sided Flycatcher

Olive-sided flycatcher (*Contopus cooperi*) is a CDFW SSC species that could occur within the Coastal BSA. This migratory species breeds in coniferous forest of North America and the higher mountains, and winters in South America. Nests are built in tree branches, usually in conifers. Olive-sided flycatcher feeds almost exclusively on flying insects and almost always takes insects mid-air.

Within the Coastal BSA, the few trees present are planted in strips along the highway of the trailer court. These trees are unlikely to provide nesting habitat for the olive-sided flycatcher. This species may forage over the Coastal BSA.

Osprey

Osprey (*Pandion haliaetus*) is a CDFW Watch List species that could occur within the project area year-round. They are widespread throughout California and the U.S. near open water such as rivers, lakes, lagoons, swamps, and marshes that contain fish at shallow depths. They nest in treetops, platforms, and elevated sites that are safe from predators.

The Coastal BSA contains potentially suitable foraging habitat for osprey but does not contain suitable nesting habitat for this species. This species has not been observed in the Coastal BSA during numerous field visits by Caltrans biologists since the year 2020.

Short-Eared Owl

Short-eared owl (*Asio flammeus*) is a CDFW SSC. This species has wide global distribution and in North America generally breeds in Canada and Alaska with some year-round residents in the northern United States. Short-eared owls live in large open areas including grasslands, marshes, seasonal wetlands, and agricultural areas. Their diet consists of mostly small mammals. Nests are placed on the ground amid vegetation, usually on dry sites (knolls, ridges, or hummocks).

Around Humboldt Bay, short-eared owls have been recognized to occur annually in suitable habitat, typically in very small numbers, in fall, winter, and early spring (Hunter et al. 2005). There is only one account of breeding in Humboldt County in 1990 and these episodic nesting events seem to be very rare (Hunter et al., 2005). Habitat within the Coastal BSA would be of low quality based on its vegetative characteristic, inundation, and proximity to the road and urban spaces. The Coastal BSA contains potentially suitable foraging habitat for short-eared owl, but does not contain suitable nesting habitat for this species.

White-tailed Kite

The State Fully Protected white-tailed kite (*Elanus leucurus*) could occur within the project area year-round. They are common throughout California and occur in a variety of open habitats including grasslands, wetlands, and agricultural fields, with trees for nesting and roosting. They are often seen hovering over fields and then dropping feet-first to capture prey.

The Coastal BSA contains potentially suitable foraging habitat for white-tailed kite but does not contain suitable nesting habitat for this species. This species has not been observed during numerous field visits to the Coastal BSA by Caltrans biologists since the year 2020; although white-tailed kite is commonly observed foraging over marshes and fields around Humboldt Bay, in habitats similar to those found within the Coastal BSA.

Coastal Cutthroat Trout

Coastal cutthroat trout (*Oncorhynchus clarkii clarkii*) is a State SSC. They occur within coastal rivers from southeastern Alaska to the Eel River in northern California. Cutthroat trout generally first spawn at age 2 to 4 years, and they are iteroparous, meaning they do not die after spawning and can return to spawn in successive years. They typically migrate up spawning streams following the first substantial rainfall beginning in fall, spawn from December through June, with peak spawning in December in larger streams and January to February in smaller streams. Eggs begin to hatch within 6 to 7 weeks of spawning; fry emerge between March and June, with peak emergence in mid-April. Juveniles remain in the upper watershed for the first year, then may disperse more widely throughout the watershed. Individuals can move in and out of estuaries, fresh water, and river plumes in the ocean. Preferred habitats include small low-gradient coastal streams, estuaries, lagoons, headwater streams, and require cool, clean water with ample cover and deep pools in summer.

Freshwater Creek contains spawning and rearing habitat for cutthroat trout. The sea-run form may pass through Eureka Slough and Humboldt Bay during spawning migrations in winter/fall and smolt ocean migrations in spring. However, they are likely uncommon in the Aquatic Species BSA, having rarely been collected in Humboldt Bay and Eureka Slough during fish surveys conducted using various types of active and passive sampling gear.

Pacific Lamprey

Pacific lamprey *(Entosphenus tridentatus*) is a state SSC. They occur along the Pacific coast from Japan, through Alaska, and south to Baja, California. They are anadromous, living in marine waters for 1 to 3 years, then migrating to fresh water in spring to spawn, after which they die. They use estuaries for foraging, rearing, and holding prior to migration. They have similar habitat requirements and co-occur with salmonids.

The species has been reported from multiple spawning surveys and outmigrant traps in Freshwater Creek, which flows into Eureka Slough, and are thought to be widely distributed throughout the Freshwater Creek watershed. Pacific lamprey adults and juveniles may use the Eureka Slough for holding before migrating upstream to spawn and foraging.

2.4.4.3 Environmental Consequences

Build Alternatives

The estimated number of in-water pile-driving days and the number of in-water piles for both Alternatives 2A and 2B are similar enough to be functionally equivalent. Alternative 2A is estimated to require 132 pile-driving days for an anticipated 398 in-water piles, while Alternative 2B is estimated to require 128 pile-driving days for an anticipated 384 in-water piles (Appendix H). As such, the impacts from noise and vibration associated with pile driving is similar for both alternatives. Therefore, noise and vibration impacts from Alternatives 2A and 2B are not evaluated separately within this section or Section 2.4.5. Additionally, within this section and Section 2.4.5 *Effects Unique to Alternatives 2A and 2B* impact differences are only described **if** there are unique features and effects to a specific resource from the different alternatives.

Migratory Birds

Common Features of Alternatives 2A and 2B Affecting Migratory Birds

Vegetation Removal

The project would require the clearing of ruderal vegetation if ground-nesting birds are present which could result in loss of nests and eggs of migratory birds. However, Standard Measure **BR-2A**, which limits vegetation removal to the non-nesting season (September 15 to February 1), would ensure no active nests would be impacted (Section 1.6). Therefore, no direct impacts to migratory birds are anticipated from vegetation removal.

Construction Impacts

Some species of migratory birds nest on bridges. A habitat assessment of the existing bridges found that the only birds nesting on the bridges are non-native pigeons (*Columba livida*) and as a non-native species are not protected under the MBTA. As per Standard Measure **BR-2F,** prior to the start of construction the bridge would be resurveyed for nesting migratory birds; if nesting migratory birds are found then a Bird Exclusion Plan would be prepared. As a result, construction noise and the removal of the existing bridges are not anticipated to impact migratory birds.

Conclusion

Under both Alternatives, with the Standard Measure detailed above incorporated, no impacts to migratory birds are anticipated.

Marine Mammals

Common Features of Alternatives 2A and 2B Affecting Marine Mammals

Construction Impacts

Under all Build Alternatives, California sea lions, harbor porpoises and harbor seals could occur within the Aquatic Species BSA and would be exposed to noise, vibration, and visual disturbance associated with bridge construction and demolition.

Airborne Noise and Visual Disturbance

Vibratory and impact pile driving and drilling could occur during construction of the temporary trestles, temporary and permanent bridges, and during demolishment of the old bridges, resulting in airborne noise that could affect marine mammals. Visual disturbances may also occur from artificial light at night. Equipment operation in Eureka Slough would be limited to the June 15 to October 15 in-water work window (Standard Measure BR-2E in Section 1.6), but other activities adjacent to or above the slough

would occur year-round. Airborne noise and artificial nighttime lighting could harass marine mammals, disrupt or delay normal activities, or deter individuals from passing through the project area.

There are established airborne noise thresholds for behavioral disruption (Level B harassment); for harbor seals it is 90 dB root mean square (RMS) and 100 dB_{RMS} non-harbor seal pinnipeds. There is currently no behavioral response thresholds established for airborne noise impacts for other (non-pinniped) marine mammals. There are no injury thresholds (Level A harassment) for airborne noise established for any type of marine mammal.

Noise and vibrations from vibratory pile driving, impact pile driving, drilling, and demolition could exceed airborne acoustic thresholds for behavioral disruption of harbor seals and California sea lion at various distances shown in Table 44 (Caltrans 2024j). If marine mammals are present within these distances while these construction activities are taking place, they may be subjected to harassment. These noises would be intermittent and temporary and would not be expected to cause long-term or permanent behavioral changes. The area where acoustic thresholds would be exceeded would be confined to Eureka Slough and not extend out into Arcata Bay, and Eureka Slough does not contain any known haul-outs or important areas for harbor seals or California sea lions. Given Eureka Slough has no haul-outs, the airborne noise from construction would be intermittent and temporary, and that marine mammals could move to unaffected suitable habitat within the bay, impacts to marine mammals from airborne noise would be minimal.

Table 44. Estimated Distances to Marine Mammal Behavioral Thresholds for Airborne Noise from Equipment

Scenario	Maximum Distance to Threshold		Average Distance to Threshold	
	Harbor Seal	California Sea Lion	Harbor Seal	California Sea Lion
	90 dB	100 dB	90 dB	100 dB
Vibratory Pile Driving	439 ft (134 m)	138 ft (42 m)	246 ft (75 m)	79 ft (24 m)
Impact Pile Driving	781 ft (238 m)	246 ft (75 m)	551 ft (168 m)	174 ft (53 m)
Drilling[1]	246 ft (75 m)	79 ft (24 m)	197 ft (60 m)	62 ft (19 m)
Demolition Hammer	275 ft (84 m)	89 ft (27 m)	98 ft (30 m)	<49 ft (<15 m)

dB = decibel; ft = feet; m = meters
[1]Drilling would only use one piece of equipment

Visual impacts from artificial lighting would be minimal as Standard Measure BR-2D (Section 1.6) requires artificial lighting to be temporary and directed specifically on the portion of the work area actively under construction.

Hydroacoustic Noise

Vibratory and impact pile driving during construction of the temporary trestles, temporary and permanent bridges, and during demolishment of the old bridges would result in hydroacoustic noise that could affect marine mammals.

There are established hydroacoustic noise thresholds for harbor porpoise, harbor seals and California sea lions based on their known hearing frequencies and range (Table 45). Hydroacoustic noise that exceeds these thresholds can cause a Permanent Threshold Shift (PTS), which is permanent partial or full hearing loss and considered Level A harassment, and behavioral disruption or Temporary Threshold Shift (TTS) which is considered Level B harassment. There are two types of thresholds for determining onset of PTS for marine mammals exposed to impulsive noise sources: peak sound pressure level limits and cumulative sound exposure level (cSEL). The cSEL threshold is based on the total daily exposure of the animal to noise from sources that are discontinuous (in this case, noise that occurs up to 12 hours a day, with 12 hours between exposures). This presumes that the animal can recover from any effects during this 12-hour period.

For non-impulsive noise sources, such as vibratory drilling, cumulative SEL is the only metric used to evaluate PTS onset. The accepted threshold for TTS from effects of pile driving is 160 dB_{RMS} for impulsive noise and 120 dB_{RMS} for non-impulsive noise sources. The distance that the single strike SEL drops below these values is referred to as the distance to the effective quiet.

Table 45. Hydroacoustic Noise Thresholds for Level A and B Harassment of Marine Mammals

Hearing Group and Generalized Hearing Range	Species in Coastal BSA	Level A Harassment - Injury		Level B Harassment - Behavioral Disruption	
		Impulsive	Non-Impulsive	Impulsive	Non-Impulsive
High-frequency cetaceans: 275 Hz to 160 kHz	Harbor porpoise	Peak: 202 dB cSEL: 155 dB	173 dB cSEL	160 dB_{RMS}	120 dB_{RMS}
Phocid pinnipeds (underwater): 50 Hz to 86 kHz	Pacific harbor seal	Peak: 218 dB cSEL: 185 dB	201 dB cSEL	160 dB_{RMS}	120 dB_{RMS}
Otariid pinnipeds (underwater): 60 Hz to 39 kHz	California sea lion	Peak: 232 dB cSEL: 203 dB	219 dB cSEL	160 dB_{RMS}	120 dB_{RMS}

dB = decibel; RMS = Root Mean Square; cSEL = Cumulative sound exposure level

Caltrans' hydroacoustic report for the project uses the model developed by NMFS to calculate sound levels from non-impulsive and impulsive noise sources and the distance from the source that sound attenuates to the peak or cumulative criteria. These distances are used to define the area in which the thresholds may be exceeded and potentially result in Level A or Level B harassment of marine mammals that may be present. Table 46 below summarizes the distances for non-impulsive noise sources.

Table 46. Estimated Distance to Level A and Level B Thresholds for Non-Impulsive Noise Sources for Marine Mammals

Scenario	Distance Level A Harassment - Injury			Distance Level B Harassment - Behavioral Disruption
	Harbor Porpoise	Harbor Seal	California Sea Lion	All Species
	173 dB cSEL	201 dB cSEL	219 dB cSEL	120 dB_{RMS}
Sheet Pile	1,732 ft (187 m)	253 ft (77 m)	<33 ft (<10 m)	70,682 ft (21,544 m)
Trestle Piles	285 ft (87 m)	118 ft (36 m)	<33 ft (<10 m)	32,808 ft (10,000 m)
24-inch CISS on Land	62 ft (19 m)	<33 ft (<10 m)	<33 ft (<10 m)	7,067 ft (2,154 m)
60-inch CISS in Water	1,539 ft (469 m)	633 ft (193 m)	46 ft (14 m)	177,549 ft (54,117 m)

dB = decibel; RMS = Root Mean Square; cSEL = Cumulative sound exposure level; ft = feet; m = meters

Note: Distances would be limited to 1.2 miles (2,000 m) east and 4.8 miles (7,800 m) west into Arcata Bay due to obstructions.

Table 47 below summarizes the distances from the source that sound attenuates to the peak or cumulative criteria for impulsive noise sources, with and without attenuation measures. Attenuation measures described in BR-2B (Section 1.6) may be used; however, the effectiveness of these measures in the shallow waters of Eureka Slough is uncertain. Therefore, analysis of impacts to marine mammals within this document is on the unattenuated distances. If during the preparation of Hydroacoustic Monitoring Plan (BR-2B) attenuation measures are found to be effective, they will be incorporated into that Plan. The areas in which the Level A harassment thresholds may be exceeded for unattenuated impulsive noise sources for harbor porpoise and harbor seals extend beyond the narrow, shallow channel of Eureka Slough and into the adjacent Arcata Bay where these species, especially harbor seals, are more likely to be present. For California sea lion, they do not extend beyond the Eureka Slough channel where there are no known haul out sites, and therefore this species is less likely to be exposed to injury.

Table 47. Estimated Distance to Thresholds for Impulsive Noise Source for Marine Mammals, with and without Attenuation

Scenario	Level A Harassment - Injury						Level B Harassment -Behavioral Disruption
	Harbor Porpoise		Harbor Seal		California Sea Lion		All Species
	202 dB Peak	155 dB cSEL	218 dB Peak	185 dB cSEL	232 dB Peak	203 dB cSEL	160 dB_{RMS}
Trestle Piles in Water- Estimated 600 strikes per day							
Unattenuated	111 ft (34 m)	1,106 ft (337 m)	<33 ft (<10 m)	495 ft (151 m)	<33 ft (<10 m)	36 ft (11 m)	1,522 ft (464 m)
Attenuated	52 ft (16 m)	511 ft (156 m)	<33 ft (<10 m)	230 ft (70 m)	<33 ft (<10 m)	<33 ft (<10 m)	705 ft (215 m)
24-inch Piles on Land- Estimated 4,000 strikes per day							
On Land	<33 ft (<10 m)	1,598 ft (487 m)	<33 ft (<10 m)	718 ft (219 m)	<33 ft (<10 m)	52 ft (16 m)	984 ft (300 m)
60-inch CISS Piles in Water- Estimated 6,000 strikes per day							
Unattenuated	328 ft (100 m)	20,423 ft (6,225 m)	<33 ft (<10 m)	9,176 ft (2,797 m)	<33 ft (<10 m)	669 ft (204 m)	8,241 ft (2,512 m)
Attenuated	151 ft (46 m)	9,478 ft (2,889 m)	<33 ft (<10 m)	4,258 ft (1,298 m)	<33 ft (<10 m)	312 ft (95 m)	3,825 ft (1,166 m)
Demolition in Water – Estimated 11,000 strikes per day							
Unattenuated	59 ft (18 m)	4,849 ft (1,478 m)	<33 ft (<10 m)	2,178 ft (664 m)	<33 ft (<10 m)	157 ft (48 m)	1,775 ft (541 m)
Attenuated	<33 ft (<10 m)	2,251 ft (686 m)	<33 ft (<10 m)	1,010 ft (308 m)	<33 ft (<10 m)	72 ft (22 m)	823 ft (251 m)

dB = decibel; RMS = Root Mean Square; cSEL = Cumulative sound exposure level; ft = feet; m = meters

Distances would be limited to 1.2 miles (2,000 m) east and 4.8 miles (7,800 m) west into Arcata Bay due to obstructions.

Since California sea lion, harbor porpoise, and harbor seal could be present within the Aquatic Species BSA during bridge construction and demolition, these species could be exposed to hydroacoustic sound levels reaching the behavioral TTS thresholds (Level B harassment) and the PTS threshold (Level A harassment). While marine mammals present in the Level B harassment behavioral disruption area would be exposed to intermittent and temporary harassment, they could move to unaffected suitable habitat within the bay. As a result, Level B impacts would be minimal.

A Hydroacoustic Monitoring Plan (Section 1.6– BR-2B) would be developed to reduce the effects of hydroacoustic noise. However, marine mammals present within the level A harassment Injury area, which is limited to the Eureka Slough channel for California sea lion, but includes a portion of the adjacent Arcata Bay for harbor porpoise and harbor seals, during these construction activities could be subjected to substantial impact, including injury.

Conclusion

For both Alternatives 2A and 2B, impacts to marine mammals from Airborne Noise and Visual Disturbance would be minimal. For both Alternatives, impacts to marine mammals from hydroacoustic noise within the Level B harassment-behavioral disruption would be minimal. However, for both Alternatives, impacts to marine mammals from hydroacoustic noise within the Level A harassment -injury has the potential to be substantial.

Bats

Common Features Of Alternatives 2A And 2B Affecting Bats

Alternatives 2A and 2B would remove the existing northbound and southbound bridges. Surveys of the bridges found that they may occasionally be used by roosting bats; however, they are not used as a roosting or maternity colony. Standard Measure **BR-2G** (Section 1.6) calls for preconstruction surveys for bats prior to bridge removal. If bats are found to be present, a Bat Exclusion Plan would be prepared by a qualified biologist prior to bridge removal. With this Standard Measure incorporated, the removal of the existing bridges and construction of the new bridge are not expected to impact Townsend's big-eared bat, or any other bat species.

Conclusion

With Standard Measures incorporated, both Alternatives would have no impact on Townsend's big-eared bat, or any other bat species.

Obscure Bumble Bee

Common Features Of Alternatives 2A And 2B Affecting Obscure Bumble Bee

Habitat Removal

For both Alternatives 2A and 2B, vegetation removal could impact foraging habitat of the obscure bumble bee given the presence of plant species that could serve as food plants within the Coastal BSA. However, the upland areas where potential food plants would be removed due to project construction is very small (e.g., 0.25 acre or less) relative to the availability of food plants in the general vicinity of the project. To the east of the project area, there are abundant fields and grazing lands that support species

that could serve as food plants and undoubtedly contain suitable nesting and overwintering habitat. There is no high-quality potential nesting or overwintering habitat within the Coastal BSA for the obscure bumble bee. Given the lack of high quality habitat in the Coastal BSA, the small size of the impact area, and the abundance of suitable habitat within the project vicinity, impacts from the proposed habitat removal would be minimal.

Conclusion

Based on the above discussion for both Alternatives 2A and 2B, there would be minimal impacts on obscure bumble bee.

Black Brant

Common Features Of Alternatives 2A and 2B Affecting Black Brant

Construction Impacts

The construction activities for both Alternatives would take place in and around existing eelgrass beds which are foraging habitat for black brant. Black brant in Humboldt Bay is known to mostly occur in Arcata Bay and South Bay with less than 1% of observations in the narrow channel between the two sections of the bay (Barnhart et al., 1992; Moore and Black, 2006). They have not been reported in the eelgrass beds of Eureka Slough. As black brant are not known to use the project area, impacts from construction would have no impact this species.

Effects Unique To Alternative 2A

Habitat Removal

Alternative 2A would temporarily impact 0.211 acres of eelgrass bed and permanently remove 0.0002 acres. These areas are potential foraging areas for black brant. It is estimated that temporarily impacted areas would regrow in 2 to 3 years following construction. Based on the extremely small areas being permanently impacted and as black brant does not appear to be using this area, there would be no impact to black brant from habitat removal under Alternative 2A.

Effects Unique To Alternative 2B

Habitat Removal

Alternative 2B would temporarily impact 0.153 acres of eelgrass bed and permanently remove 0.112 acres. It is estimated that temporarily impacted areas would re-grown in 2 to 3 years following construction. Based on the small areas being permanently impacted and that black brant does not appear to be using this area, there would be no impact to black brant from habitat removal under Alternative 2B.

Conclusions

Alternative 2B would impact a greater amount black brant habitat then Alternative 2A. However, both Alternatives would impact a small amount of habitat. Based on this information, the temporary nature of construction, and as black brant is not known to use the eelgrass beds in Eureka Slough, there would be no effect to black brant from either alternative.

Bryant's Savannah Sparrow

Common Features Of Alternatives 2A And 2B Affecting Bryant's Savannah Sparrow

Construction Impacts

Under both build Alternatives, construction activities would occur within foraging and nesting habitat of Bryant's savannah sparrow. This species may nest and forage within the estuarine marsh in the Coastal BSA. The vegetated upland strips along the highway in the Coastal BSA are highly disturbed by the proximity of highway traffic, as well as foot traffic, and are unlikely to provide nesting habitat for this species. All vegetation removal would take place outside of the nesting bird season, or nesting bird surveys would take place prior to vegetation removal, and buffers would be established around active nests (Section 1.6–BR-2A). Therefore, no impacts to active nests from vegetation removal are expected. If foraging individuals were present during construction, they could simply move away from the disturbance into the ample available habitat (salt marsh and agricultural pastureland) around Humboldt Bay. Therefore, it is not anticipated that nesting or foraging Bryant's savannah sparrow would be impacted by either Alternative.

Effects Unique To Alternative 2A

Habitat Removal

Bryant's savannah sparrow historically nested in the estuarine (salt) marsh and pickleweed mats of Humboldt Bay. Alternative 2A would temporarily impact 0.029 acre of estuarine marsh (including 0.21 acre of pickleweed mat) and permanently remove 0.039 acre of estuarine marsh (including 0.03 acre of pickleweed mat). Standard measure BR-4B would prepare a Revegetation Plan for the temporarily impacted areas. It is estimated that temporarily impacted areas would regrow in 2 to 3 years following construction. Based on the small areas being permanently impacted and the ample available habitat (salt marsh and agricultural pastureland) around Humboldt Bay, there would be minimal impact to Bryant's savannah from habitat removal under Alternative 2A.

Effects Unique to Alternative 2B

Habitat Removal

Bryant's savannah sparrow historically nested in the estuarine (salt) marsh and pickleweed mats of Humboldt Bay. Alternative 2B would temporarily impact 0.297 acre of estuarine marsh (including 0.145 acres of pickleweed mat) and permanently remove 0.224 acre of estuarine marsh (including 0.200 acres of pickleweed mat). Standard measure BR-4B (Section 1.6) would require preparation of a Revegetation Plan for the temporarily impacted areas. It is estimated that temporarily impacted areas would regrow in 2 to 3 years following construction. Based on the small areas being permanently impacted and the ample available habitat (salt marsh and agricultural pastureland) around Humboldt Bay, there would be minimal impact to Bryant's savannah from habitat removal under Alternative 2B.

Conclusions

Alternative 2A would permanently impact 0.039 acres of Bryant's savannah sparrow nesting and foraging habitat while Alternative 2B would permanently impact 0.224 acres of Bryant's savannah sparrow nesting and foraging habitat. Overall, both Alternatives would impact a relatively small amount of habitat when compared to the approximately 900 acres of salt marsh within Humboldt Bay (H. T. Harvey and Associates, 2012). Vegetation removal would take place outside of the nesting season. Additionally, for both Alternatives, during construction foraging individuals could easily move away from construction-produced noise and disturbance. Based on this, the temporary nature of construction, and the ample available habitat (salt marsh and agricultural pastureland) around Humboldt Bay, there would be a minimal impact to Bryant's savannah sparrow from either alternative.

Other Bird Species

Common Features of Alternatives 2A and 2B Other Bird Species

Construction Impacts

Both build Alternatives would have construction activities within foraging habitat of olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and osprey. There is no suitable nesting habitat for these species within the Coastal BSA: therefore, no nests would be subject to construction noise and disturbance.

If foraging individuals were present during construction, they could simply move away from the disturbance into the ample available habitat (salt marsh and agricultural pastureland) around Humboldt Bay. Therefore, effects from construction on olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and osprey are not anticipated.

Effects Unique to Alternative 2A

Habitat Removal

Alternative 2A would temporarily impact 0.029 acre of estuarine marsh and permanently remove 0.039 acre. These areas are potential foraging areas for olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, and merlin. Standard Measure BR-4B (Section 1.6) would require preparation of a Revegetation Plan for the temporarily impacted areas. It is estimated that temporarily impacted areas would regrow in 2 to 3 years following construction. Based on the small areas being permanently impacted and the ample available habitat (salt marsh and agricultural pastureland) around Humboldt Bay, there would be minimal impact to on olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, and merlin from habitat removal under Alternative 2A.

Effects Unique to Alternative 2B

Habitat Removal

Alternative 2B would temporarily impact 0.297 acre of estuarine marsh and permanently remove 0.224 acre. These areas are potential foraging areas for olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, and merlin. Standard Measure BR-4B (Section 1.6) would require preparation of a Revegetation Plan for the temporarily impacted areas. It is estimated that temporarily impacted areas would regrow in 2 to 3 years following construction. Based on the small areas being permanently impacted and the ample available habitat (salt marsh and agricultural pastureland) around Humboldt Bay, there would be minimal impact to olive-sided flycatcher, short-eared owl, northern harrier, and white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, and merlin from habitat removal under Alternative 2B.

Conclusions

Alternative 2A would permanently impact 0.039 acres while Alternative 2B would permanently impact 0.224 acres of olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and osprey foraging habitat. Both Alternatives would impact a relatively small amount of habitat when compared to the approximately 900 acres of salt marsh within Humboldt Bay (H.T. Harvey and Associates, 2012). Additionally, for both Alternatives, during construction these species could easily move away from construction-produced noise and disturbance. Based on this, the temporary nature of construction, and the available habitat (salt marsh and agricultural pastureland) around Humboldt Bay, there would be a minimal effect to olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and osprey from either alternative.

The project would result in "**No Take**" of white-tailed kite.

Coastal Cutthroat Trout

Under Alternatives 2A and 2B, project-related activities that could affect all fish species are identical to those for Coastal cutthroat trout, as discussed below. The species analysis for Pacific lamprey, California Coastal (CC) Chinook salmon, Southern Oregon/Northern California Coast (SONCC) coho salmon, longfin smelt, North American green sturgeon–sDPS, Pacific eulachon–Southern DPS, Northern California (NC) steelhead, and tidewater goby (Sections 2.4.4.3 and 2.4.5.3) refer back to the impact and standard measure analysis in this section.

Common Features Of Alternatives 2A And 2B Affecting Coastal Cutthroat Trout

Eureka Slough is a migratory corridor for adult Coastal cutthroat trout (*Oncorhynchus clarkia clarkia*) migrating between the ocean and upstream spawning areas in Freshwater Creek basin and is used by smolting juveniles (age 1 year and older) for passage during their seaward outmigration.

Under all Build Alternatives, project impacts on Coastal cutthroat trout from construction activities include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects from activities such as site clearing, earthwork, installation, and removal of temporary piles for falsework, vibratory and impact pile driving for installation of temporary and permanent piles, construction and removal of a temporary bridge, removal of the existing bridges, and construction of the new bridges, and habitat alteration.

Construction–Water Quality

Suspended Sediment and Turbidity

For both Alternatives, site clearing, earthwork, creation of new impervious surface, installation and removal of temporary piles for falsework, vibratory and impact pile driving for installation of temporary and permanent piles, construction and removal of a temporary bridge, removal of the existing bridges, and construction of the new bridges could disturb soil and sediments and cause temporary increases in turbidity and suspended sediments in and downstream of the affected waters. Potential effects on Coastal cutthroat trout from elevated turbidity and suspended sediment include impaired visibility for feeding, reduced feeding rates, and damaged gill tissue causing asphyxiation. Standard Measures (Section 1.6) such as BR-1 which educates workers on environmental permit conditions and requirements and BR-2E which requires in-water construction to only occur during the June 15 to October 15 work window, would avoid the time when fish are most likely present and limit impacts to water quality. Additionally Standard Measures WQ-1 and WQ-2 would protect water quality by implementing BMPs including erosion and sediment control, pollution prevention, and stormwater treatment measures. As such, exposure to Coastal cutthroat trout from this stressor would likely be negligible and the effects would be minor.

Contaminants

The operation of heavy equipment, drilling rigs, cranes, and other construction equipment in or near the channel could result in accidental spills and leakage of fuel, lubricants, hydraulic fluids, and coolants into the channel. Other sources of contaminants include wet concrete, asphalt, and discharges from vehicle and concrete washout facilities. Standard Measures WQ-1 and WQ-2 (Section 1.6) would implement BMPs that would substantially reduce or eliminate the potential for accidental releases of contaminants into Eureka Slough.

Contaminants generated by traffic due to wear of tires, brakes, and pavement, as well as exhaust emissions and fluid leaks deposited on impervious roadway surfaces, may be carried by stormwater runoff into the channel, resulting in chronic to acute effects on fish. There would be a net increase in impervious surface area of the new bridges and bridge approaches relative to existing surfaces. This increase would result in reduced infiltration of water adjacent to the highway and may cause a slight increase in runoff of contaminants during winter precipitation events. To prevent or reduce stormwater runoff, bioswales, or Design Pollution Prevention Areas (DPPAs), would be installed. After construction, all stormwater conveyance systems and permanent erosion control and stormwater treatment measures would be maintained in compliance with Caltrans' Storm Water Management Program.

With implementation of these Standard Measures and BMPs (Section 1.6), and project-specific construction and design measures to control stormwater discharges and minimize contaminant inputs, degradation of water quality from accidental releases are unlikely. No measurable long-term increase in roadway runoff is expected, as the new bridge would not result in added vehicle trips and increased impervious surfaces would be offset by the installation of bioswales. As such, potential exposure of Coastal cutthroat trout to these stressors would be minor.

Construction–Noise and Visual Disturbance

General Construction Noise and Visual Disturbance

The use of artificial light at night would be restricted (Standard Measure BR-2D) to the minimum needed and directed onto work areas using light shields to avoid illuminating the channels. Noise and vibration could occur from equipment operating in or adjacent to Eureka Slough. As per Standard Measure BR-2E, equipment operation in Eureka Slough would be limited to the June 15 to October 15 in-water work window, but other activities adjacent to or above the slough could occur year-round, and the temporary structures would remain in place until the project is complete. Noise and visual disturbances to Coastal cutthroat trout could result in avoidance behaviors and temporarily disrupt feeding, delay migration, or flush fish from suitable habitat, potentially making them more vulnerable to predation. Eureka Slough is generally only passed through during spawning migrations in winter/fall and smolt ocean migrations in spring. As a result, they are likely uncommon in the Aquatic Species BSA, having rarely been collected in Humboldt Bay and Eureka Slough during fish surveys. Given that the Aquatic Species BSA is not considered to be important rearing habitat for juvenile Coastal cutthroat trout, and the use of the area by adult and juvenile fish is likely limited to movements between the ocean and upstream to Freshwater Creek, the effects of these stressors would likely be negligible.

Impact Noise

The use of impact hammers for pile installation of temporary trestles, falsework, and bridge piers, or demolition produces impulsive sounds that can cause injury or mortality of fish (McCauley et al., 2003; Hastings and Popper, 2005; Popper and Hastings, 2009). It can also result in avoidance behaviors and temporarily disrupt feeding, delay migration, or flush fish from suitable habitat, potentially making them more vulnerable to predation (Voellmy et al., 2014; Simpson et al., 2016).

Caltrans' Hydroacoustic Report for the project uses the model developed by NMFS to calculate sound levels from impulsive noise sources and the distance from these sources that attenuates to the peak or cumulative criteria (Caltrans 2024i). These distances are used to define the area in which the thresholds could be exceeded and result in injury, mortality, or behavioral changes of fish that are present.

For fish with swim bladders, which applies to salmonid species, a threshold of 206 decibels (dB) is considered the maximum level a fish can receive from a single strike without injury (Fisheries Hydroacoustic Working Group 2008). The threshold of 187 dB cumulative SEL for fish size greater than 2 grams, and 183 dB cumulative SEL for fish size less than 2 grams, is considered the total amount of acoustic energy a fish can receive from multiple strikes without injury. The cumulative SEL threshold is based on the total daily exposure of a fish to noise from sources that are discontinuous (in this case, noise that occurs up to 12 hours a day, with 12 hours between exposures). This presumes that fish can recover from any effects during this 12-hour period. The accepted threshold for behavioral effects of pile driving is 150 dB root mean square (RMS). The distance that the single strike SEL drops below 150 dB is referred to as the distance to the effective quiet.

Table 48 below summarizes the types of impulsive noise sources associated with the project and distances from these activities that could result in injury or mortality of fish in Eureka Slough, with and without attenuation measures (i.e., noise reducing measures). Attenuation measures (detailed in Section 1.6) may be used; however, the effectiveness of these measures in the shallow waters of Eureka Slough is uncertain. Therefore, analysis of impacts to fish within this document is on the unattenuated distances. If during the preparation of the Hydroacoustic Monitoring Plan (BR-2B) attenuation measures are found to be effective, they will be incorporated into that Plan. It is worth noting that for unattenuated impact noise, the area in which the 206 dB peak injury threshold may be exceeded is confined to the narrow, shallow channel of Eureka Slough and does not extend into the adjacent Arcata Bay.

Table 48. Estimated Distance to Threshold for Impulsive Noise Source for Fish with Swim Bladders, with and without Attenuation, Using 2008 Criteria

Scenario	Distance to 206 dB Peak Injury Threshold	Distance to 187 dB cSEL Injury Threshold (fish >2 grams)	Distance to 183 dB cSEL Injury Threshold (fish <2 grams)	Distance to 150 dB_{RMS} Behavioral Threshold
Trestle Piles in Water – Estimated 600 strikes per day				
Unattenuated	59 ft (18 m)	502 ft (153 m)	928 ft (283 m)	7,067 ft (2,154 m)
Attenuated	33 ft (<10 m)	233 ft (71 m)	430 ft (131 m)	3,281 ft (1,000 m)
24-inch Piles on Land – Estimated 4,000 strikes per day				
Unattenuated*	33 ft (<10 m)	728 ft (222 m)	187 ft (257 m)	4,570 ft (1,393 m)

Scenario	Distance to 206 dB Peak Injury Threshold	Distance to 187 dB cSEL Injury Threshold (fish >2 grams)	Distance to 183 dB cSEL Injury Threshold (fish <2 grams)	Distance to 150 dB_{RMS} Behavioral Threshold
60-inch CISS Piles in Water – Estimated 6,000 strikes per day				
Unattenuated	177 ft (54 m)	8,241 ft (2,512 m)	8,241 ft (2,512 m)	38,312 ft (11,659 m)
Attenuated	82 ft (25 m)	3,825 ft (1,166 m)	3,825 ft (1,166 m)	17,756 ft (5,412 m)
Demolition in Water – Estimated 11,000 strikes per day				
Unattenuated	33 ft (10 m)	1,305 ft (398 m)	1,305 ft (398 m)	8,241 ft (2,512 m)
Attenuated	<33 ft (<10 m)	607 ft (185 m)	607 ft (185 m)	3,825 ft (1,166 m)

dB = decibels; cSEL = cumulative sound exposure level; RMS = root mean square; ft = feet; m = meters

*No attenuation for piles driven on land

Distances would be limited to 6,562 feet east and 22,966 feet west into Arcata Bay due to obstructions.

Standard Measure BR-2E (Section 1.6) would minimize the potential for injury and mortality, as pile driving and demolition would only occur during the June 15 to October 15 work window, which would avoid the time when Coastal cutthroat trout are most likely present. Negative effects on Coastal cutthroat trout from impact noise would be further minimized through implementation of the Standard Measures BR-2C and 2B which call for a qualified biologist to monitor in-stream construction activities and a Hydroacoustic Monitoring Plan to describe the monitoring methodology and frequency of monitoring. If they are found to be effective within the shallow slough waters, this Plan may also include the use of noise attenuation measures such as bubble curtains, dewatered cofferdams, and dewatered isolation casings. Additionally, Standard Measure BR-2 B requires that pile diving be halted prior to reaching the cumulative SEL threshold; therefore, the maximum area where Coastal cutthroat trout would be susceptible to injury during pile driving is only the 177 feet (54 m) surrounding the pile where the Peak Injury threshold may be exceeded (Table 48). This area in which the injury and mortality thresholds may be exceeded are confined to the narrow, shallow channel of Eureka Slough and does not extend into the adjacent Arcata Bay. However, given that juvenile or adult Coastal cutthroat trout may on occasion occur within the area of Peak Injury during pile driving between June 15 and October 15, they could be at risk for injury or mortality from these activities.

Bridge Demolition–Dewatering

Under both Alternatives, dewatering would be required for cofferdam installation around the 20 existing piers for bridge demolition to occur. Fish capture and relocation could be required as part of the cofferdam installation. Fish relocation methods would be outlined as part of the Aquatic Species Relocation Plan (Section1.6–Standard Measure BR-2H). While fish relocation avoids potential harm, fish relocation activities themselves can harm fish. The amount of unintentional injury or mortality attributable to fish capture and handling varies widely depending on the method used, stream conditions, and the expertise and experience of the field crew. Fish collecting gear, whether passive or active, poses some risk to individuals, including stress, disease transmission, injury, or death. In addition, relocated fish may be subject to increased predation risk or impaired growth because of competition with other fish and displacement to less favorable habitat (Hayes et al., 1996; Keeley 2003; Ward et al., 2007).

Data on fish relocation efforts from clear water diversion activities since 2004 shows most average mortality rates are below three percent for salmonids (Collins 2004, Hurlburt 2013). Given the measures that would be implemented to avoid and minimize impacts to fish during relocation efforts, Caltrans expects no more than three percent of all relocated fish would be subject to potential injury or mortality.

Habitat Alteration

For both Alternatives 2A and 2B, habitat alteration from the project that could affect Coastal cutthroat trout habitat include temporary losses of in-stream channel habitat, permanent shading of estuarine habitat from the larger bridges, and temporary shading of estuarine habitat from temporary trestles and temporary bridge. The small temporary losses of in-stream channel habitat would occur from the placement of temporary piles for the temporary bridge, construction trestle, and falsework piles. These temporary losses of habitat are miniscule relative to the available existing habitat throughout the 17,000-acre bay (i.e., less than 0.001% of the total area) and are likely to have minimal effects on the overall quantity or quality of habitat available.

Installation of the temporary trestles would result in a temporary increase in shading over the slough during construction. However, it is unlikely that the proposed changes in light levels associated with the temporary structures would have any measurable effect on water temperature, primary production, or habitat for fish because of the temporary nature and small scale of these effects. Following completion of the project, replacement of the existing bridge with the proposed new bridge would create slightly more shade due to the increased width of the new bridge. Given that the Aquatic Species BSA is not considered important rearing habitat for juvenile Coastal cutthroat trout, and their use of the area by adult and juvenile fish is likely limited to movements

between the ocean and upstream in Freshwater Slough and Freshwater Creek, the effect of this stressor would likely be negligible.

Conclusion

For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated (Section 1.6), would be minimal. However, even with Standard Measures incorporated, for both Alternatives 2A and 2B, effects from impact noise and fish relocation during dewatering could include lead to injury or mortality of Coastal cutthroat trout.

Pacific Lamprey

Under Alternatives 2A and 2B, project-related activities that could affect Pacific lamprey are identical to those for Coastal cutthroat trout, as discussed above and include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving and demolition noise, potential injury or mortality from dewatering and fish relocation, and habitat alteration. Standard Measures such as BR-2B which calls for a Hydroacoustic Monitoring Plan, BR-2C which calls for a qualified biologist to monitor in-stream construction activities, BR-2H which prepares an Aquatic Species Relocation Plan, and WQ-1 and WQ-2 which protect water quality, would be implemented to reduce impacts.

Pacific lamprey, as a fish with no swim bladder, can tolerate slightly greater hydroacoustic noise levels with recoverable injury at 216 dB SEL_{cum} or 213 dB peak and mortality and potential mortal injury at 219 dB SEL_{cum} or 213 dB peak. Unattenuated peak sound pressure from impact pile driving within the water are expected to be between 210dB and 217dB, which could cause injury or mortality to Pacific lamprey. Pacific lamprey use Eureka Slough for holding before migrating upstream to spawn and forage. Given that Pacific lamprey may occur within the BSA between June 15 and October 15, they could be at risk for injury or mortality from these activities.

Under both Alternatives, dewatering would be required for cofferdam installation. Salvage techniques for salmonids are often not effective for salvaging lamprey ammocoetes as ammocoetes may not emerge from dewatered substrates until they begin to desiccate, which often occurs at night after other fish salvage operations have ceased (USFWS 2010). Pacific lamprey ammocoetes have difficulties tolerating salinities >12 ppt (Richards & Beamish, 1981). Optimal temperatures for early life stage survival in laboratory experiments with *E. tridentatus* and *L. richardsoni* ranges from 10–18C (Meeuwig, Bayer & Seelye, 2005). Salinities and temperatures were recorded for Eureka Slough in June 2021 and July 2023 resulting in salinity ranging from 30-34 ppt and temperatures from 62.6 to 69.8 F (17 to 21C). Based on this data, ammocotes are unlikely to be present in the slough during dewatering and Standard Measure BR-2H

(Aquatic Species Relocation Plan) would be implemented to minimize impacts to Pacific lamprey adults and juveniles. Given the measures (Section 1.6) that would be implemented to avoid and minimize impacts to fish during relocation efforts, Caltrans expects no more than three percent of all relocated fish would be subject to potential injury or mortality.

Conclusion

For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could include lead to injury or mortality of Pacific lamprey.

No Build Alternative

Under the No Build Alternative, the existing bridges would not be replaced. There would be no impact to animal species.

2.4.4.4 Avoidance, Minimization, and/or Mitigation Measures

For bats, migratory birds, and black brant for both Alternatives 2A and 2B, there would be no impact with Standard Measures incorporated (Section 1.6). No additional avoidance and minimization measures would be needed.

For obscure bumble bee, Bryant's savannah sparrow, olive-sided flycatcher, short-eared owl, Northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and osprey, impacts from Alterative 2A and 2B would be minimal. No additional avoidance and minimization measures would be needed.

For marine mammals, for both Alternatives, impacts from hydroacoustic noise within the Level A harassment injury has the potential to be substantial. To mitigate for impacts to marine mammals, **Bio-5** (below) would be implemented.

> **Bio-5:** To offset potential effects on marine mammals, a Marine Mammal Monitoring Plan would also be developed that would include monitoring for presence of marine mammals during project activities that may exceed established acoustic and hydroacoustic noise thresholds, and halting work when any are present and could be subject to injury. In addition, a Hydroacoustic Monitoring Plan (HMP) would be developed that would include measures to minimize exposure of marine mammals to potentially harmful underwater sounds resulting from the project. Note, the HMP is a standard measure for projects that involve impact pile driving, hoe-ramming, jackhammering, or any other activities

that could potentially produce impulsive sound waves that may affect listed fish species (see Section 1.6–BR-2B). It is mentioned in the MMRP because marine mammals would be included as part of the plan.

For Coastal cutthroat trout and Pacific lamprey, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and dewatering could include lead to injury or mortality. To mitigate for impacts to Coastal cutthroat trout and Pacific lamprey, Bio-6 (below) would be implemented. By restoring or creating quality habitat for different life stages of these species, (e.g., juvenile rearing and/or foraging habitat etc.), this mitigation measure is anticipated to increase the population of these fish over time, thereby mitigating for losses potentially caused by the construction of this project.

Bio-6: To compensate for potential impacts on longfin smelt, NC steelhead, CC Chinook salmon, SONCC coho salmon, Coastal cutthroat trout, sDPS green sturgeon, and Pacific lamprey, and tidewater goby, Caltrans may implement a combination of on-site and off-site restoration efforts, and/or preservation of existing habitat through purchase. Caltrans would focus on measures that provide overlapping benefits to sensitive fish species and wetlands and other waters as described in **Bio-3 and 4**. Mitigation activities could include habitat creation and/or restoration which would likely include enhancing estuarine function through a subset of the following options: slough channel construction or restoration, enhanced slough channel connectivity, tidal marsh creation or restoration, fish passage barrier removal through tide gate replacement, and creation or restoration of off-channel habitat in a Humboldt Bay tributary. All off-site mitigation would focus on improving some or all of the following: habitat quality, connectivity, water quality, spawning habitat, migration, and juvenile rearing and/or foraging for these sensitive fish species. Final acreage amount, location, and restoration project would be determined in coordination with the appropriate administering agencies.

2.4.5 Threatened and Endangered Species

2.4.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act, and later amendments, provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA) (and the Department, as assigned), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and

the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) to ensure they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take Statement or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

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

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

2.4.5.2 Affected Environment

This section focuses on discussing threatened and endangered species under FESA and CESA only. A discussion of non-threatened and endangered special-status species is included in Section 2.4.3, Plant Species and Section 2.4.4, Animal Species.

Record searches[3] and habitat assessments were conducted to determine whether threatened and endangered species have the potential to occur within the project area. Habitat suitability within the Coastal BSA and Aquatic Species BSA was assessed to determine potential presence of special-status animal species (Caltrans 2025b).

Coordination with federal and state agencies conducted to date is included in Chapter 4, Comments and Coordination. It is anticipated that Section 7 consultation with USFWS and NMFS would be conducted prior to the final environmental document.

See Appendices F and G for lists of USFWS, NMFS, CDFW, and CNPS special-status plant and animal species, including threatened and endangered species, which are known to occur or have the potential to occur within the project vicinity, and the rationale for habitat presence or absence.

Based on the record searches and habitat assessments, nine threatened and endangered species could potentially occur or would have suitable habitat and/or critical habitat (CH) within the BSAs, including two birds and seven fish (Caltrans 2025b).

Species with potential to occur within the project area are discussed below; species with no habitat present within the project area are not discussed further. A summary of FESA and CESA conclusions for all listed species is included under the Environmental Consequences section.

Bald Eagle

The state endangered and Fully Protected bald eagle (*Haliaeetus leucocephalus*) could occur within the project area year-round. Bald eagles are also federally protected by the Bald and Golden Eagle Protection Act. Bald eagles typically nest in large trees within one mile of fishable waters, within or directly adjacent to forests with large trees that provide suitable nesting structures (Buehler 2000). Nesting occurs February through August. Bald eagles feed on a variety of fish, small mammals, amphibians, reptiles, and small birds, and also scavenge and eat carrion. In Humboldt County, bald eagles are strongly tied to open water and undisturbed shorelines. River corridors and

[3] Record searches for special-status animal species were determined by reviewing natural resource agency databases, literature, and other relevant sources; these included official lists from the CNDDB (CDFW 2025).

estuaries attract scattered individuals thought to be migrants, or otherwise nonresident, from October to March (Hunter et al., 2005). Resident nesting eagles have also been reported in the area.

The Coastal BSA contains potentially suitable foraging habitat for bald eagle but does not contain suitable nesting habitat for this species. This species has not been observed during numerous field visits by Caltrans biologists to the project site since year 2020.

Marbled Murrelet

Marbled murrelet (*Brachyramphus marmoratus*) is federally threatened and state endangered. Critical habitat has been designated but does not include the Aquatic Species BSA. The marbled murrelet is a small seabird that occurs along the Pacific coast from Alaska to central California. Populations have declined, primarily due to loss and fragmentation of nesting habitat from harvest of old-growth coniferous forests. They forage in nearshore marine waters and in protected bays and coves (Ralph et al., 1995). They fly inland to nest, laying a single egg on a large moss-covered branch high in an old-growth coniferous tree. Nests are initiated from mid-March to mid-August, and chicks fledge by mid-September (Hamer and Nelson, 1995). During the non-breeding season, they spend most of their time at sea but may fly inland to visit nesting areas in the early morning, presumably to find nest sites and establish pair-bonds for future nesting (Naslund 1993; Hébert and Golightly, 2006).

No surveys were conducted for marbled murrelets. They are known to occur in small numbers in Humboldt Bay, particularly in late summer and fall, primarily in the deeper channels closer to the entrance of the bay (eBird 2021), outside of the Aquatic Species BSA. The only record within the Aquatic Species BSA was along the Humboldt Bay waterfront near Halvorsen Park, approximately 1.2 miles (1,930 m) from the bridges (eBird 2021). Thus, it is possible, but unlikely, that they would occur in the Aquatic Species BSA.

Chinook Salmon–California Coastal ESU

The Chinook salmon (*Oncorhynchus tshawytscha*)–California Coastal (CC) ESU is listed as federally threatened and includes naturally spawned populations of Chinook salmon from rivers and streams south of the Klamath River to the Russian River (70 FR 37160). Critical habitat was designated in 2005 and includes the same stream reaches identified by the final listing rule (70 FR 52629). The Aquatic Species BSA occurs within critical habitat.

The CC Chinook salmon is a fall-run, ocean-type anadromous fish. Adults enter fresh water between August and January and typically spawn in lowland reaches of big rivers and tributaries within a few days or weeks after arrival (Healey 1991). Spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs. Preferred spawning substrate is clean, loose gravel. They rear in fresh water, lagoons, estuaries, and bays for one to three months, usually departing for the ocean in summer (Moyle et al., 2008).

CC Chinook critical habitat includes sites essential to support one or more life stages of the ESU. These include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, and estuarine areas for rearing and transitions between fresh water and salt water. Within these sites, essential physical or biological features include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, space, and safe passage conditions.

Chinook salmon spawn and rear in Freshwater Creek and estuary upstream of Eureka Slough, and adult Chinook pass through Eureka Slough and Humboldt Bay during spawning runs in fall/winter and smolt ocean migrations in summer (Wallace 2006; Anderson and Ward 2016). Juveniles have been reported to remain in Freshwater Creek and estuary for 1 to 8 weeks (Wallace 2006). Their time in the estuary may be limited by the warming of the water in lower Freshwater Slough (upstream of Eureka Slough), which reaches near lethal levels 68°F (20°C) by late June and remains there throughout the summer, potentially forcing young-of-the-year Chinook salmon out of the slough and into Humboldt Bay in mid- to late summer (Wallace 2006). Although water temperatures in Eureka Slough did not reach lethal levels during the Wallace (2006) study, they exceeded temperatures for optimal growth 54-63°F (12-17°C) conditions for juveniles by mid-August. The quality of rearing habitat for Chinook salmon in much of the action area is likely marginal due to the lack of deep water, natural cover, and structural complexity, such as submerged and overhanging large wood, rock and boulders, and overhanging vegetation.

There are currently few Chinook salmon in the watershed. After ceasing augmentation of the population with hatchery-reared Chinook salmon in 2004, adult escapement declined sharply in the subsequent decades, from a high of 154 individuals in 2000, to less than 20 individuals in each of the years 2006-2023 (CDFW 2023). Juveniles were irregularly captured in small numbers (e.g., fewer than 10 individuals) in Freshwater Creek in weekly seine surveys conducted in April through June 2013, 2014, and 2015 (Anderson and Ward, 2016).

Similar to other salmonid species, they have rarely been collected in Humboldt Bay and Eureka Slough during fish surveys conducted using various types of active and passive sampling gear (e.g., Chamberlain and Barnhart, 1993; Pinnix et al., 2004, 2005; Cole 2004), further suggesting they are likely uncommon in the Eureka Slough.

Coho Salmon–Southern Oregon/Northern California Coast Coho Salmon

Coho salmon (*Oncorhynchus kisutch*)–Southern Oregon/Northern California Coast (SONCC) ESU is listed as federally and state threatened. It includes all naturally spawned populations of coho salmon in coastal streams between Cape Blanco, Oregon (Elk River), and Punta Gorda, California (Mattole River), as well as salmon produced by three artificial propagation programs: the Cole Rivers Hatchery (Rogue River) in Oregon, and Trinity River and Iron Gate (Klamath River) hatcheries in California (NMFS 2014). Critical habitat was designated in 1999 and encompasses all accessible reaches of all rivers (including estuarine areas and tributaries) between the Mattole River in California and the Elk River in Oregon (64 FR 24049). The Aquatic Species BSA is within critical habitat for SONCC coho salmon.

Coho salmon are anadromous fish. Juveniles can rear in their natal stream and/or an estuary for 1 to 2 years before emigrating to the ocean where they spend 1 to 2 years before returning to their natal stream to spawn (Bell and Duffy, 2007; Moyle et al., 2008). In California, upstream migration varies among tributaries but generally occurs from September through January with a peak in November and December, and spawning occurs mainly from November to January (Moyle et al., 2008). Eggs incubate in redds (gravel nests) made up of coarse, loose gravels commonly at the heads of riffles or tails of pools (Moyle et al., 2008). Adults die after spawning. Incubation lasts 8 to 12 weeks, and fry emerge between March and July (Shapovalov and Taft, 1954).

Following emergence, young coho salmon rear in low-gradient coastal streams, tributaries to large rivers, brackish-water estuaries, wetlands, lakes, sloughs, side channels, off-channel ponds, beaver ponds, and other slack-waters (Pacific Fishery Management Council 2014). Optimal water temperatures for juvenile rearing are between 54° and 63°F (12° and 17°C) (Richter and Kolmes 2005). They are opportunistic predators that feed primarily on aquatic and terrestrial insects.

SONCC coho salmon critical habitat includes sites essential to support one or more life stages of the ESU. These include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, and estuarine areas for rearing and transitions between fresh water and salt water. Within these sites, essential physical or biological features include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, riparian vegetation, food, space, and safe passage conditions.

Coho salmon spawn and rear in Freshwater Creek and estuary located upstream of Eureka Slough and pass through Eureka Slough and Humboldt Bay during spawning runs in fall/winter and smolt ocean migrations in spring (Anderson and Ward, 2016; Pinnix et al., 2013; Rebenack et al., 2015; Wallace 2006). They are the most abundant salmonid species in Freshwater Creek, numbering in the hundreds per year over the past 20 years (CDFW 2023). The Freshwater Creek stream-estuary ecotone provides

high quality rearing habitat for juvenile coho where they reside an average of 1 to 2 months, but some individuals rear there for over a year (Allen et al., 2016). However, they are likely uncommon in Eureka Slough, having rarely been collected in Humboldt Bay and Eureka Slough during fish surveys conducted using various types of active and passive sampling gear (e.g., Chamberlain and Barnhart, 1993; Pinnix et al., 2004, 2005; Cole 2004). Coho salmon smolts tracked with acoustic monitors from Freshwater Creek to Humboldt Bay only briefly passed through Eureka Slough (average less than 1 day) but spent an average of 10 to 12 days in the upstream freshwater/estuary ecotone and an average of 15 to 22 days in Humboldt Bay (Pinnix et al., 2013). The quality of rearing habitat for Chinook salmon in much of the action area is likely marginal due to the lack of deep water, natural cover, and structural complexity, such as submerged and overhanging large wood, rock and boulders, and overhanging vegetation.

In Humboldt Bay, coho salmon smolts tracked with acoustic transmitters spent most of the time in deep channel habitats (60 percent and 72 percent of the time in 2007 and 2008, respectively), 30 percent and 26 percent of the time in the channel margins, and little time spent in floating eelgrass mats (9 percent and 2 percent) and pilings/docks (1 percent and 0 percent) (Pinnix et al., 2013). They were not detected over eelgrass beds.

Longfin Smelt

Longfin smelt (*Spirinchus thaleichthys*) is listed as state threatened. It is a small, short-lived (2 years) pelagic fish that occurs in estuaries and nearshore ocean waters along the Pacific coast from San Francisco Bay to Alaska. They inhabit the middle or deeper areas of the water column and move up towards surface waters at night. They are known to occur in a wide variety of estuarine habitats and in a range of flow regimes. Adults prefer salinities of 15–30 parts per thousand (ppt) and water temperatures of 60.8- 64.4 degrees F (16–18°C) but may occur in waters as warm as 68 degrees F (20°C) in summer (Baxter 1999). Larvae and young juveniles have a lower salinity tolerance and are generally found below 15 ppt, with highest abundance at around 2 ppt (Kimmerer et al. 2009). In winter to early spring, adults travel from the ocean or bay upstream to spawn in fresh or slightly brackish water where they deposit their eggs on coarse gravel or sandy substrates. Most spawning occurs between January and March. After hatching, the larvae disperse downstream to estuarine habitats for rearing. As juveniles, they continue their downstream migration out to the bay or ocean. They mature at the end of their second year and migrate to spawn, after which they usually die.

Longfin smelt have been captured throughout Humboldt Bay, including Eureka Slough, Freshwater Slough, and upstream in Freshwater Creek (Garwood 2017). Spawning has been reported in Freshwater Creek and other tributaries to Humboldt Bay. Larval fish surveys conducted in Humboldt Bay in 1969 reported longfin smelt throughout the year, peaking in January (Eldridge and Bryan, 1972). They were common in the 1969 study,

but much less common by the early 2000s based on extensive sampling conducted by Gleason et al. (2007), presumably due to a declining population. During monthly larval fish surveys conducted by CDFW, larval longfin smelt were reported in Eureka Slough in small numbers (11 or fewer) in January through March 2017, but none in the remaining months (CDFW, unpubl. data). Based on the existing survey information and the biology of the species, longfin smelt adults would be most abundant within Eureka Slough in the winter during upstream migration, and larvae/ juveniles in early spring. Adults and juveniles could occur within Eureka Slough year-round, but likely in small numbers. Spawning habitat is not present within the Aquatic Species BSA.

North American Green Sturgeon–Southern DPS

The Southern DPS (sDPS) of the North American green sturgeon (*Acipenser medirostris*) is listed as federally threatened and a State SSC and only spawns in the Sacramento River, although migrating adults are known to occur in Humboldt Bay.

Green sturgeon ranges in ocean waters from Ensenada, Mexico, to the Bering Sea, Alaska, and are common in coastal waters from San Francisco Bay to Canada (Lindley et al., 2008). They make long migrations along the Pacific coast, generally to the north in the fall and to the south in spring (Lindley et al., 2008). They congregate in coastal bays and estuaries of Washington, Oregon, and California (including Humboldt Bay) in summer and fall, and along the coast of British Columbia, Canada, in winter and spring (Lindley et al., 2008; Lindley et al., 2011). They are benthic feeders and feed on invertebrates and fish in intertidal mudflats and deeper channels, moving on and off mudflats with tidal fluctuations and frequenting shallow areas less than 33 feet deep (Moyle et al., 1992; Kelly et al., 2007; Moser and Lindley, 2007).

Critical habitat for the green sturgeon–sDPS includes Humboldt Bay and is within the Aquatic Species BSA. Critical habitat is designated for freshwater riverine systems, estuarine areas, and nearshore marine waters. The estuarine features essential to the conservation of green sturgeon–sDPS include abundant food resources, suitable water flows, suitable water quality, safe migratory corridors, a diversity of water depths, and suitable sediment quality.

In one study of 355 adult green sturgeon tagged with acoustic transmitters in rivers along the Pacific coast, a few individuals were detected in Humboldt Bay in summer and fall (June-October) (Lindley et al., 2011). They were detected in deeper channels of Arcata Bay, but acoustic receivers placed in Eureka Slough and Freshwater Slough to the west and east of the bridge detected no sturgeon (W. Pinnix, pers. comm. 11/21/22). Based on this information, it is possible that green sturgeon could occasionally occur and forage over the intertidal mudflats and deeper channel areas of the Aquatic Species BSA in summer and fall.

Pacific Eulachon–Southern DPS

The southern DPS of Pacific eulachon (*Thaleichthys pacificus*), which consists of populations in California, Oregon, and Washington, is federally listed as threatened and a state SSC. It is a small, anadromous fish that ranges in the eastern Pacific Ocean from the Bering Sea, Alaska, to Humboldt Bay, California. The southernmost known spawning run is in Mad River (just north of Humboldt Bay) and the Klamath River is the main spawning river in California; however, there is evidence of a few individuals spawning in Humboldt Bay tributaries from the 1970s (Jennings 1996).

Pacific eulachon spend the majority of their lives in nearshore ocean waters, returning to larger rivers during spring runoff to spawn. Larvae generally drift downstream and rear in estuaries for weeks to months, then juveniles move to nearshore ocean waters where they remain until they become sexually mature, at around 3 years of age.

Critical habitat was designated in October 2011 and includes the Klamath River, Redwood Creek, and Mad River in California, which is the known southern extent of the southern DPS population (76 FR 65323). The Aquatic Species BSA/action area is not within critical habitat for Pacific eulachon–Southern DPS.

Based on occasional reports of individuals over the past few decades, they are thought to be infrequent visitors in winter in Humboldt Bay (Gustafson et al., 2010). They have occasionally been captured in Jolly Giant and Jacoby Creek (tributaries to Humboldt Bay) during spawning season, but not in Freshwater Creek (Gustafson et al., 2010). They have not been captured in Humboldt Bay or Eureka Slough during fish surveys conducted using various types of active and passive sampling gear (e.g., Chamberlain and Barnhart, 1993; Pinnix et al., 2004, 2005; Cole 2004). Their presence in the Aquatic Species BSA is highly unlikely.

Steelhead – Northern California DPS

Steelhead (*Oncorhynchus mykiss irideus*)–Northern California (NC) DPS was listed as threatened under FESA in 2006 (71 FR 834). The DPS includes all naturally spawned anadromous steelhead populations below natural and manmade impassable barriers in California coastal river basins from Redwood Creek southward to and including the Gualala River, as well as some State and Federal propagation programs. Critical habitat was designated in 2005 and includes the same stream reaches identified by the final listing rule (70 FR 52629). The Aquatic Species BSA occurs within critical habitat. The winter-run population is also a state SSC. The summer-run population is State endangered, but this population does not occur within the Coastal BSA.

NC steelhead enter coastal streams between November and April and spawn shortly after arriving in spawning areas (Moyle 2002). Successful migration depends on rainfall or snowmelt and sufficient stream flow to provide suitable passage conditions to upstream spawning areas. Winter-run steelhead generally spawn between December and April. After spawning, they may return to the ocean in spring.

Juvenile steelhead prefer streams with cool, clear, fast-flowing riffles, ample riparian cover and undercut banks, and abundant food (Moyle 2002). Newly emerged fry generally occupy shallow waters along stream margins while larger juveniles maintain territories in faster and deeper water in pools or runs. They typically rear in streams or estuaries for 1 to 2 years before entering the ocean. Downstream movement typically peaks in April or May although young-of-the-year have been reported to migrate to estuaries as late as June or July (Moyle et al., 2008). Smolts typically emigrate to the ocean between March and June, although bar formation across the mouth of coastal streams may prevent exit from the estuary until the bar breaches in late fall or winter (Moyle et al., 2008).

NC steelhead critical habitat includes sites that are essential to support one or more life stages of the DPS. These include freshwater spawning sites, freshwater rearing sites, freshwater migration corridors, and estuarine areas for rearing and transitions between fresh water and salt water. Within these sites, essential physical or biological features include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, space, and safe passage conditions.

Steelhead spawn and rear in Freshwater Creek and estuary upstream of Eureka Slough, and adult steelhead pass through Eureka Slough and Humboldt Bay during spawning runs in winter and smolt ocean migrations in spring (Anderson and Ward, 2016; Allen et al., 2016; Wallace et al., 2018). Abundance estimates in Freshwater Creek over the past 20 years ranged from 25 to 400+ individuals per year (CDFW 2023). Steelhead are likely uncommon in the Aquatic Species BSA, having rarely been collected in Humboldt Bay and Eureka Slough during fish surveys conducted using various types of active and passive sampling gear (e.g., Chamberlain and Barnhart, 1993; Pinnix et al., 2004, 2005; Cole 2004).

Tidewater Goby

The federally endangered and state SSC tidewater goby (*Eucyclogobius newberryi*) is a small fish that is endemic (limited) to California, ranging from the Smith River to northern San Diego County. They occur in coastal lagoons, brackish marshes, and estuaries that are seasonally disconnected from tidal action when sand bars form at the ocean's edge (Swenson 1999; Moyle 2002) or when anthropogenic structures (e.g., perched culverts, tide gates) mute tidal action (Ritter et al., 2008).

They prefer areas with flood refugia, such as off-channel sloughs, pockets of still water, and "perched" habitats, particularly for the egg and larval life stages. Substrate is generally bare (e.g., sand and mud), and they use dense emergent vegetation for cover, especially *Ruppia* spp. (Chamberlain 2006). Although adults and juveniles are known to occur in a wide range of salinity levels (0–51 parts per thousand [ppt]), they generally occur at low to moderate salinities (2-15 ppt) (Stillwater Sciences 2006).

In general, tidewater goby live for only 1 year (Swenson 1999), although some live longer (Hellmair and Kinziger, 2014). Spawning occurs from April through November, with distinct peaks in spring and late summer (Swenson 1999). Male gobies initiate spawning by digging a vertical burrow 4 to 8 inches deep in unconsolidated, clean, coarse sand or mud substrates with minimal vegetative cover. Females fight for access to males with burrows in which to lay their eggs, and they lay 300 to 500 eggs per clutch in 6 to 12 clutches per year. Following hatching, the larvae live in vegetated areas of estuaries until they have matured sufficiently to become free-swimming and benthic. Juveniles feed on small aquatic animals, such as shrimp, amphipods, ostracods, and midge larvae and other aquatic insects (USFWS 2005).

Critical habitat has been designated for the tidewater goby; however, the Aquatic Species BSA is not within critical habitat for the species.

The Aquatic Species BSA was evaluated for potential presence of tidewater goby habitat during multiple site visits, including a site visit with USFWS (Greg Schmidt and Nissen Bradsen). Within the Aquatic Species BSA, the only potentially suitable habitat is present in the off-channel unnamed slough adjacent to Eureka Slough on the southeast side of U.S. Highway 101. Tidewater gobies are known to occur in brackish off-channel habitats and sloughs adjacent to Humboldt Bay; the nearest known populations to the Aquatic Species BSA are in a ditch along U.S. Highway 101 about 1 mile north of the channel, and another about 1.75 mile upstream in Freshwater Slough (Frimodig and Goldsmith, 2008). They are unlikely to occur in the open channel under the bridge and in most areas of the Aquatic Species BSA/action area, as these areas do not contain suitable habitat for spawning, eggs, or larval life stages.

2.4.5.3 Environmental Consequences

Build Alternatives

Bald Eagle

Common Features Of Alternatives 2A And 2B Affecting Bald Eagle

Construction Impacts

Both build Alternatives would have construction activities within foraging habitat of the bald eagle. There is no suitable nesting habitat for this species within the Coastal BSA: therefore, no nests would be subject to construction noise and disturbance. If foraging individuals were present during construction, they could simply move away from the disturbance into the ample available habitat in and around Humboldt Bay. Therefore, only minimal effects from construction on bald eagle are anticipated.

Habitat Alteration

There is no nesting habitat for bald eagle within the project area. Bald eagles could possibly forage within the slough. For both Alternatives, the replacement of the existing bridges with the proposed bridges would be a minimal change and would have minimal to no impact on bald eagle foraging habitat.

Conclusion

Alternatives 2A and 2B would have minimal to no long-term impact to bald eagle foraging habitat. Additionally, for both Alternatives, during construction these species could easily move away from construction-produced noise and disturbance. Based on this, the temporary nature of construction, and the ample available foraging habitat around Humboldt Bay, there would be a minimal effect to bald eagle from either alternative.

Per CESA, the project would result in no **"Take"** of the bald eagle.

Marbled Murrelet

Common Features Of Alternatives 2a And 2b Affecting Marbled Murrelet

The project would not impact nesting murrelets because there is no suitable nesting habitat within the project area.

Construction- Noise

Impact Noise

Murrelets could be exposed to hydroacoustic noise from the project, as they spend a substantial amount of time foraging underwater. Impact pile driving for installation of the temporary trestles, temporary and permanent bridges, and during demolishment of the old bridges are impulsive noises that can result in behavioral effects, auditory injury, physical injury, and mortality (Teachout 2012). The established injury and behavioral response thresholds for impulsive noise sources for marbled murrelets are shown in Table 49.

Table 49. Hydroacoustic Impulsive Noise Thresholds for Marbled Murrelet

Effect Type	Threshold
Auditory Injury (cochlear hair loss, recoverable)	202 dB cSEL
Non-Auditory Injury (barotrauma, significant injury)	208 dB cSEL
Behavioral Response	150 dB_{RMS}

The cumulative sound exposure level (cSEL) threshold is based on the total daily exposure of the animal to noise from sources that are discontinuous (in this case, noise that occurs up to 12 hours a day, with 12 hours between exposures). This presumes that the animal can recover from any effects during this 12-hour period. There are no thresholds for non-impulsive noise sources for marbled murrelets.

Caltrans' Hydroacoustic Report for the project calculates sound levels from impulsive noise sources and the distance from the source that sound attenuates (Caltrans 2024i). These distances are used to define the area in which the thresholds may be exceeded and potentially result in injury or behavioral harassment of murrelets that may be present. Table 50 below summarizes the distances for impulsive noise sources, with and without attenuation measures (i.e., noise reducing measures). Attenuation measures may be used; however, the effectiveness of these measures in the shallow waters of Eureka Slough is uncertain. Therefore, analysis of impacts to marbled murrelets within this document is on the unattenuated distances.

If during the preparation of Hydroacoustic Monitoring Plan (Section 1.6–BR-2B) attenuation measures are found to be effective, they will be incorporated into that Plan. The areas in which auditory (minor hearing damage) and non-auditory (barotrauma, significant injury) injury thresholds may be exceeded for unattenuated impulsive noise sources do not extend beyond the Eureka Slough channel into Humboldt Bay. Given the nearest reported occurrence is within Humboldt Bay approximately 1.2 mile (1,930 m) away from the bridge, it is highly unlikely that any marbled murrelets would be exposed to noise levels that could cause injury or mortality. However, the area that behavioral response thresholds may be exceeded extends into Humboldt Bay where murrelets are more likely to be present (but still rare); therefore, behavioral responses to impulsive noise could occur.

Table 50. Estimated Distance to Threshold for Hydroacoustic Impulsive Noise Source for Marbled Murrelet, with and without Attenuation

Scenario	Distance to 202 dB cSEL Auditory Injury Threshold	Distance to 208 dB cSEL Non-Auditory Injury Threshold	Distance to 150 dB_{RMS} Behavioral Response Threshold
Trestle Piles in Water – Estimated 600 strikes per day			
Unattenuated	49 ft (15 m)	33 ft (<10 m)	7,067 ft (2,154 m)
Attenuated	33 ft (<10 m)	33 ft (<10 m)	3,281 ft (1,000 m)
24-inch Piles on Land – Estimated 4,000 strikes per day			
Unattenuated*	72 ft (22 m)	33 ft (<10 m)	4,570 ft (1,393 m)
60-inch CISS Piles in Water – Estimated 6,000 strikes per day			
Unattenuated	928 ft (283 m)	371 ft (113 m)	38,312 ft (11,659 m)
Attenuated	430 ft (131 m)	171 ft (52 m)	17,756 ft (5,412 m)
Demolition in Water – Estimated 11,000 strikes per day			
Unattenuated	29 ft (9 m)	190 ft (58 m)	8,241 ft (2,512 m)
Attenuated	33 ft (<10 m)	89 ft (27 m)	3,825 ft (1,166 m)

cSEL = cumulative sound exposure level; dB = decibels; RMS = root mean square; ft = feet; m = meters

*No attenuation for piles driven on land

Note: Distances would be limited to 6,562 feet east and 22,966 feet west into Arcata Bay due to obstructions

Negative effects on marbled murrelets from impact noise would be minimized through implementation of Standard Measures BR-1 which educates workers on environmental permit conditions and requirements and BR-2B which calls for a Hydroacoustic Monitoring Plan to describe the monitoring methodology and frequency of monitoring. If they are found to be effective within the shallow slough waters, this Plan may also include the use of noise attenuation measures such as bubble curtains, dewatered cofferdams, and dewatered isolation casings. Additionally, the areas in which the injury and mortality thresholds may be exceeded are confined to the narrow, shallow channel of Eureka Slough and do not extend into the adjacent Arcata Bay. Lastly, marbled murrelet presence within the Aquatic Species BSA is so unlikely that any potential behavioral or injury effects associated with impact pile driving would be discountable.

Conclusions

Based on the Standard Measures listed above and the unlikely presence of marbled murrelet within the Aquatic Species BSA, both Alternatives 2A and 2B would likely have a minimal effect on marbled murrelet.

Per FESA, for both Alternatives 2A and 2B, it is anticipated the project ***may affect, but is not likely to adversely affect*** marbled murrelet. Also per FESA, there would be ***no effect*** to marbled murrelet critical habitat.

Per CESA, project Alternatives 2A and 2B would not result in **"*Take*"** of marbled murrelet.

Chinook Salmon–California Coastal ESU

Under Alternatives 2A and 2B, project-related activities that could affect Chinook salmon–California Coastal (CC) ESU (CC Chinook salmon) are identical to those for Coastal cutthroat trout, as discussed in Section 2.4.4.3, and include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving and demolition noise, potential injury or mortality from dewatering and fish relocation, and habitat alteration. Standard Measures (Section 1.6), such as BR-2B which calls for a Hydroacoustic Monitoring Plan, BR-2C which calls for qualified biologist to monitor in-stream construction activities, BR-2H which prepares an Aquatic Species Relocation Plan, and WQ-1 and WQ-2 which protect water quality, will be implemented to reduce impacts.

Restricting in-water construction activities between June 15 and October 15 (BR-2E) would avoid the primary migration of adult CC Chinook salmon and peak outmigration of smolts in summer. Because the June 15 to October 15 in-water work window avoids the time when they are most likely present, and because they likely spend little time within the Aquatic Species BSA as compared to other areas within the watershed, their

exposure to stressors from the project would likely be low. Additionally, Standard Measure BR-2B requires that pile diving be halted prior to reaching the cumulative SEL threshold; therefore, the maximum area where CC Chinook salmon would be susceptible to injury during pile driving is only the 177 feet (54m) surrounding the pile where the Peak Injury threshold may be exceeded (Table 48). However, given that juvenile or adult Chinook salmon may on occasion occur within the area of Peak Injury during pile driving and within the area where dewatering would be taking place, they could be at risk of injury or mortality from these activities.

Critical Habitat

Alternatives 2A and 2B could impact critical habitat through temporary loss of in-stream channel and temporary shading of estuarine habitat from temporary trestles and temporary bridge. Permanent impacts to critical habitat include some additional permanent shading of estuarine habitat from the installation of the larger bridges.

The small temporary losses of in-stream channel habitat would occur from the placement of temporary piles for the temporary bridge, construction trestle, and falsework piles. These temporary losses of habitat are miniscule relative to the available existing habitat throughout the 17,000-acre bay (i.e., less than 0.001% of the total area) and are likely to have minimal effects on the overall quantity or quality of habitat available. Installation of the temporary trestles and temporary bridge would result in a temporary increase in shading over the slough during construction. However, it is unlikely that the proposed changes in light levels associated with the temporary structures would have any measurable effect on water temperature, primary production, or habitat for fish because of the temporary nature and small scale of these effects.

Following completion of the project, replacement of the existing bridges with the proposed new bridges would create slightly more shade due to the increased width of the new bridges. Given that the Aquatic Species BSA is not considered important rearing habitat for juvenile Chinook salmon, and their use of the area by adult and juvenile fish is likely limited to movements between the ocean and upstream in Freshwater Slough and Freshwater Creek, the effect of this stressor would likely be negligible.

Conclusion

For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures (Section 1.6) incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could include lead to injury or mortality of CC Chinook salmon.

Per FESA, for both Alternatives 2A and 2B, it is anticipated the project ***may affect, is likely to adversely affect*** CC Chinook salmon and ***may affect, is not likely to adversely affect*** the species' critical habitat.

Coho Salmon–Southern Oregon/Northern California Coast Coho Salmon

Under Alternatives 2A and 2B, project-related activities that could affect coho salmon–Southern Oregon/Northern California Coast ESU (SONCC coho salmon) are identical to those for Coastal cutthroat trout, as discussed in Section 2.4.4.3., and include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving and demolition noise, potential injury or mortality from dewatering and fish relocation, and habitat alteration. Standard Measures (Section 1.6), such as BR-2B which calls for a Hydroacoustic Monitoring Plan, BR-2C which calls for qualified biologist to monitor in-stream construction activities, BR-2H which prepares an Aquatic Species Relocation Plan, and WQ-1 and WQ-2 which protect water quality, would be implemented to reduce impacts.

Restricting in-water construction activities between June 15 and October 15 (BR-2E) would avoid the primary migration of adult coho salmon and peak outmigration of smolts in summer. Because the June 15 to October 15 in-water work window avoids the time when they are most likely present, and because they likely spend little time within the Aquatic Species BSA as compared to other areas within the watershed, their exposure to stressors from the project would likely be low. Additionally, Standard Measure BR-2B requires that pile diving be halted prior to reaching the cumulative SEL threshold; therefore, the maximum area where coho salmon would be susceptible to injury during pile driving is only the 177 feet (54m) surrounding the pile where the Peak Injury threshold may be exceeded (Table 48). However, given that juvenile or adult coho salmon may on occasion occur within the area of Peak Injury during pile driving and within the area where dewatering would be taking place, they could be at risk of injury or mortality from these activities.

Critical Habitat

Impacts to coho salmon critical habitat are identical to those discussed in the Chinook salmon section above.

Conclusion

For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could lead to injury or mortality of SONCC coho salmon.

Per FESA, for both Alternatives 2A and 2B, it is anticipated that the project ***may affect, is likely to adversely affect*** SONCC coho salmon and ***may affect, is not likely to adversely affect*** the species' critical habitat.

Per CESA, the project Alternatives 2A and 2B could result in "***Take***" of SONCC coho salmon.

Longfin Smelt

Under Alternatives 2A and 2B, project-related activities that could affect longfin smelt, and how standard measures reduce potential impacts, are identical to those for Coastal cutthroat trout, as discussed in Section 2.4.4.3, and include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving and demolition noise, potential injury or mortality from dewatering and fish relocation, and habitat alteration. Standard Measures (Section 1.6), such as BR-2B which calls for a Hydroacoustic Monitoring Plan, BR-2C which calls for qualified biologist to monitor in-stream construction activities, BR-2H which prepares an Aquatic Species Relocation Plan, and WQ-1 and WQ-2 which protect water quality, would be implemented to reduce impacts.

Eureka Slough is a migratory corridor for longfin smelt migrating to upstream spawning areas in Freshwater Creek basin, with longfin smelt adults most abundant within Eureka Slough during winter upstream spawning migration, and larvae/juveniles most abundant in late winter/early spring. Restricting in-water construction activities between June 15 and October 15 (BR-2E) avoids the primary migration of longfin smelt through Eureka slough. Longfin smelt adults prefer water salinities of 15–30 parts per thousand (ppt) and larvae and young juveniles have an even lower salinity tolerance and are generally found below 15 ppt, with highest abundance at around 2 ppt (Kimmerer et al., 2009). During the summer months June through October when construction would be taking place, the salinity levels in Eureka Slough are consistently over 30ppt (CDFW, unpubl. data). Therefore, it is unlikely any larvae or young juveniles would be present in the slough during construction activities, such as pile driving or dewatering. With salinity levels higher than their preferred range and surveys that report low abundance of the species, the summer waters in Eureka Slough may not be high quality habitat for adult longfin smelt. Therefore, they are unlikely to be present in the slough in high numbers when pile driving and dewatering activities are taking place. Additionally, Standard Measure BR-2 B requires that pile diving be halted prior to reaching the cumulative SEL threshold; therefore, the maximum area where longfin smelt would be susceptible to injury during pile driving is only the 177 feet (54m) surrounding the pile where the Peak Injury threshold may be exceeded (Table 48). However, given that adults could be present within the area of Peak Injury during pile driving and within the area of dewatering, they could be subject to injury or mortality from these activities.

Conclusion

For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could include lead to injury or mortality of longfin smelt.

Per CESA, Alternatives 2A and 2B could result in **"*Take*"** of longfin smelt.

North American Green Sturgeon–Southern DPS

Under Alternatives 2A and 2B, project-related activities that could affect North American green sturgeon– sDPS (sDPS green sturgeon) are identical to those for Coastal cutthroat trout, as discussed in Section 2.4.4.3, and include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving and demolition noise, potential injury or mortality from dewatering and fish relocation, and habitat alteration. Standard Measures (Section 1.6), such as BR-2B which calls for a Hydroacoustic Monitoring Plan, BR-2C which calls for qualified biologist to monitor in-stream construction activities, BR-2H which prepares an Aquatic Species Relocation Plan, and WQ-1 and WQ-2 which protect water quality, would be implemented to reduce impacts.

Adult green sturgeon could occur in Eureka Slough within the Aquatic Species BSA particularly in summer and fall when they are most likely to occur in Humboldt Bay. Restricting in-water construction activities between June 15 and October 15 does not avoid the time of year when they are most likely to be present. As noted in the *Affected Environment* section above, based on data from tagged individuals in Humboldt Bay, green sturgeon used the deeper channels of Arcata Bay and were never detected in Eureka Slough. Additionally, Standard Measure BR-2 B requires that pile diving be halted prior to reaching the cumulative SEL threshold; therefore, the maximum area where green sturgeon would be susceptible to injury during pile driving is only the 177 feet (54 m) surrounding the pile where the Peak Injury threshold may be exceeded (Table 48). This area is all contained within the shallower waters of Eureka Slough. Given this, as their presence is likely uncommon in Eureka Slough, their exposure to stressors from the project would likely be low.

Critical Habitat

Impacts to green sturgeon critical habitat are identical to those discussed in the Chinook salmon section above.

Conclusions

For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could include lead to injury or mortality of sDPS green sturgeon.

Per FESA, for both Alternatives 2A and 2B, it is anticipated that the project ***may affect, is likely to adversely affect*** sDPS green sturgeon and ***may affect, is not likely to adversely affect*** their critical habitat.

Pacific Eulachon–Southern DPS

Under Alternatives 2A and 2B, project-related activities that could affect Pacific eulachon–sDPS are identical to those for Coastal cutthroat trout, as discussed in Section 2.4.4.3, and, if Pacific eulachon if they were present, includes potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving and demolition noise, potential injury or mortality from dewatering and fish relocation, and habitat alteration.

However, as detailed above, Humboldt Bay is just outside of Pacific eulachon's range. They have never been captured in Freshwater Creek or Eureka Slough. Their presence in the Aquatic Species BSA is highly unlikely. As a result, both alternatives would likely have no effect on Pacific eulachon.

Conclusion

Based on the temporary nature of construction and that sDPS Pacific eulachon is not known to be present in Eureka Slough, there would be no effect to sDPS Pacific eulachon from either alternative.

Per FESA, Alternatives 2A and 2B of the project would have ***no effect*** on Pacific eulachon and their critical habitat.

Steelhead–Northern California DPS

Under Alternatives 2A and 2B, project-related activities that could affect steelhead–Northern California DPS (NC steelhead) are identical to those for Coastal cutthroat trout, as discussed in Section 2.4.4.3, and include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving and demolition noise, potential injury or mortality from dewatering and fish relocation, and habitat alteration. Standard Measures (Section 1.6), such as BR-2B

which calls for a Hydroacoustic Monitoring Plan, BR-2C which calls for qualified biologist to monitor in-stream construction activities, BR-2H which prepares an Aquatic Species Relocation Plan, and WQ-1 and WQ-2 which protect water quality, would be implemented to reduce impacts.

Restricting in-water construction activities between June 15 and October 15 (BR-2E) would avoid the primary migration of adult NC steelhead and peak outmigration of smolts in summer. Because the June 15 to October 15 in-water work window avoids the time when they are most likely present, and because they likely spend little time within the Aquatic Species BSA as compared to other areas within the watershed, their exposure to stressors from the project would likely be low. Additionally, Standard Measure BR-2B requires that pile diving be halted prior to reaching the cumulative SEL threshold; therefore, the maximum area where steelhead would be susceptible to injury during pile driving is only the 177 feet (54m) surrounding the pile where the Peak Injury threshold may be exceeded (Table 48). However, given that juvenile or adult steelhead may on occasion occur within the area of Peak Injury during pile driving and within the area where dewatering activities are taking place, they could be at risk of injury or mortality from these activities.

Critical Habitat

Impacts to NC steelhead critical habitat are identical to those discussed in the Chinook salmon section above.

Conclusion

For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could include lead to injury or mortality of NC steelhead.

Per FESA, for both Alternatives 2A and 2B, it is anticipated the project ***may affect, is likely to adversely affect*** NC steelhead and ***may affect, is not likely to adversely affect*** NC steelhead critical habitat.

Tidewater Goby

Under Alternatives 2A and 2B, project-related activities that could affect tidewater goby are identical to those for Coastal cutthroat trout, as discussed in Section 2.4.4.3, and include potential effects related to temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving, and habitat alteration.

Standard Measures (Section 1.6), such as BR-2B which calls for a Hydroacoustic Monitoring Plan, BR-2C which calls for qualified biologist to monitor in-stream construction activities, and WQ-1 and WQ-2 which protect water quality, would be implemented to reduce impacts.

The off-channel unnamed slough adjacent to Eureka Slough within the Aquatic Species BSA is potential habitat for eggs, larvae, and adult tidewater goby, and they could be present there year-round. Tidewater gobies are not known to be present within this unnamed slough and the slough provides only marginal habitat. The unnamed slough is separated by land from the Eureka Slough channel; therefore, hydroacoustic noise and vibration from pile driving for the construction of the new bridges, the temporary bridge for Alternative 2A, and the northern trestles would have no impact on tidewater goby within this off-channel unnamed slough. Additionally, no dewatering would take place within this unnamed slough. The southern construction trestle for both Alternatives 2A and 2B would have piers within this off-channel unnamed slough. If the piles for these trestles were placed within the water of the slough channel, any tidewater goby present could be subject to injury or mortality from pile driving noise. In order to avoid impacts from pile driving within the slough waters **Bio-8** (detailed in Section 2.4.5.4) would require all piles to be located outside of the unnamed slough channel. By locating all piles outside of the unnamed slough channel, tidewater goby would not be subject to direct injury from hydroacoustic noise. Tidewater goby spawning occurs from April through November, with distinct peaks in spring and late summer (Swenson 1999). Therefore, burrows containing eggs may be present within the unnamed slough during the construction window (June 15 through October 15). Vibrations from pile driving adjacent to this unnamed slough channel could cause nest burrows to collapse leading to injury or mortality of tidewater goby.

Conclusion

Although the unnamed slough provides only marginal habitat for tidewater goby, they could be present there year-round. For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated, would be minimal. For both Alternatives 2A and 2B, with **Bio-8** incorporated, effects from impact noise on tidewater goby would be minimal. However, impacts from vibration from pile diving adjacent to the unnamed slough could lead to injury or mortality of tidewater goby if they are present.

Per FESA, for both Alternatives 2A and 2B, it is anticipated that the project ***may affect, is likely to adversely affect*** tidewater goby. For both Alternatives 2A and 2B, per FESA, the project would have ***no effect*** on tidewater goby critical habitat.

No Build Alternative

Under the No Build Alternative, the existing bridges would not be replaced. There would be no impact to threatened and/or endangered species.

Summary of FESA and CESA Conclusions

Coordination with state and federal agencies conducted to date is included in Chapter 4, Comments and Coordination.

Anticipated effects findings under FESA for the species and critical habitats potentially within the project area are included in Table 51. It is anticipated that Section 7 consultation with USFWS and NMFS would be conducted prior to finalizing the final environmental document.

Table 51. FESA Preliminary Effects Findings

Common Name	Scientific Name	Federal Status[1]	Effect Finding	Effect Finding for Critical Habitat (if applicable)
Birds				
Marbled murrelet	*Brachyramphus marmoratus*	FT	May Affect, Not Likely to Adversely Affect	No Effect
Fish				
Chinook salmon–California Coastal ESU	*Oncorhynchus tshawytscha*	FT	May Affect, Likely to Adversely Affect	May Affect, Not Likely To Adversely Affect
Coho salmon–Southern Oregon/Northern California Coast ESU	*Oncorhynchus kisutch*	FT	May Affect, Likely to Adversely Affect	May Affect, Not Likely To Adversely Affect
North American green sturgeon-sDPS	*Acipenser medirostris*	FT	May Affect, Likely to Adversely Affect	May Affect, Not Likely To Adversely Affect
Pacific eulachon-sDPS	*Thaleichthys pacificus*	FT	No Effect	No Effect
Steelhead–NC DPS *winter run*	*Oncorhynchus mykiss irideus*	FT	May Affect, Likely to Adversely Affect	May Affect, Not Likely To Adversely Affect
Tidewater goby	*Eucyclogobius newberryi*	FE	May Affect, Likely to Adversely Affect	No Effect

[1]**Status Definitions**: FE = Endangered; FT = Threatened

Caltrans has determined the project would have ***no effect*** on the following federally listed species, critical habitat, or species proposed for listing:

- Beach layia (*Layia carnosa*)
- Lassics lupine (*Lupinus constancei*)
- Menzies' wallflower (*Erysimum menziesii*)
- Western lily (*Lilium occidentale*)
- Green sea turtle (*Chelonia mydas*)–East Pacific DPS
- Leatherback sea turtle (*Dermochelys coriacea*)
- Olive Ridley sea turtle (*Lepidochelys olivacea*)
- Northwestern pond turtle (*Actinemys marmorata)*
- California Ridgeway's rail (*Rallus obsoletus obsoletus*)
- Northern spotted owl (*Strix occidentalis caurina*)
- Short-tailed albatross (*Phoebastria albatrus*)
- Western snowy plover (*Charadrius alexandrinus nivosus*)
- Yellow-billed cuckoo (*Coccyzus americanus*)–Western U.S. DPS
- Pacific eulachon–Southern DPS (*Thaleichthys pacificus*)
- Steelhead *(Oncorhynchus mykiss irideus)*–Northern California DPS *summer run*
- Pacific (Humboldt) marten (*Martes caurina humboldtensis*)–Coastal DPS
- Blue whale (*Balaenoptera musculus*)
- Fin whale (*Balaenoptera physalus*)
- Humpback whale (*Megaptera novaeangliae*)
- North Pacific right whale (*Eubalaena japonica*)
- Sei whale (*Balaenoptera borealis*)
- Sperm whale (*Physeter macrocephalus*)
- Southern sea otter *(Enhydra lutris nereis)*
- Southern resident killer whale (*Orcinus orca*)
- Monarch butterfly (*Danaus plexippus*)

Caltrans has determined the project ***may adversely affect*** Essential Fish Habitat (EFH) for Pacific Coast Salmon (Chinook and coho salmon), Pacific Coast Groundfish, and Coastal Pelagic species. Section 7 consultation would be conducted with NMFS to address potential effects of the project on EFH.

Per CESA, Caltrans has determined the project could result in ***incidental take*** of the following state-listed species. An Incidental Take Permit or Consistency Determination with California Department of Fish and Wildlife (CDFW) may be required for these species:

- Coho salmon (*Oncorhynchus kisutch*)–SONCC ESU
- Longfin smelt (*Spirinchus thaleichthys*)

Caltrans has determined the project ***would not result in take*** of the following state-listed, state candidate, or fully protected species:

- Beach layia (*Layia carnosa*)
- Menzies' wallflower (*Erysimum menziesii*)
- Western lily (*Lilium occidentale*)
- Bald eagle (*Haliaeetus leucocephalus*)
- Golden eagle (*Aquila chrysaetos*)
- Bank swallow (*Riparia riparia*)
- California Ridgeway's rail (*Rallus obsoletus obsoletus*)
- Golden eagle *(Aquila chrysaetos)*
- Great grey owl *(Strix nebulosa)*
- Marbled murrelet (*Brachyramphus marmoratus*)
- Northern spotted owl (*Strix occidentalis caurina)*
- White-tailed kite (*Elanus leucurus*)
- Willow flycatcher *(Empidonax traillii)*
- Yellow-billed cuckoo (*Coccyzus americanus*)–Western U.S. DPS
- Steelhead (*Oncorhynchus mykiss irideus*)–Northern California DPS *summer run*
- Northern California ringtail *(Bassariscus astutus raptor)*
- Pacific (Humboldt) marten (*Martes caurina humboldtensis*)–Coastal DPS

- Crotch bumble bee (*Bombus crotchii*)
- Western bumble bee (*Bombus occidentalis*)

2.4.5.4 Avoidance, Minimization, and/or Mitigation Measures

Alternatives 2A and 2B would have no impact on Pacific eulachon. With the incorporation of Standard Measures and Best Management Practices (Section 1.6), the project would have minimal impacts on bald eagle. No additional species-specific avoidance and minimization measures would be needed.

Alternatives 2A and 2B have the potential to impact marbled murrelet. Bio-7 (detailed below) would be implemented to further minimize any potential impacts to marbled murrelet.

> Bio-7: To offset potential effects on marbled murrelets (MAMU), a Marine Mammal Monitoring Plan would be developed that would include monitoring for marbled murrelets during project activities that may exceed established hydroacoustic noise thresholds for injury, and halting work if a murrelet is present and could be subject to injury. In addition, a Hydroacoustic Monitoring Plan (HMP) would be developed that would include measures to minimize exposure of MAMU to potentially harmful underwater sounds resulting from the project. The HMP is a standard measure for projects that involve impact pile driving, hoe-ramming, jackhammering, or any other activities that could potentially produce impulsive sound waves that may affect listed fish species (see Section 1.6, BR-2B). It is mentioned in the MMRP because MAMU would be included as part of the plan.
>
> Bio-8: To avoid impacts from pile diving noise on tidewater goby from both Alternatives (2A and 2B), no piles would be driven into the unnamed slough channel located between the crematorium and the northbound highway lanes at Post Mile 80.0.
>
> Bio-6: For both Alternatives 2A and 2B, implementation of Bio-6 (detailed in Section 2.4.4.4) would mitigate for impact noise and dewatering, which could lead to fish injury or mortality for CC Chinook salmon, SONCC coho salmon, sDPS green sturgeon, NC steelhead, tidewater goby, and longfin smelt. By restoring or creating quality habitat for different life stages of these species (e.g., juvenile rearing and/or foraging habitat etc.), this mitigation measure is anticipated to increase the population of these fish species over time thereby mitigating for losses potentially caused by the construction of this project.

2.4.6 Invasive Species

2.4.6.1 Regulatory Setting

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

2.4.6.2 Affected Environment

Cal-IPC places invasive plant species into three categories:

- High: species with severe ecological impacts, high rates of dispersal and establishment, and usually widely distributed
- Moderate: species with substantial and apparent ecological impacts, moderate to high rates of dispersal, establishment dependent on disturbance, and limited to widespread distribution
- Limited: species with minor ecological impacts, low to moderate rates of invasion, limited distribution, and locally persistent and problematic

At least 40 non-native plant species were identified within the Coastal BSA, 8 with a high rating by Cal-IPC: foxtail chess (Bromus madritensis), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), fennel (*Foeniculum vulgare*), French broom (*Genista monspessulana*), English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), and dense-flowered cordgrass (*Spartina densiflora*).

The most consequential invasive species within the Coastal BSA is the dense-flowered cordgrass that grows interspersed within the salt marsh, crowding out the native pickleweed and salt grass. English ivy grows densely within the understory of the pine tree grove along the southwestern edge of the Coastal BSA adjacent to the RV park. Himalayan blackberry is found on upland roadsides and within native coastal brambles, but also within and on the edges of wet areas.

2.4.6.3 Environmental Consequences

All Build Alternatives

For all Build Alternatives, there is potential for new invasive species to be brought to the project area on equipment, material, and vehicles during construction activities. Project construction could take up to four or five years, and the project would temporarily disturb areas, potentially spreading existing invasive species into new areas of the project. In order to prevent the spread of invasive species, Standard Measures such as **BR-3A,** which requires erosion control and landscaping material be free of invasive plant seeds, and BR-3B, which requires all equipment be cleaned in adherence with the latest version of the *California Department of Fish and Wildlife Aquatic Invasive Species Cleaning/Decontamination Protocol*, would be implemented. Additionally, Standard Measure **BR-4 B** requires a Revegetation Plan that includes invasive species control measures. For both Alternatives 2A and 2B, with these Standard Measures incorporated, there should be minimal impacts from invasive species.

No Build Alternative

The No Build Alternative would not change existing conditions, and there would be no impact to invasive species.

2.4.6.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance, minimization or mitigation measures are proposed for invasive species control for the project.



Chapter 3 California Environmental Quality Act (CEQA) Evaluation

3.1 Determining Significance Under CEQA

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 United States Code Section 327 (23 USC 327) and the Memorandum of Understanding dated May 27, 2022, and executed by FHWA and Caltrans. The Department is the lead agency under CEQA and NEPA.

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

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

3.2 CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects will indicate that there are no impacts to a particular resource. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, and standardized measures that are applied to all or most Caltrans projects such as Best Management Practices (BMPs) and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below; see Chapters 1 and 2 for a detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

The project would have the potential to have Significant and Unavoidable and potentially significant impacts on some resources; however, due to the nature and limited footprint of the project, the project would not be anticipated to have any significant irreversible environmental changes to any resources.

3.2.1 Aesthetics

Except as provided in Public Resources Code Section 21099, would the project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No Impact
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
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No Impact

CEQA Significance Determinations for Aesthetics

Please see Section 2.2.11 of this EIR/EA for more information.

a) Have a substantial adverse effect on a scenic vista?

The visual quality of the project site and adjacent surroundings would be maintained. Therefore, there would be "**No Impact**".

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No scenic resources would be damaged by the project. The project is within a landscape of high visual quality with views of the bay, marshes, and slough with associated natural elements in the foreground and the Coast Range in the distant background. The project would not diminish the views that make the highway eligible for scenic status. Therefore, there would be **"No Impact"**.

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?

Temporary visual impacts during implementation of the project under all Build Alternatives would result from construction activities such as equipment and materials staging, truck hauling, excavation activity, and construction signage. However, the project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. The replacement bridges would be constructed on a similar alignment and in scale with the existing bridges. Although the project would require removal of established vegetation, revegetation of any temporary access roads, constructions easements, and staging areas that were previously vegetated would take place upon completion of construction. The project includes context-sensitive design solutions including aesthetic treatment to the bridges and associated elements. The project conforms to applicable zoning and other regulations that govern scenic quality. Therefore, impacts are considered "**Less Than Significant**", and no mitigation is required.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The project would not include new lighting elements in an area in which there is currently no lighting. The project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Therefore, there would be "**No Impact**".

3.2.2 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:

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

CEQA Significance Determinations for Air Quality

Please see Section 2.3.6 of this EIR/EA for more information.

a) No Impact

As the project would not conflict with or obstruct implementation of any air quality plans, there would be **"No Impact"**.

b), c), d) Less Than Significant Impact

Humboldt County is classified as in attainment for federal National Ambient Air Quality Standards (NAAQS) for all transportation-related criteria pollutants. At the state level, Humboldt County is listed as attainment or unclassified for all criteria pollutants except for the state 24-hour PM_{10} (fine particulate matter 10 micrometers in diameter or less) standard. Particular matter from construction activities would be temporary and Standard Measures and BMPs (Section 1.6) would be utilized to limit dust within the project area. The project is not capacity increasing and would have no impact on traffic volumes or vehicle fleet mix. The project would generate a less than significant amount of pollutants during construction due to short-term emissions. Fugitive dust and construction equipment exhaust would be temporary and transitory in nature. The project would comply with air quality regulations to avoid or minimize construction emissions and Caltrans Standard measures and Best Management Practices for air

quality would be implemented to reduce exposure of pollutants and odors resulting from construction activities. Therefore, impacts are considered **"Less Than Significant"**, and no mitigation is required.

3.2.3 Biological Resources

Would the project:

Question	CEQA Determination
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?	Less Than Significant with Mitigation Incorporated
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 Impact
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
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
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	No Impact

CEQA Significance Determinations for Biological Resources

This section was prepared using information from the Natural Environment Study (NES) prepared for the project (Caltrans 2025b). See Section 2.4, Biological Environment for additional information on biological resources.

Record searches and habitat assessments were conducted to determine whether special-status species have the potential to be present in project area. Federal and state lists of potential species in the vicinity are included in Appendix F-Species Lists. The presence of potential habitat for each species and potential to occur are documented in Appendix G–Species Tables for plants and wildlife species and critical habitat (CH). Special-status plant and animal species with the potential to occur are discussed further below. The project would have no impact under CEQA on species with no potential habitat.

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?

Special-status Plants: Less Than Significant Impact.

Two special-status plant species, Humboldt Bay's owls-clover and Point Reyes bird's-beak, would be impacted by both Alternatives 2A and 2B. Alterative 2A would temporarily impact 165 square feet of Humboldt Bay owl's-clover and 157 square feet of Point Reyes bird's-beak. Alternative 2A would have no permanent impacts to Humboldt Bay owl's-clover or Point Reyes bird's-beak.

Alterative 2B would temporarily impact 174 square feet of Humboldt Bay owl's-clover and 218 square feet of Point Reyes bird's-beak and permanently impact 218 square feet of Humboldt Bay owl's-clover and 1,089 square feet of Point Reyes bird's-beak.

Standard measure BR-4B and BR-4C would require replanting of temporarily disturbed areas and THVF to be installed around occurrences adjacent to construction. The sizes of the impacted areas are relatively small compared to the occurrences within the salt marsh surrounding Humboldt Bay. With Standard Measures incorporated, there would be "***Less Than Significant Impact***" to both these species with both Alternatives 2A and 2B. Although the project does not require mitigation under CEQA, agency permitting will likely require permit-driven mitigation; therefore, in addition to on-site restoration of temporary impacts, **Bio-1** described in Section 2.4.1.4 would be implemented for Humboldt Bay owl's-clover and Point Reyes bird's-beak.

See Section 2.4.3 for detailed discussion of special-status plants.

Special-status Marine Mammals: Less than Significant with Mitigation Incorporated.

Under both Alternatives, California sea lions, harbor porpoises and harbor seals could occur within the Aquatic Species BSA and be exposed to noise, vibration, and visual disturbance associated with bridge construction and demolition. Potential impacts include exposure to airborne noise visual disturbance and hydroacoustic noise.

Noise and vibrations from vibratory pile driving, impact pile driving, drilling, and demolition could exceed airborne acoustic thresholds for behavioral disruption of harbor seals and California sea lion. These noises would be intermittent and temporary and would not be expected to cause long-term or permanent behavioral changes. The area where acoustic thresholds would be exceeded would be confined to Eureka Slough and not extend out into Arcata Bay, and Eureka Slough does not contain any known haul-outs or important areas for harbor seals or California sea lions. Additionally, marine mammals could easily move to unaffected suitable habitat within the bay. Impacts to marine mammals from airborne noise would be minimal.

Visual impacts from artificial lighting would be minimal as Standard Measure BR-2D requires artificial lighting to be temporary and directed specifically on the portion of the work area actively under construction.

For both Alternatives 2A and 2B, vibratory and impact pile driving during construction of the temporary trestles, temporary and permanent bridges, and during demolishment of the old bridges would result in hydroacoustic noise that could affect marine mammals. The areas in which Level A harassment (Injury) thresholds may be exceeded for non-impulsive noise sources for harbor porpoise, harbor seals, and California sea lion are confined to the narrow, shallow channel of Eureka Slough and do not extend into the adjacent Arcata Bay. While marine mammals present in the Level B harassment behavioral disruption area would be exposed to intermittent and temporary harassment, they could move to unaffected suitable habitat within the bay. As a result, Level B impacts would be minimal. A Hydroacoustic Monitoring Plan (BR-2B) would be developed to reduce the effects of hydroacoustic noise; however, marine mammals present within the Level A harassment Injury area during these construction activities would be subjected to substantial impact, including injury. Mitigation measure Bio-5 detailed in Section 2.4.4.4, which would develop a Marine Mammal Monitoring Plan, would be implemented to mitigate for hydroacoustic noise impacts to marine mammals and would include monitoring for presence of marine mammals during project activities that may exceed established acoustic and hydroacoustic noise thresholds. Therefore, CEQA impacts from both Alternate 2A and 2B would be "**Less Than Significant With Mitigation Incorporated**".

See Section 2.4.4 for a detailed discussion special-status marine mammals.

Special-status Fish including Coastal Cutthroat Trout, Pacific Lamprey, CC Chinook Salmon, SONCC Coho Salmon, Longfin Smelt, sDPS Green Sturgeon, NC Steelhead, and Tidewater Goby: *Less than Significant with Mitigation Incorporated*.

Under Alternatives 2A and 2B, impacts to Coastal cutthroat trout, Pacific lamprey, CC Chinook salmon, SONCC coho salmon, longfin smelt, sDPS green sturgeon, NC steelhead, and tidewater goby, and the Standard Measures implemented to minimize and avoid them, are identical to those described in detail in Sections 2.4.4.3 and 2.4.5.3.

Restricting in-water construction activities between June 15 and October 15 (BR-2E) would avoid the primary migration of adult Coastal cutthroat trout, CC Chinook salmon, SONCC coho salmon, longfin smelt, NC steelhead and peak outmigration of smolts in summer. Because the June 15 to October 15 in-water work window avoids the time when they are most likely present, and because they likely spend little time within the Aquatic Species BSA as compared to other areas within the watershed, their exposure to stressors from the project would likely be low. Additionally, Standard Measure BR-2B requires that pile diving be halted prior to reaching the cumulative SEL threshold; therefore, the area where fish would be susceptible to injury during pile driving is only the area where the Peak Injury threshold may be exceeded (Table 48). However, given that juveniles (or adult longfin smelt) may on occasion occur within the area of Peak Injury during pile driving or area where dewatering activities will take place between June 15 and October 15, they could be at risk for injury or mortality from these activities.

Alternatives 2A and 2B could impact critical habitat for CC Chinook salmon, SONCC coho salmon, sDPS green sturgeon, and NC steelhead. The small temporary losses of in-stream channel habitat during construction are miniscule relative to the available existing habitat throughout the 17,000-acre bay (i.e., less than 0.001% of the total area) and are likely to have minimal effects on the overall quantity or quality of habitat available. Following completion of the project, replacement of the existing bridges with the proposed new bridges would create slightly more shade due to the increased width of the new bridges. The effect of this stressor would likely be negligible.

Pacific lamprey adults and juveniles could be within the project area year-round. The salinity and temperatures within Eureka Slough are too high for ammocoetes to be present. For both Alternatives 2A and 2B, effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures (Section 1.6) incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could include lead to injury or mortality of Pacific lamprey.

Adult green sturgeon could occur in Eureka Slough within the Aquatic Species BSA, particularly in summer and fall when they are most likely to occur in Humboldt Bay.

Restricting in-water construction activities between June 15 and October 15 does not avoid the time of year when they are most likely to be present. However, Humboldt Bay green sturgeon use the deeper channels of Arcata Bay and have never been detected in the Eureka Slough. Therefore, as their presence is likely uncommon in Eureka Slough, for both Alternatives 2A and 2B effects from water quality, general construction noise, visual impacts, and habitat alteration, with Standard Measures incorporated, would be minimal. However, for both Alternatives 2A and 2B, even with Standard Measures incorporated, effects from impact noise and fish relocation could include lead to injury or mortality of sDPS green sturgeon.

The off-channel unnamed slough adjacent to Eureka Slough within the Aquatic Species BSA is potential habitat for eggs, larvae, and adult tidewater goby, and they could be present there year-round. Tidewater gobies are not known to be present within this unnamed slough. The unnamed slough is separated by land from the Eureka Slough channel; therefore, hydroacoustic noise and vibration from pile driving for the construction of the new bridges, the temporary bridge for Alternative 2A, and the northern trestles would have no impact on tidewater goby within this off-channel unnamed slough. Additionally, no dewatering would take place within this unnamed slough. The southern construction trestle for both Alternatives 2A and 2B would have piers within this off-channel unnamed slough. If the piles for these trestles were placed within the water of the slough channel, any tidewater goby present could be subject to injury or mortality from pile driving noise. In order to avoid impacts from pile driving within the slough waters, **Bio-8** (detailed in Section 2.4.5.4) would require all piles to be located outside of the unnamed slough channel. By locating all piles outside of the unnamed slough channel, tidewater goby would not be subject to direct injury from hydroacoustic noise. Tidewater goby spawning occurs from April through November, with distinct peaks in spring and late summer (Swenson 1999). Therefore, burrows containing eggs may be present within the unnamed slough during the construction window (June 15 through October 15). Vibrations from pile driving adjacent to this unnamed slough channel could cause nest burrows to collapse, leading to injury or mortality of tidewater goby.

Mitigation measure **Bio-8,** detailed in Section 2.4.5.4, would avoid impacts to tidewater goby by ensuring that no piles needed for the southern trestle for both Alternatives 2A and 2B would be driven into the unnamed slough channel located between the crematorium and the northbound highway lanes at Post Mile 80.0. Therefore, under CEQA, impacts from pile driving noise on tidewater goby from both Alternate 2A and 2B would be “Less Than Significant With Mitigation Incorporated”.

Mitigation measure **Bio-6**, detailed in Section 2.4.4.4, would mitigate for impact noise, vibration, and dewatering, which could include fish injury or mortality for Coastal cutthroat trout, Pacific lamprey, CC Chinook salmon, SONCC coho salmon, longfin smelt, sDPS green sturgeon, NC steelhead, and tidewater goby. By restoring or creating quality habitat for different life stages of these species (e.g., juvenile rearing and/or foraging habitat etc.), this mitigation measure is anticipated to increase the population of these fish over time, thereby mitigating for losses potentially caused by the construction of this project. Therefore, under CEQA, impacts from both Alternate 2A and 2B would be "***Less Than Significant With Mitigation Incorporated***".

Per FESA, for both Alternatives 2A and 2B, the project ***may affect, is likely to adversely affect*** CC Chinook salmon, SONCC coho salmon, sDPS green sturgeon, NC steelhead, and tidewater goby.

For both Alternatives 2A and 2B, per FESA, the project ***may affect, is not likely to adversely affect*** CC Chinook salmon, SONCC coho salmon, sDPS green sturgeon, and NC steelhead critical habitat. There would be no effect to tidewater goby critical habitat.

Per CESA, the project Alternatives 2A and 2B could result in "***Take***" of SONCC coho salmon and longfin smelt.

See Section 2.4.4 and 2.4.5 for a detailed discussion of these special-status fish.

Obscure bumble bee: Less Than Significant Impact.

For both Alternatives 2A and 2B, vegetation removal could impact foraging habitat of the obscure bumble bee. However, the upland areas where potential food plants would be removed due to project construction is very small (e.g., 0.25 acre or less) relative to the availability of food plants in the general vicinity of the project. There is no high-quality potential nesting or overwintering habitat for the obscure bumble bee within the Coastal BSA. Given the lack of high-quality habitat within the Coastal BSA, the small size of the impact area, and the abundance of suitable habitat in the project vicinity, Alternatives 2A and 2B would have a "***Less Than Significant Impact"*** on obscure bumble bee.

See Section 2.4.4 for a detailed discussion obscure bumble bee.

Special-status Birds including bald eagle, Bryant's savannah sparrow, marbled murrelet, olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and osprey: Less Than Significant Impact.

The project area has suitable nesting and foraging habitat for Bryant's savannah sparrow. Bald eagle, marbled murrelet, olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and have foraging habitat within the Coastal BSA.

Both Alternatives 2A and 2B require vegetation removal and would require noise and night lighting during construction, all of which could affect special-status bird species and their habitat. Standard Measures incorporated into the project, such as BR-2A, BR2-B, and BR2-D would minimize impacts associated with these activities by requiring trees and vegetation be removed outside of the nesting season of these species, minimizing hydroacoustic noise during construction and minimizing night lighting.

Alternatives 2A and 2B would remove habitat for special-status birds. Some areas would be permanently impacted, and the habitat would be replaced with infrastructure. In other areas, estuarine marsh would be removed to facilitate construction of the project and then would be replanted. However, the areas impacted are small, and there is adequate suitable habitat in the project vicinity to which individuals could relocate.

Given the abundance of suitable habitat in the vicinity, the relatively small size of the impact, the temporary nature of construction, and the Standard Measures detailed above, Alternatives 2A and 2B would have a ***less than significant impact*** on bald eagle, Bryant's savannah sparrow, marbled murrelet, olive-sided flycatcher, short-eared owl, northern harrier, white-tailed kite, black-capped chickadee, Cooper's hawk, double-crested cormorant, long-billed curlew, merlin, and osprey. In addition, for bald eagle, a state endangered species, it is anticipated that there would be "**no Take:** under CESA.

For both Alternatives, the areas in which the injury and mortality thresholds for marbled murrelet may be exceeded are confined to the narrow, shallow channel of Eureka Slough and do not extend into the adjacent Arcata Bay. Marbled murrelet presence within the Aquatic Species BSA is so unlikely that it is anticipated there would be a "***Less Than Significant Impact*****'.**

Although the project does not require mitigation under CEQA, an additional minimization measure has been included for both alternatives to reduce impacts. **Bio-7** (see Section 2.4.5.4) would be implemented to further minimize any potential impacts to marbled murrelet.

In addition, marbled murrelet is listed as federally threated and state endangered. There is no critical habitat within the project BSAs.

Per FESA, for both Alternatives 2A and 2B, the project ***may affect, but is not likely to adversely affect*** marbled murrelet. There would be ***no effect*** to marbled murrelet critical habitat.

Per CESA, the project Alternatives 2A and 2B would result in **"No Take"** of marbled murrelet or bald eagle.

The project would result in "**No Take**" of white-tailed kite

See Section 2.4.4 and 2.4.5 for a detailed discussion of special-status birds.

Special-status Bats Including Townsend's Big -Eared Bat: No Impact.

Alternatives 2A and 2B would remove the existing northbound and southbound bridges. Surveys of the bridges found that they may occasionally be used by roosting bats, however they are not used as a roosting or maternity colony. Standard Measure BR-2G calls for preconstruction surveys for bats prior to bridge removal. If bats are found to be present, a Bat Exclusion Plan would be prepared by a qualified biologist prior to bridge removal. With Standard Measures incorporated (Section 1.6), both Alternatives would have "**No Impact"** on Townsend's big-eared bat or any other bat species.

See Section 2.4.4 for a detailed discussion special-status bats.

Black Brant: No Impact.

Alternative 2A would permanently impact 0.0002 acres and Alternative 2B would permanently impact 0.0.112 acres of foraging habitat (eelgrass beds) for black brant. However, black brant in Humboldt Bay is known to mostly occur in Arcata Bay and South Bay with less than 1% of observations in the narrow channel between the two sections of the bay (Barnhart et al., 1992; Moore and Black, 2006). They have not been reported in the eelgrass beds of Eureka Slough. As black brant are not known to use the project area, both Alternatives would have "**No Impact"** on black brant.

See Section 2.4.4 for a detailed discussion of black brant.

Special-status Fish, Pacific Eulachon: No Impact.

As detailed in Section 2.4.5, Humboldt Bay is just outside of sDPS Pacific eulachon's range. They have never been captured in Freshwater Creek or Eureka Slough. Their presence in the Aquatic Species BSA is highly unlikely. Based on the temporary nature of construction, and as Pacific eulachon is not known to be present in Eureka Slough, there would be **"No impact"** to sDPS Pacific eulachon from either alternative.

Per FESA, Alternatives 2A and 2B of the project would have ***No Effect*** on Pacific eulachon and their critical habitat.

See Section 2.4.5 for a detailed discussion of Pacific eulachon.

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?

Riparian Habitat: Less Than Significant Impact.

Riparian habitat mapped within the Coastal BSA occurs along an estuarine inlet. Vegetation consisted of Arroyo willow (*Salix lasiolepis*) and other willow species and patchy red alders (*Alnus rubra*).

Alternative 2A would have no impacts on riparian habitat. Under Alternative 2B, 0.04 acre of riparian habitat would be temporarily impacted, and 0.04 acre of permanent impacts to riparian habitat is anticipated. This riparian habitat is also likely to be considered an environmentally sensitive habitat area (ESHA) by the CCC. For Alternative 2A, Standard Measure BR-4B would require a Revegetation Plan which would require revegetation of temporarily impacted areas.

Given the relatively small impact, the abundance of similar habitat within the region, and the Standard Measures incorporated into the project, both Alternatives would have a "**Less Than Significant Impact"** on riparian habitat. Although the project does not require mitigation under CEQA, **Bio-4** would likely be implemented during agency permitting. Under this measure, in line with agency policies, permit-driven compensation would offset impacts to riparian habitat.

See Section 2.4.2 for a detailed discussion of riparian habitat.

Sensitive Natural Communities: Less Than Significant Impact.

Pickleweed Mats, Salal-Berry Brambles/Thimbleberry, and Eelgrass Beds are considered CDFW SNCs. Of these, Pickleweed Mats Alliance and Eelgrass Beds would also possibly be considered an ESHA, while Salal-Berry Brambles/Thimbleberry are not considered ESHAs as they are common in the region and resilient to disturbance.

Impact acreages for each community by alternative can be found in Section 2.4.1.3. Standard Measures BR-4B**,** C**,** and D, which call for Revegetation Plans for temporary disturbed areas and Temporary High Visibility Fencing (THVF) and/or flagging around sensitive communities prior to construction, would be incorporated into both alternatives to minimize impacts. Given the small size of the impacts relative to the abundance of these communities around Humboldt Bay, with Standard Measures incorporated, both Alternatives would have a "**Less Than Significant Impact"** to Pickleweed Mats, Salal-Berry Brambles/Thimbleberry, and Eelgrass Beds.

Although the project does not require mitigation under CEQA, **Bio-1** and **Bio-2** (detailed in Section 2.4.1.4) would likely be implemented during agency permitting. Under these measures, in line with agency policies, permit-driven compensation would offset impacts to Pickleweed Mats and Eelgrass Beds.

See Section 2.4.1 for a detailed discussion of sensitive natural communities.

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?

Estuarine Marsh: Alternative 2B *Less Than Significant With Mitigation Incorporated*. Alternative 2A *Less than Significant Impact*.

Both build alternatives would have temporary and permanent impacts on estuarine marsh. Alternative 2A would temporarily impact 0.029 acres and permanently impact 0.039 acres of estuarine marsh. Alternative 2B would temporarily impact 0.297 acres and permanently impact 0.224 acres of estuarine marsh. Standard Measures BR-2E and BR-5A, which limit the operating period to between June 15 and October 15 for all in-stream work, would protect water quality and habitats. Standard Measure BR-4C would protect adjacent wetlands and waters by installing THVF around them. Measure BR-5B would call for the use of protection mats, if allowed, to minimize impacts to wetlands. As per measure BR-4B, Caltrans would prepare a Revegetation Plan that would require revegetation of wetlands and areas adjacent to waters that are temporarily impacted.

Estuarine marsh is restricted to bay and estuary locations and therefore is a naturally uncommon and highly valuable habitat. With Standard Measures incorporated, Alternative 2A would have a "**Less Than Significant"** on estuarine marsh. Although Alternative 2A does not require mitigation under CEQA, **Bio-4** (detailed in Section 2.4.2.4) would likely be implemented during permitting. Under this measure, in line with agency policies, permit-driven compensation would offset impacts to estuarine marsh.

Standard Measures and BMPs (Section 1.6) would be implemented as part of the project to help avoid and minimize effects to estuarine marsh. Caltrans anticipates significant impacts to estuarine marsh from Alternative 2B. To mitigate for these impacts to estuarine marsh, **Bio-3** (detailed in Section 2.4.2.4) would be implemented. Under CEQA, impacts from Alternate 2B would be **'Less Than Significant With Mitigation Incorporated"**.

See Section 2.4.2 for a detailed discussion of estuarine marsh.

Other Wetlands and Waters: Less Than Significant Impact.

Both build alternatives would have temporary and permanent impacts on roadside Ditch wetlands, estuarine and Marine Deepwater, estuarine channel, eelgrass beds, tidal mud flats, culverted waters, and coastal riparian. Impacts acres can be found in Section 2.4.2.3. For both build Alternatives 2A and 2B, the following Standard Measures would minimize and avoid impacts to wetlands and waters. BR-2E and BR-5A, which limits the operating period to between June 15 and October 15 for all in-stream work, would project water quality and habitats. Standard Measure BR-4C would protect adjacent wetlands and waters by installing THVF around them. Standard Measure BR-5B would call for the use of protection mats, if allowed, to minimize impacts to wetlands. After construction, all temporary structures would be removed (including bridge trestles and fill) and landform and topography would be restored back to preexisting conditions. Existing bridge abutments and piers would be cut off at or below grade. As per Standard Measure BR-4B, Caltrans would prepare a Revegetation Plan that would require revegetation of wetlands and areas adjacent to waters that are temporarily impacted.

Both Alternatives would have minor (generally less than 0.1 acres) of impact to estuarine and marine deepwater, estuarine channel, eelgrass beds, tidal mud flats, riparian, and culverted waters. While both alternatives would impact around 1 acre of roadside ditch wetland, these wetlands are of lower quality and common; therefore, the impact would be minor. Given the small size of the impacts relative to the abundance of these communities around Humboldt Bay, with Standard Measures incorporated, both Alternatives would have a "**Less Than Significant Impact"** to Other Wetlands and Waters.

Although the project does not require mitigation under CEQA, **Bio-4** (detailed in Section 2.4.2.4) would likely be implemented during permitting. Under this measure, in line with agency policies, permit-driven compensation would offset impacts to other wetlands and waters.

See Section 2.4.21 for a detailed discussion of other wetlands and waters.

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?

Habitat Connectivity: Less than Significant Impact

Wildlife corridors are areas used by wildlife for seasonal or daily migration. Eureka Slough connects Humboldt Bay to Freshwater Creek, providing important habitat connectivity for anadromous fish that use the creek for spawning and rearing. Under Alternatives 2A and 2B, the project could temporarily impact habitat connectivity. In-

water construction and associated water quality impacts, hydroacoustic noise, artificial lighting, and general disturbance could affect the ability of fish to move through Eureka Slough. Standard Measures and BMPs described in Section 1.6, such as BR-2 (items B, C, D, E, BR-5, WQ-1, and WQ-2), would be implemented to avoid and minimize impacts on habitat connectivity. These measures include a June 15 to October 15 in-water work window, measures to protect water quality, and a Hydroacoustic Monitoring Plan. The Standard Measures outlined above would avoid and minimize impacts on habitat connectivity and minimize exposure of fish to stressors. As a result, there would be a "***Less Than Significant Impact"*** to migratory fish.

For terrestrial wildlife, no natural landscape blocks or Essential Connectivity Areas (ECAs) were identified by the CEHC Project in or adjacent to the Coastal BSA. Humboldt Bay mudflats provide important wintering grounds for migratory shorebirds. The project's Coastal BSA has an ACE rank of 1 for its terrestrial limited connectivity opportunity but has a rank of 5 for its high aquatic biodiversity. Foraging migratory birds may be temporarily impacted during construction. If foraging individuals were present during construction, they could simply move away from the disturbance into the ample available foraging habitat around Humboldt Bay. Therefore, both Alternatives would have a "***Less Than Significant Impact***" on wildlife movement.

See Section 2.4.1 for additional discussion of wildlife movement.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Alternatives 2A and 2B would not conflict with any local policies or ordinances protecting biological resources; therefore, there would be **"No Impact"**.

See Section 2.2.2, Consistency with State, Regional, and Local Plans and Program, for additional information.

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?

There are no conservation plans adopted for any portion of the project; therefore, the project would not conflict with any such plans. As a result, there would be **"No Impact"**.

3.2.4 Cultural Resources

Would the project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	No Impact
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	No Impact

CEQA Significance Determinations for Cultural Resources

Please see Section 2.2.12 of this EIR/EA for more information.

a), b), c) No Impact

No properties listed on the National Register of Historic Places, no California Historical Landmarks, no California Register of Historic Resources, and no Points of Historical Interest are in the area of potential effect. No archaeological resources, including human remains, are anticipated at the project site. In the event unidentified cultural resources are unearthed during construction, work would be halted until a qualified archaeologist can assess the significance of the discovery. Therefore, there would be "No Impact".

3.2.5 Energy

Would the project:

Question	CEQA Determination
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
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No Impact

CEQA Significance Determinations for Energy

Please see Section 2.3.8 of this EIR/EA for more information.

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The construction and operation of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. However, there would be short-term energy consumption from the use of petroleum fuels by construction equipment and vehicles. Project construction would be temporary and energy consumption would be minimized to the maximum extent practicable. The project does not propose changes in the operation of the current roadway and would not increase capacity. Therefore, there would be a "***Less Than Significant Impact"*** and no mitigation is required.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The project is not a capacity-increasing transportation project and would not increase the use of energy resources during the operation of the bridges. The project would not conflict with state and local plans for renewable energy and energy efficiency; therefore, there would be "**No Impact**".

3.2.6 Geology and Soils

Would the project:

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

CEQA Significance Determinations for Geology and Soils

Please see Section 2.3.3 of this EIR/EA for more information.

a-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.

The project is not located within an Alquist-Priolo Earthquake Fault Zone. Additionally, the site is not located within any unzoned fault and is not considered susceptible to surface fault rupture hazards; therefore, there would be "**No Impact**".

a-ii) Strong seismic ground shaking?

The project is located in an area of potentially strong ground shaking. The project would replace two seismically deficient structures with two new structures. The Caltrans Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects, and the project would be designed to meet current Caltrans Seismic Design Criteria. However, highway infrastructure is susceptible to damage from very large seismic events which could result in substantial adverse effects from ground shaking even when built to current seismic design standards. Therefore, the **Impact Is Less Than Significant**, and no mitigation is required.

a-iii) Seismic-related ground failure, including liquefaction?

Some of the sediments in the upper 70-feet below ground surface may be susceptible to seismically induced liquefaction. The ground surface in the area of the bridge is relatively flat; however, in the event of a very large seismic occurrence, there is potential for bearing capacity failure and lateral spreading for the approach embankments. Potential hazards and impacts from liquefaction would be evaluated as part of future geotechnical exploration and analysis to support the project design and construction. If recommended by the geotechnical investigation, final design would include design features related to liquefiable soils. Highway infrastructure is susceptible to damage from very large seismic events, which could result in substantial adverse effects from soil liquefaction even when built to current seismic design standards. Therefore, the **Impact Is Less Than Significant**, and no mitigation is required.

a-iv), b), c), d), e), f) Landslides, soil erosion/topsoil, geologic unit, expansive soil, septic tanks/waste water, paleontological resources?

The project would not directly or indirectly cause potential adverse effects from landslides. The topography of the project limits is relatively flat with no natural slopes. The northern and southern approaches to both bridges consist of fill embankment ramps rising to approximately 14 feet in height over a distance of approximately 600 linear feet.

Construction of the project would include soil-disturbing activities such as grading and cut and fill slopes. Potential impacts related to soil erosion would be minimized through Standard Measures and BMPs, including the implementation of a Stormwater Plan which would include erosion control measures and a post construction Revegetation Plan that would include measures to return disturbed areas to pre-construction or better conditions. The project would not result in substantial soil erosion or the loss of topsoil.

The project is not located on a geologic unit or soil that is unstable, and the project site would not become unstable as a result of the project. The project would not result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. The project is not located on expansive soil that could result in substantial risk to life or property.

The project does not involve septic tanks or alternative waste water disposal systems.

The project would disturb geologic units with a low sensitivity for paleontological resources, and therefore, a low potential to affect scientifically significant paleontological resources. Caltrans Standard Measures and Best Management Practices (Section 1.6), which include work stoppage and appropriate resource follow-up if paleontological resources are encountered during construction, would be included in the project.

The project would not directly or indirectly impact geology and soils; therefore, there would be "**No Impact**" related to landslides, soil erosion/topsoil, geologic unit, expansive soil, septic tanks/waste water, paleontological resources.

3.2.7 Greenhouse Gas Emissions

Would the project:

Question	CEQA Determination
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less Than Significant Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Less Than Significant Impact

CEQA Significance Determinations for Greenhouse Gas Emissions

Please see Section 3.4 of this EIR/EA for more information.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Explained in Section 3.4.3.2 *Construction Emissions*, the project would result in GHG emissions during construction; however, standard specifications and regulations detailed in Section 3.4.4 *GHG Reduction Strategies*, would be implemented to reduce and minimize GHG during construction. Section 3.4.3.1, *Operational Emissions* explains that project would not add travel lanes or increase vehicle miles traveled. Therefore, the project would not result in an increase in operational GHG emissions. The project would not generate greenhouse gas emissions, either directly or indirectly, that would have a significant impact. The impact would be **"Less Than Significant"** and no mitigation is required.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

As described in Section 3.4.2.2 *Regional Plans,* the project supports the goals of the Regional Transportation Plan (RTP), City of Eureka General Plan, and the Humboldt Regional Climate Action Plan. Bicycle/pedestrian lanes on the bridges and connections to the existing regional trail system expand opportunity for and increase safety of active transportation. The project does not add travel lanes and would not result in an increase in VMT or operational GHG emissions. As stated previously above in Section a) and explained in Section 3.4.3.2, *Construction Emissions*, the project would result in GHG emissions during construction; however, standard specifications and regulations detailed in Section 3.4.4 GHG *Reduction Strategies* would be implemented to reduce and minimize GHG during construction.

The Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The impact would be **"Less Than Significant"** and no mitigation is required.

3.2.8 Hazards and Hazardous Materials

Would the project:

Question	CEQA Determination
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less Than Significant Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Less Than Significant Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	No Impact
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
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two nautical 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?	Less Than Significant Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Less Than Significant Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No Impact

CEQA Significance Determinations for Hazards and Hazardous Materials

Please see Section 2.3.5 of this EIR/EA for more information.

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

During construction, there is the potential to encounter hazardous materials in the soils and existing road materials. The project would involve disturbance of soils and demolition of existing bridge structures. Construction of the project would involve the transportation, storage, and use of common materials such as fuels and oils to operate construction equipment and vehicles. Accidental releases of these substances could contaminate soils and degrade the quality of surface water and groundwater or be released into the air. In addition, soil impacted by hazardous material could be encountered at properties that would be partially or fully acquired for the proposed project or potentially utilized as a construction staging location.

Typical hazardous materials used during construction would be handled in accordance with Caltrans standard procedures. Standard regulations and policies would be followed for the use, storage, handling, disposal, and transport of potentially hazardous materials during construction of the project. Project-specific BMPs would be implemented to further reduce the potential of accidental release or exposure to hazardous materials. The private property adjacent to the project area previously identified as being listed on the Hazardous Waste and Substances Site List (Cortese List) has a Case Closed status, having received a No Further Action letter from the North Coast Regional Water Quality Control Board in August of 2007. Cleanup areas at the listed site are not within the area of proposed work, and it is unlikely that contaminants would be encountered during construction. Therefore, potential impacts related to hazardous materials would be **"Less Than Significant"** and mitigation would not be required.

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?

The project would not create a significant hazard to the public or the environment through any reasonably foreseeable upset or accident conditions involving the release of hazardous materials. The project could potentially disturb hazardous materials in the form of asbestos-containing material, lead-based paint, treated wood waste, and aerially deposited lead. Routine hazardous materials such as paint, solvents, and fuel would be used, handled, stored, disposed of, and transported in accordance with applicable local, state, and federal regulations. Therefore, impacts would be **"Less Than Significant"**, and no mitigation is required.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The project is not located within one-quarter mile of an existing or proposed school; therefore, there would be "No Impact".

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The project Initial Site Assessment (Caltrans 2022d) found project work is on or adjacent to a private parcel listed on the Hazardous Waste and Substances Site List (Cortese List). Potential contamination associated with the property is due to past land uses and operation activities related to contaminant discharges and underground storage tanks at the site. The property received a No Further Action letter from the North Coast Regional Water Quality Control Board in August of 2007 and, having fulfilled obligations to mitigate for any releases that occurred, has a Case Closed status. Contaminant release and subsequent cleanup activities are not within the area of proposed construction, and it is unlikely that petroleum hydrocarbons would be encountered. With implementation of Caltrans Standard Measures and Best Management Practices (Section 1.6) and avoidance and minimization measures, the proposed project would not result in a significant hazard to the public or the environment. Therefore, the impact is **"Less Than Significant"** and no mitigation is required.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two nautical 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?

The project is located within two miles of Murray Field, a county-owned public airport. The project would comply with all appliable federal, state, and local safety regulations and pre-construction notifications to minimize potential for construction activities to result in a safety hazard or excessive noise for people residing or working within the project area. The replacement bridges would be approximately the same height as the existing bridges and the project would not result in any permanent features that would pose a hazard to air traffic or result in aviation-related safety impacts. Therefore, the impact would be **"Less Than Significant"** and no mitigation is required.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Traffic delays are expected during project construction. A Transportation Management Plan (TMP) would be prepared for the project to alleviate or minimize traffic delays through traffic handling practices. It is anticipated that lane reductions would be in effect during hours of darkness and a work zone speed reduction would be required. Traffic delays would be coordinated with all emergency responders and contract specifications would require the contractor to provide local notifications at least 10 business days before the start of job activities. As such, the project would not interfere with emergency response, or an Emergency Response Plan related to hazardous waste. Therefore, the impact would be **"Less Than Significant"** and no mitigation is required.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The project is not located within a Fire Hazard Severity Zone (FHSZ) in a State Responsibility Area. The project area is located within a Local Responsibility Area served by Humboldt Bay Fire. There are no areas designated as *Very High* Fire Hazard Severity within five miles of the project area and the nearest designated Severity Zone (moderate) is approximately two miles to the east. The project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildfires; therefore, there would be **"No Impact"**.

3.2.9 Hydrology and Water Quality

Would the project:

Question	CEQA Determination
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	Less Than Significant Impact
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site;	No Impact

Question	CEQA Determination
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	No Impact
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	No Impact
(iv) impede or redirect flood flows?	No Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No Impact

CEQA Significance Determinations for Hydrology and Water Quality

Please see Sections 2.3.1 and 2.3.2 of this EIR/EA for more information.

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Replacement of the Eureka Slough bridges could result in temporary impacts on water quality during construction. Soil exposed by excavation activities would have an increased potential for soil erosion which could be transported into receiving waters through stormwater runoff. Petroleum products, chemicals, and concrete-related waste may be spilled or leaked with the potential to be transported to receiving waters through stormwater runoff. To avoid substantial degradations to surface or ground water quality, standard temporary water pollution control, permanent design pollution prevention, and post-construction treatment Best Management Practices (BMPs) would be used to meet water quality standards and waste discharge requirements.

The project would disturb more than 1 acre of soil and would need to comply with the NPDES Construction General Permit and would be required to implement an appropriate Stormwater Plan. Project features and the Stormwater Plan prepared for the project prior to construction would identify temporary BMPs to address potential temporary impacts on water quality. Therefore, the impact would be **"Less Than Significant"** and no mitigation is required.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The project is located within the Eureka Groundwater Basin. Temporary water diversion and dewatering within the Eureka Slough would be incorporated as a project feature, and clean groundwater could be used as dust control, disposed of in an upland area, or transported to a publicly owned treatment facility. The proposed project would implement standard temporary water pollution control, permanent design pollution prevention, and post-construction treatment BMPs to avoid substantial decreases in groundwater supplies and substantial interference with groundwater recharge. The proposed project would not decrease groundwater supply or interfere with groundwater recharge or impede sustainable ground water management. Therefore, there would be **"No Impact"**.

c i) Result in substantial erosion or siltation on- or off-site?

The project would not temporarily or permanently alter the course of any stream or river. The project would implement permanent design pollution prevention BMPs to address potential post-construction stormwater impacts, and standard construction BMPs and a Stormwater Plan would be required to avoid impacts during construction. These project design features would avoid substantial erosion or siltation from occurring on-or off-site during the construction and operation of the project. The project would add new impervious surface, which would be fully treated. Therefore, there would be **"No Impact"**.

c ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

The project would not result in an increase to the rate and amount of surface runoff. The proposed bridge would be designed with minimal impact to the floodplain and would not cause any rise to the existing base flood elevation. The project would not significantly alter the existing drainage pattern within the project limits and surrounding area. The increase in new impervious surface would be addressed with treatment BMPs that would be located and sized to appropriately infiltrate, harvest, reuse, and/or evapotranspire stormwater runoff. Therefore, there would be **"No Impact"**.

c 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?

The proposed project would be designed to avoid exceeding the capacity of existing or planned stormwater drainage systems. The project would not create or contribute runoff water or alter existing drainage patterns such that the capacity of existing or planned stormwater drainage systems would be exceeded. Project features, such as post

construction treatment areas, would avoid contributing additional sources of polluted roadway runoff to the project area. The project would not adversely impact the current hydraulic conditions of the project area. Therefore, there would be **"No Impact"**.

c iv) Impede or redirect flood flows?

The proposed project would not impede or redirect flood flows. A final hydraulic analysis would be conducted during final design to determine appropriate bridge design features needed to meet flood capacity and permitting requirements. Therefore, there would be **"No Impact"**.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Within the project limits, the Eureka Slough floodplain is located within a FEMA Zone VE floodplain. The FEMA Zone VE designation is for flood zones subject to the 1-percent annual chance floodplain that have additional hazards associated with storm waves. Because the project is located near the coastline of the Pacific Ocean, it could be subject to tidal influence and tsunami inundation. Although portions of the project limits could be inundated by flood or tsunami, the replacement of the bridges does not increase the risk. The proposed project would not increase the base flood elevation of any designated floodplain and would not increase the risk of release of pollutants due to project inundation. Therefore, there would be **"No Impact"**.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The proposed project would be designed to meet the water quality standards outlined in the RWQCB Basin Plan and would not conflict with or obstruct the Basin Plan or any other applicable federal, state, or local water quality control plans. The project is located within the Eureka Plain Groundwater Basin. The proposed project would not conflict with or obstruct implementation of sustainable groundwater management. Therefore, there would be **"No Impact"**.

3.2.10 Land Use and Planning

Would the project:

Question	CEQA Determination
a) Physically divide an established community?	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	No Impact

CEQA Significance Determinations for Land Use and Planning

Please see Sections 2.2.1 and 2.2.3 of this EIR/EA for more information.

a) Physically divide an established community?

Replacement of the Eureka Slough bridges would not divide an established community, and no residences or businesses would be displaced. Therefore, there would be no "**No Impact**" and no mitigation is required.

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?

The project is consistent with state, regional and local plans including the Humboldt County Association of Governments Regional Transportation Plan and the City of Eureka General Plan (Section 2.2.1). The project is within the Coastal Zone within State jurisdiction, and a Coastal Development Permit would be required to comply with the California Coastal Act (Section 2.2.3). The project would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, there would be **"No Impact"** and mitigation is not required.

3.2.11 Noise

Would the project result in:

Question	CEQA Determination
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
b) Generation of excessive groundborne vibration or groundborne noise levels?	Less Than Significant Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two nautical miles of a public airport or public use airport, would the project expose people residing or working within the project area to excessive noise levels?	Less Than Significant Impact

CEQA Significance Determinations for Noise

Please see Section 2.3.8 of this EIR/EA for more information.

a), b) 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 or Generation of excessive groundborne vibration or groundborne noise levels?

The project would not increase the capacity of U.S. 101 for motor vehicles and therefore would not result in a permanent increase in ambient noise levels. A temporary increase in ambient noise levels would occur and groundborne vibration and noise would be generated during construction. Noise and vibration would not be in excess of established local standards.

Pile driving activities, which generate the highest noise and vibration levels during project construction, would be required for construction of the temporary work trestles and the replacement bridge foundations. Typical pile driving can generate noise levels ranging between 95 and 101 dBA Lmax at 50 feet. The nearest noise sensitive area to the pile driving operation is the Shoreline RV Park. The nearest RV site is approximately 80 feet from the closest proposed pile installation location. At 75 feet from pile driving, the typical maximum outdoor noise levels would be 98 dBA and the typical hourly average noise level would be 96 dBA (Table 30).

Vibration levels are highest close to the source, and then attenuate with increasing distance. The amount of attenuation over distance varies depending on soil conditions. Vibrations generated by the project would diminish in magnitude as they travel away from the source. The upper limits of impact pile driving produce higher vibration levels than vibratory pile driving. The distance to potential annoyance to nearby residences from impact pile driving vibration would be considered severe within 85 feet of the pile driving operation and would be barely perceptible beyond 2,500 feet. Vibratory pile driving would be considered severe at distances less than 40 feet and would be barely perceptible beyond 1,115 feet. The distance to potential damage to structures from vibration depends on the structure type. The potential to cause damage from impact pile driving could occur to within 130 feet of historic buildings, 110 feet of older residential buildings, or 70 feet of new residential and commercial structures. Potential damage from vibratory pile driving would occur within 60 feet of historic buildings, 50 feet of older residential buildings, or 32 feet of new residential and commercial structures.

Caltrans utilizes Standard Specifications for noise that specify noise resulting from work activities would be monitored and controlled to not exceed 86 dBA Lmax at 50 feet from the job site activities from 9 p.m. to 6 a.m. Additional noise controls would be implemented where practical and feasible. Measures that can further reduce potential noise impacts include prohibiting unnecessary idling of engines, acoustic shielding around pile driving hammer, and restricting noise-generating construction activities during certain days and times with notification made in advance if work is necessary outside those restrictions. Therefore, impacts from noise are considered **"Less Than Significant"** and no mitigation is required.

There are no structures located within the thresholds for potential damage from vibration or impact pile driving within the project limits. Therefore, the project would have a **"Less Than Significant"** impact from vibration and no mitigation is required.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two nautical 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?

The project is located approximately one mile from Murry Field, a Humboldt County public airport that supports regional aviation. People working or living between the project location and the airport (along Jacobs Avenue) would be exposed to both construction noise from the project and air traffic noise from the airport. However, while residents and workers at the location could be exposed to increased noise levels, the distance between the project and the airport is great enough that noise would not reach a level that would be excessive. Impacts are considered **"Less Than Significant"** and no mitigation is required.

3.2.12 Population and Housing

Would the project:

Question	CEQA Determination
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	No Impact
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No Impact

CEQA Significance Determinations for Population and Housing

Please see Section 2.2.5 of this EIR/EA for more information.

a), b) 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 displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The proposed project would replace existing bridges on an existing highway. No extension of roads or infrastructure would occur, and no capacity is being added. The majority of improvements and construction associated with all Build Alternatives would be within the existing Caltrans right of way. Partial acquisitions and easements would be required from adjacent federal and private property; however, it is anticipated that acquisitions would not affect existing use or function of the properties. No displacement or relocation of residents or businesses would occur, and construction of replacement housing elsewhere would not be necessary. Therefore, there would be **"No Impact"**, and mitigation is not required.

3.2.13 Public Services

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 following public services:

Question	CEQA Determination
a) Fire protection?	No Impact
b) Police protection?	No Impact
c) Schools?	No Impact
d) Parks?	No Impact
e) Other public facilities?	No Impact

CEQA Significance Determinations for Public Services

Please see Sections 2.2.9 and 2.2.10 of this EIR/EA for more information.

a), b), c), d), e) Affect fire or police protection, schools, parks, or other public facilities?

The proposed project is limited to the replacement of the existing Eureka Slough bridges, associated roadway improvements, and trail connections within the project limits. The project does not include development which may result in a need for new or improved government facilities. There would be no change to the service ratios, response times, or other public performance objectives for existing public services such as fire protection, police protection, schools, parks, and other public facilities. Therefore, there would be **"No Impact"**.

3.2.14 Recreation

Question	CEQA Determination
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	No Impact
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

CEQA Significance Determinations for Recreation

Please see Section 2.2.4 of this EIR/EA for more information.

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The project would not provide increased access or directly or indirectly increase use or deterioration of existing neighborhood or regional parks. While the project would result in increased access to recreational trail facilities within the project area by providing additional connection points, the enhanced access would not promote use that would lead to substantial or accelerated physical deterioration of the existing trail system. Therefore, there would be **"No Impact"**.

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?

The project would provide connections to existing public trails. The trail connections would not require the construction or expansion of the existing recreational facilities and would not result in an adverse physical effect on the environment. Therefore, there would be **"No Impact"**.

3.2.15 Transportation

Would the project:

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

CEQA Significance Determinations for Transportation

Please see Section 2.2.10 of this EIR/EA for more information.

a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The project would not change the existing circulation system because it would not change the number or operation of vehicle lanes within the project limits. The project would include new shared bicycle/pedestrian lanes, standard inside and outside shoulders, and a new section of sidewalk adjacent to U.S. 101 west of the southbound bridge. The project would be consistent with programs, plans, ordinances, and policies regarding the circulation system. Therefore, there would be **"No Impact"**.

b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

The project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b). The project would not result in an increase in vehicle miles traveled as there would be no increase in the number of travel lanes within the project limits. Therefore, there would be **"No Impact"**.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The project would not increase hazards or propose incompatible uses. The project would correct the existing bridge profile that impedes sight distance and would implement Caltrans design standards to increase the safety of the traveling public. Therefore, there would be **"No Impact"**.

d) Result in inadequate emergency access?

During construction, two lanes of traffic would be maintained in both directions during daytime peak travel times. Lane closures would be utilized during nighttime construction, reducing traffic to one lane in each direction. A Transportation Management Plan (TMP) would be prepared as part of the project to minimize delays during both day and nighttime construction. Infrequent, temporary full closures would be needed when northbound and southbound traffic is shifted. Measures outlined in the TMP would be taken to ensure that emergency services would not be delayed, and construction activities would be coordinated with emergency service providers and emergency vehicles would be accommodated at all times. After the project is constructed, emergency service would be enhanced with wider shoulders which would improve travel times for emergency services. Therefore, the impact would be **"Less Than Significant"** and no mitigation is required.

3.2.16 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:

Question	CEQA Determination
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	No Impact
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No Impact

CEQA Significance Determinations for Tribal Cultural Resources

Please see Section 2.2.12 of this EIR/EA for more information.

a), b) No Impact

In compliance with AB 52, Native American consultation was initiated on January 11, 2021, early in the project development phase and has continued throughout the life of the proposed project. Correspondence continued as Caltrans prepared to conduct a geoarchaeological investigation of the project area which was completed in 2022. The Native American Heritage Commission (NAHC) responded to Caltrans' request on September 9, 2021, for a consultation list of tribes, groups, and individuals who have expressed an interest in the project vicinity and for review of the Sacred Lands File for any potential sacred sites within the project vicinity. The NAHC indicated no sacred sites were identified and provided a consultation list pursuant to Section 106. Consultation emails were sent to all tribal groups and individuals to inform them of the proposed geoarchaeological investigation and to notify them that the bridge project was continuing. Recent correspondence with the tribes occurred on June 19, 2023, to share project updates. Native American tribes, groups, and individuals consulted include the Chairperson and THPO of the Bear River Band of the Rohnerville Rancheria, the

Chairperson, THPO, and Administration for the Wiyot Tribe, Table Bluff Rancheria, and Chairperson, THPO, and Tribal Cultural Resources Advisor for Blue Lake Rancheria.

The geoarchaeological study conducted in 2022 determined that it is highly unlikely that any potentially important cultural resources would be affected by the proposed project-related earth disturbances, and recommended no further archaeological identification efforts for the project area. All of the interested tribes were updated on the results of the geoarchaeological study on May 5, 2022. It is Caltrans' policy to avoid cultural resources whenever possible. If cultural resources or human remains are exposed during Caltrans activities, Caltrans policy and state and federal law require that activity in that area is stopped until appropriate action can be taken to address the discovery. In addition, Caltrans would consult with the Native American tribes and representatives in the event that human remains, or other tribal cultural resources are discovered during construction. Therefore, there would be **"No Impact"**.

3.2.17 Utilities and Service Systems

Would the project:

Question	CEQA Determination
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
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	No Impact
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	No Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No Impact

CEQA Significance Determinations for Utilities and Service Systems

Please see Section 2.2.9 of this EIR/EA for more information.

a) Less than Significant Impact

The project would require relocation of overhead and underground utilities, and any utilities attached to the bridge. Utilities would be relocated following current design requirements and would avoid impacting sensitive environmental resources. The City of Eureka's water and sewer lines are currently attached to the bridges. While most likely they will be re-attached to the bridges, with some temporary attachments during construction, there is the possibility of moving them completely off the highway alignment. This would involve underground directional drilling from upland areas, and potentially additional environmental studies and permitting. Impacts are expected to be **"Less Than Significant"** and no mitigation is required.

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

The project does not include new development or uses that would require water supplies nor does the project include uses that generate new wastewater flows. While the project would generate solid waste during construction, the operation of the highway would not generate solid waste or impair the attainment of solid waste reduction goals. The project would comply with all federal, state, and local statutes and regulations related to solid waste. Therefore, there would be **"No Impact"**.

3.2.18 Cumulative Impacts

This cumulative impact analysis evaluates whether the project, in combination with projects that are planned, approved, or under construction, would result in a cumulative effect on a resource, and, if so, whether the project's contribution to the cumulative impact would be considerable. If the project would not cause direct or indirect impacts on a resource, it would not contribute to a cumulative impact on that resource.

3.2.18.1 Regulatory Setting

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

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

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.

3.2.18.2 Affected Environment (Methodology)

There are several steps involved in analyzing for cumulative impacts. Resources are considered in the cumulative impacts analysis following the process set forth in the 2005 *Caltrans' Guidance for Preparers of Cumulative Impact Analysis*. The first step in the process is to evaluate which project-specific resources need to be considered in the cumulative impact analysis. Resources that could be directly or indirectly impacted by the project could potentially contribute to a cumulative impact to that resource and would need to be further evaluated to determine if the impact is cumulatively considerable.

The following steps serve as guidelines for identifying and assessing cumulative impacts:

1. Identify the resources to consider in the cumulative impact analysis by gathering input from knowledgeable individuals and reliable information sources.

2. Define the geographic boundary or Resource Study Area (RSA) for each resource to be addressed in the cumulative impact analysis.

3. Describe the current health and the historical context of each resource.

4. Identify the direct and indirect impacts of the proposed project that might contribute to a cumulative impact on the identified resources.

5. Identify the set of other current and reasonably foreseeable future actions or projects within the RSA and their associated environmental impacts to include in the cumulative impact analysis.

6. Assess the potential cumulative impacts.
7. Report the results of the cumulative impact analysis.
8. Assess the need for mitigation and/or recommendations for actions by other agencies to address a cumulative impact.

Project-Specific Resource Evaluation.

If a project would not result in a direct or indirect impact to a resource, it would not contribute to a cumulative impact to that resource and would not need to be further evaluated. The project would not directly or indirectly impact the following resources:

- Agriculture and Forestry Resources
- Cultural Resources
- Tribal Cultural Resources
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Wildfire
- Biological Resources: black brant, bats, migratory birds, and Pacific eulachon

If a project would result in an impact to a resource, it is evaluated to determine whether the project would have impacts that are individually limited but cumulatively considerable when viewed in connection with the effects of past or future projects within the RSA. The past and future projects considered when determining whether a cumulative analysis is warranted are presented below in Tables 56 and 57. The projects listed include land use developments, infrastructure, and other transportation improvements that would be located near the proposed project.

Table 52. Caltrans Projects Considered in the Cumulative Impacts Analysis

Project Name	Location Route/ Post Mile	Jurisdiction	Project Description	Status or Estimated Completion Date	Potential Cumulative Affect
EA 01-0M080 Manila Micro-Surface And Digouts	HUM-255-0.5/8.6	Caltrans	Micro surfacing	1/17/2024	Hazardous waste (lead).
EA 01-0N520 Clean CA Samoa Bridge Decorative Lighting	HUM-255-0.28/0.28	Caltrans	Install lighting on Samoa Bridge	3/15/2025	Visual.
EA 01-3660U Eureka-Arcata Corridor Combined: (EA 01-0F220 Arcata Accel/Decel Lanes , EA 01-0C970 Eureka/Arcata Corridor MBGR, EA 01-36600 E/A RTIP 101 Corridor, Indianola Interchange, Mitigation)	HUM-255-7/7.6, HUM-101-79.9/86.1	Caltrans	Combined environmental mitigation, Upgrade 4-Lane Facility	1/21/2026	Transportation, special-status fish, wetlands, and water quality.
EA 01-0H650 HUM-101 Drainage North	HUM-101-56.6/137.1	Caltrans	Rehabilitate drainage systems	6/1/2029	Water quality, Salal-Berry Bramble SNC, special-status fish.
EA 01-0M270 Eureka/Arcata 101 SLR Resilience	HUM-101-79.9/85	Caltrans	Sea Level Rise Resilience	12/2/2033	This project has the potential to impact wetlands, sensitive natural communities and special-status plant species. However, at this stage in project development, the level of impact to these resources is unknown.

Table 53. Non-Caltrans Projects Considered in the Cumulative Impacts Analysis

Project Name	Location Route; Post Mile	Jurisdiction	Project Description	Status Or Estimated Completion Date	Potential Affect
Humboldt Bay Trail South	--	County of Humboldt	Pedestrian trail from Eureka to Arcata	In construction, completion in 2025	Wetlands, special-status plants, special-status birds, special-status fish.
Bay to Zoo Trail	--	City of Eureka	Trail linking Eureka Waterfront Trail to Sequoia Park	In planning, estimated completion in 2027	Wetlands, special-status birds, special-status fish.
Humboldt Bay Shellfish Aquaculture Expansion Project	--	Humboldt Bay Harbor District	Aquaculture	Planning, no completion date	Water quality, eelgrass beds.
King Salmon Fisherman's Channel maintenance	--	Humboldt Bay Harbor District	Dredging	Ongoing	Water quality, eelgrass beds, longfin smelt.
Humboldt Bay periodic dredging	--	Humboldt Bay Harbor District	Dredging	Ongoing	Special-status fish, marine mammals.
Nordic Aquafarm	--	Humboldt Bay Harbor District	Aquaculture facility adjacent to bay in Samoa	Pending, in design/permitting.	Special-status fish.
Offshore Wind Heavy Lift Terminal	--	Humboldt Bay Harbor District	Industrial land-based port to support off-shore wind efforts	Pending, in design/permitting.	This project has the potential to impact wetlands, eelgrass beds, special-status plants, special-status birds, special-status fish, and marine mammals. However, at this stage in project development, the level of impact to these resources is unknown.
Elk River Estuary Restoration	HUM 101/ 74	City of Eureka	Salt marsh and tidal channel restoration of 114 acres adjacent to Elk River as it enters Humboldt Bay, west of U.S. 101.	2023 earthwork completed, may be continued vegetation management.	**Positive** impact to wetlands and Pickleweed SNC, and special-status fish.

Project Name	Location Route; Post Mile	Jurisdiction	Project Description	Status Or Estimated Completion Date	Potential Affect
Elk River Recovery Program	--	CalTrout	Restoration activities in the upper estuary east of U.S. 101.	Early planning stages.	Project may have impacts to sensitive natural communities, special-status plants, special-status birds, and **positive** impacts to wetlands and special-status fish. However, at this stage in project development, the level of impact to these resources is unknown.

3.2.18.3 Environmental Consequences (Cumulative Impact Analysis)

All Build Alternatives

The cumulative impact analysis determines whether impacts to resources are cumulatively considerable when considered with other past and reasonably foreseeable projects in the resource study area (RSA). Potential for impacts to resources areas resulting from the Build Alternatives when considered cumulatively with projects in the above tables are discussed below.

Aesthetics

The RSA for aesthetics would be the Area of Visual Effect (AVE), which is the area from which a project would be visible. As discussed in Sections 2.2.10 and 3.2.1, *Visual/Aesthetics*, under both Build Alternatives, the layout, height, and scale of the project is comparable to the existing elements being replaced. The AVE would remain visually intact with views of natural features remaining as the dominant visual element. There would be no adverse effect on the scenic vista and no project features would adversely affect views in the area. No projects with visual impacts included in the cumulative impact analysis could be viewed at the same time as the Eureka Slough bridges location; therefore, there would be no shared AVE. The Build Alternatives would not contribute to permanent impacts to the AVE and the project would not be cumulatively considerable for effects on aesthetics.

During construction, the views of and from the project location would include construction trestles and equipment, and staging areas with construction materials. Construction-related impacts to views would be temporary and limited to the area adjacent to the work site. Likewise, any construction equipment and activities from other projects that might occur in the AVE would be temporary and are not anticipated to occur in close proximity as the proposed project Therefore, effects to aesthetics during construction would not be cumulatively considerable.

Air Quality

The RSA for air quality would be North Coast Air Basin. As discussed in Sections 2.3.6, and 3.2.2, *Air Quality*, under all Build Alternatives the project is a non-capacity increasing project that would not directly or indirectly impact air quality as it would not increase emissions compared with the No Build Alternative. The completed project would have no cumulatively considerable impacts on air quality.

Humboldt County is categorized as an attainment area for all current National Ambient Air Quality Standards (NAAQS) and in attainment for all state standards except for PM_{10}, which is produced during ground disturbance during construction. During construction, short-term degradation of air quality is expected. These construction emissions would be temporary and limited to the immediate area surrounding the construction site. As no other projects would be concurrently constructed at the site, , there would be no cumulative impact to air quality. Therefore, effects to air quality would not be cumulatively considerable and cumulative effects from the project would not be anticipated.

Greenhouse Gas Emissions

The RSA for greenhouse gas emissions (GHG) would be regional GHG emissions. As discussed in Sections 3.2.7, *Greenhouse Gas Emissions*, and 3.4, *Climate Change*, an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Because the fundamental characteristic of global climate change is a cumulative impact, a project may contribute to that impact through a change in GHG emissions. The project would not result in a change in GHG emissions. The project does not add travel lanes or increase vehicle miles traveled and would therefore not result in an increase in operational GHG emissions or result in a source of new permanent emissions. The project would not interfere with regional GHG reduction goals or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

While construction activities from the project would generate GHG emissions, they would be temporary and would not contribute to a change in the amount of regional GHG emissions. Likewise, other projects completed throughout the region would produce GHG emissions during construction; however, construction activities are not a

new, permanent source of emissions. The Build Alternatives are not anticipated to affect regional GHG emissions. Therefore, effects to GHG emissions would not be cumulatively considerable and cumulative effects from the project would not be anticipated.

Energy

The RSA for energy would be the regional supply of gasoline and diesel. As discussed in Sections 2.3.8 and 3.2.5, *Energy*, Build Alternatives 2A and 2B would not result in inefficient or unnecessary use of energy, or wasteful use of energy resources. The project would not result in changes in traffic volumes, vehicle mix, or any other factor that would cause an increase in long-term energy consumption. Long-term operation and maintenance of the new bridges is expected to result in lower energy use than for maintaining the existing bridges.

During construction, there would be a one-time expenditure of direct energy use to build the project. The energy used under both Build Alternatives would not contribute to unnecessary or wasteful use of energy. No projects identified in the cumulative impact analysis are anticipated to contribute to unnecessary or wasteful use of energy. Additionally, the project is not anticipated to coincide with other projects that could contribute to an energy shortage. Therefore, effects to energy would not be cumulatively considerable and cumulative effects from the project would not be anticipated.

Geology and Soils

The RSA for geology and soils is the surface and subsurface conditions of the bridge site, the slough channel, and the adjacent tidal mudflat, marshy floodplain, and fill embankments. As discussed in Sections 2.3.3 and 3.2.6, G*eology/Soils/Seismic/ Topography* the project would be designed according to current standards to minimize the potential for adverse impacts to the public from earthquakes, landslides, liquefication, or other geologic hazards. The replacement bridges would be less vulnerable in a seismic event or other coastal hazard than the existing bridges, and the project would not, when considered with the effects of other projects within the RSA, contribute to the occurrence or increase the intensity of a geologic hazard within the project area.

Construction activities would require grading and vegetation removal, which could result in soil compaction and exposure of bare soil. Upon completion of construction, the project site would be restored to pre-construction conditions and revegetated. No other projects have been identified that would result in compaction or exposure of soil within the project area. The Build Alternatives would not cumulatively contribute to impacts to geology and soils. Therefore, effects to geology and soils would not be cumulatively considerable and cumulative effects from the project would not be anticipated.

Hazardous Materials

The RSA for hazardous materials is the soils, existing bridge structures, roadway features such as sign posts and traffic striping within the project area, and the fuel, lubricants, and fluids used during construction As discussed in Sections 2.3.5 and 3.2.8, *Hazardous Waste/Materials*, the project would generate hazardous waste during construction. During construction, there is the potential to encounter hazardous materials in the soils, existing road materials, and existing bridge materials and there would also be potential for the accidental release of hazardous materials during construction activities. Construction of the proposed project would not result in the inability of other nearby projects being able to properly dispose of hazardous waste or result in an increased exposure to the public or workers to a cumulatively considerable amount of hazardous waste. Construction Best Management Practices would be employed throughout construction, and all materials would be properly disposed of at a licensed facility. The project area would not be impacted by hazardous materials from the Build Alternatives. Therefore, effects from hazardous materials would not be cumulatively considerable and cumulative effects from the project would not be anticipated.

Hydrology

The RSA is the hydrology of the Eureka Plain Hydrologic Unity within the Freshwater watershed. As discussed in Sections 2.3.1 and 3.2.9 *Hydrology and Floodplain*, the Eureka Slough bridges are located within a floodplain. Additionally, the project location is near the coastline of the Pacific Ocean, where it could be subject to tidal influence, sea level rise, and tsunami inundation. The project design would consider the FEMA water surface, sea level rise, and tidal influence for the minimum soffit elevation of the bridges. The project would not result in impacts to the area hydrology or an encroachment of the floodplain that would increase flooding risk. The project would not contribute to incompatible floodplain development or incompatible floodplain development from other projects. No projects have been identified within the RSA that would impact area hydrology. The Build Alternatives would not cumulatively contribute to impacts to the hydrology or floodplain within the project area. Therefore, effects to hydrology would not be cumulatively considerable and cumulative effects from the project would not be anticipated.

Noise and Vibration

The RSA for noise is the residents, businesses, and visitors within the project area and the RSA for vibration is the structures located within the project area. As discussed in Sections 2.3.7 and 3.2.11, *Noise and Vibration*, replacement of the Eureka Slough bridges would not result in future long-term traffic noise impacts. No substantial vertical profile changes are being considered that would increase noise between receptors and the traffic noise source.

During construction, traffic detours would not result in substantial noise increases and measures would be implemented to avoid and minimize construction noise and vibration. Pile driving (the highest noise level construction activity) would not occur during nighttime hours, and no other projects identified for the cumulative analysis would involve pile driving. There are no known projects within the RSA that would be producing construction noise during the same time period as the proposed project. The Build Alternatives would not cumulatively contribute to noise impacts. Therefore, effects from noise and vibration would not be cumulatively considerable and cumulative effects from the project would not be anticipated.

For impacts to biological resources from noise and vibration, refer to the specific resource area listed below under Biological Resources.

Recreation

The RSA for recreation is the bicycle and pedestrian trails and the recreational waterways within the project area. As discussed in Sections 2.2.4 and 3.2.14, *Parks and Recreational Facilities*, the project would temporarily impact the Eureka Waterfront Trail and the Eureka Slough Boat Launch during some construction activities. No other projects would restrict access to the trail and boat launch during the construction of the project. The completed project would provide connections from the bridges to existing public trails, permanently increasing access to the regional trail system.

Under Build Alternative 2A, a temporary bridge would be built on a portion of the Humboldt Bay National Wildlife Refuge (HBNWR). The temporary bridge would be removed upon completion of the project. Under Alternative 2B, the replacement southbound bridge would be built on a portion of the HBNWR. The replacement bridge would permanently occupy the HBNWR parcels. No other projects would be impacting HBNWR properties within the RSA. Temporary and permanent impacts to the HBNWR would represent a minor percentage of the refuge and would not affect the quality of the features or characteristics that provide recreation opportunities to the public. The project would not have cumulatively considerable impacts to recreational resources within the RSA. Therefore, cumulative effects from the project would not be anticipated.

Transportation and Traffic

The RSA for traffic and transportation is U.S. 101 within the project area and the connecting streets, on- and off-ramps, sidewalks, bike lanes, and trails as well as the associated traffic volumes and available transit services. As discussed in Sections 2.2.9 and 3.2.15, *Traffic and Transportation*, the project would not result in an increased vehicle capacity or change the long-term traffic operations or access to streets, driveways, or on- and off-ramps within the project area. The completed project would not result in a change in transit service operations. No adverse impacts to sidewalks, bike lanes, or multiuse trails would occur under the project.

During construction, there would be temporary, short-term impacts to vehicles, bicyclists, and pedestrians. The Build Alternatives propose options for construction staging that require the shifting of traffic lanes throughout the various phases of bridge construction. Project construction would require limited nighttime closures of one lane in each direction of U.S. 101. Construction activities would necessitate intermittent, temporary detours for users of the Waterfront Trail. No other projects within the RSA would create traffic congestion or require detours of the roadway, trails, or bicycle lanes. Transportation impacts from the Build Alternatives would not be cumulatively considerable given that no other transportation projects would be necessitating detours or causing congestion within the RSA. Therefore, cumulative effects to transportation and traffic would not be anticipated.

Utilities and Service Systems

The RSA for the utilities is the existing power, communication, water, and sewer facilities within the project area. Service systems include the law enforcement, emergency, and fire protection agencies that serve the project area. As discussed in Sections 2.2.8 *Utilities/Emergency Services,* 3.2.13 *Public Services,* and 3.2.17 *Utilities and Service Systems*, the project would not include development or uses that would require new utility services to be permanently established within the project area.

During construction, the project would require relocation of existing overhead and underground utilities, and any utilities attached to the bridge which would result in temporary service interruption. There would be temporary traffic delays on U.S. 101 during construction which could result in temporary delays in emergency response. No other projects would be occurring during construction of the proposed project that would contribute to delays to emergency services or utility service interruptions. The Build Alternatives would include standard measures that utilize plans to minimize disruption to utilities or delays to emergency response. Impacts to services would not be cumulatively considerable. Therefore, cumulative effects to utilities and service systems within the RSA would not be anticipated.

Water Quality

The RSA for water quality is the receiving water bodies within the project area. As discussed in Sections 2.3.2 and .3.2.9, *Water Quality and Stormwater Runoff,* the project would result in an increase in impervious surface, which increases the rate of stormwater runoff and reduces the ability of stormwater to infiltrate into the soil and pollutants to be removed. The Build Alternatives would comply with all federal, state, and regional water quality regulations. Post-construction treatment areas would be designed to accommodate stormwater to avoid an impact to water quality from the project.

During construction, replacement of the bridges would have the potential to result in temporary impacts on water quality; however, standard avoidance and minimization measures would minimize any potential affect (see Section 3.2.9). Project areas disturbed during construction would be restored to avoid a permanent change in water quality. All other projects in the vicinity of the proposed project would also be required to comply with all water quality regulations and are not anticipated to have short- or long-term impacts. As a result, the project would not have cumulatively considerable effects to water quality within the RSA. Therefore, cumulative effects to water quality from the project would not be anticipated.

Biological Resources

Natural Communities

As discussed in Section 2.4.1, *Natural Communities*, the project has the potential to impact sensitive natural communities (SNCs); specifically, Pickleweed Mats, Salal – Berry Brambles/Thimbleberry, and Eelgrass Beds.

Construction of the project would not have a cumulatively significant impact on Pickleweed Mats due to the small area of permanent impacts (less than 0.4 acre) relative to the abundance of Pickleweed Mats in Humboldt Bay. Additionally, any impacts associated with the project would be offset with implementation of avoidance, minimization, and mitigation measures. The Eureka/Arcata 101 SLR Resilience Project and the Elk River Recovery Program (Tables 52 and 53) may have impacts to Pickleweed Mats. However, at this stage in those projects' development, the level of impact to this resource is unknown. One non-federal project, Elk River Estuary Restoration Project, may restore Pickleweed Mats as part of the project.

Construction of the project would not have a cumulatively significant impact on Salal – Berry Brambles/Thimbleberry due to the miniscule area of permanent impacts (0.06 acre or less) and implementation of a Revegetation Plan to restore on-site. One other proposed project, HUM-101 Drainage North would also have a less then significant impact to this SNC, and impacts would be also restored on site.

Construction of the project would have a small area of temporary and permanent impacts (0.21 acre for Alternative 2A, 0.27 acre for Alternative 2B) relative to the abundance of eelgrass beds in Humboldt Bay estimated at 4,700 acres (i.e., impacting less than 0.00005% of the total area). Other projects within Humboldt Bay that could affect Eelgrass Beds include the Humboldt Bay Shellfish Aquaculture Expansion Project, King Salmon Fisherman’s Channel maintenance, and the construction of the Offshore Wind Heavy Lift Terminal. The Harbor District and Caltrans are planning a joint eelgrass mitigation strategy to compensate for these projects, along with the Eureka Slough Bridges Replacement Project, to ensure no net loss of eelgrass beds. Given the minimal scale of the potential permanent impacts on eelgrass from the

Eureka Slough Bridges Replacement Project, along with implementation of the joint eelgrass mitigation strategy with the Harbor District for other projects within Humboldt Bay, it is anticipated there would be no cumulatively significant impact on Eelgrass Beds. Therefore, there would be no cumulatively considerable impacts to sensitive natural communities.

Wetlands and Other Waters

As discussed in Section 2.4.2, *Wetlands and Other Waters*, the project is anticipated to impact Wetlands and Other Waters of the U.S. and State; specifically, estuarine marsh, roadside ditch wetlands, estuarine and marine deepwater, estuarine channels, eelgrass beds, tidal mud flats, culverted waters, and riparian coastal wetlands. For temporary impacts, Caltrans would prepare a Revegetation Plan that would require revegetation of wetlands and areas adjacent to waters. For permanent impacts that cannot be restored on-site, off-site mitigation would be completed. Off-site mitigation would include purchase of property for enhancement and preservation to compensate for permanent wetland impacts. Other projects in the region which could affect Wetlands and Other Waters include the Eureka-Arcata Corridor Combined Project, Eureka/Arcata 101 SLR Resilience, Humboldt Bay Trail South, Bay to Zoo Trail, and the Offshore Wind Heavy Lift Terminal. Additionally, the Elk River Restoration Project and Elk River Recovery Program would have beneficial impacts to wetlands. These projects are not expected to result in significant adverse impacts on wetlands and waters and mitigation would be implemented to compensate for any impacts. There would be no cumulatively significant impacts to Wetlands and Other Waters; therefore, there would be no cumulatively considerable impacts to Wetlands and Other Waters.

Plant Species

As discussed in Section 2.4.3 *Plant Species* occurrences of Humboldt Bay owl's-clover and Point Reyes bird's-beak will be impacted by the project. Caltrans may implement a combination of on- and off-site restoration efforts. Seeds of Humboldt Bay owl's-clover and Point Reyes bird's-beak may be salvaged prior to construction and saved for future on-site or off-site transplanting. As a standard measure, Caltrans would also implement a Revegetation Plan that includes on-site revegetation and restoration after construction. The Humboldt Bay Trail South would also have less than significant impacts Humboldt Bay owl's-clover and Point Reyes bird's-beak. The Eureka/Arcata 101 SLR Resilience Project and the Offshore Wind Heavy Lift Terminal may also impact these species; however, at this stage in these project's development the level of impact to these resources is unknown. Based on the relatively small impacts to the overall size of the population of these species around Humboldt Bay, there would be no cumulatively significant impacts to Humboldt Bay owl's-clover and Point Reyes bird's-beak; therefore, there would be no cumulatively considerable impacts to special-status plant species.

Animal Species

Numerous species discussed in Section 2.4.4, *Animal Species*, occur within the project area. There would be a ***less than significant impact*** on the following species from the project:

- bald eagle
- black-capped chickadee
- Bryant's savannah sparrow
- Cooper's hawk
- double-crested cormorant
- long-billed curlew
- marbled murrelet
- merlin
- northern harrier
- olive-side flycatcher
- osprey
- short-eared owl
- white-tailed kite
- obscure bumble bee

For obscure bumble bee, the project may impact small amounts of low quality foraging habitat. There is an abundance of suitable habitat for obscure bumble bee within the project vicinity. For most bird species, the project area contains no suitable nesting habitat, and they would only use the area for foraging. The amount of foraging habitat permanently impacted by both Build Alternatives is less than 0.25 acre and there is ample available foraging habitat for these birds and bee in and around Humboldt Bay. Standard bird protection measures (Section 1.6) would be implemented to avoid impacts from construction to any nesting birds within the project area. Other projects that would impact special-status animals include the Humboldt Bay Trail South, Bay to Zoo Trail, and the Elk River Recovery Program. Impacts from these projects would mainly be temporary disturbance of foraging habitat during construction. The Offshore Wind Heavy Lift Terminal may also impact these species; however, at this stage in the project's development, the level of impact to these resources are unknown.

Given the minimal impacts associated with the Eureka Slough Bridges Replacement Project and with implementation of Standard Measures to protect nesting birds, there would be no cumulatively significant impacts to the special-status species listed above and therefore there would be no cumulatively considerable impacts to the special-status animal species listed above.

Special-status Fish Species

Special-status fish species (Section 2.4.4 and 2.4.5) that may occur within the project area include:

- California Coastal Chinook salmon–California Coastal ESU
- Coho salmon–Southern Oregon/Northern California Coast ESU
- Coastal cutthroat trout
- Longfin smelt
- North American green sturgeon–Southern DPS
- Pacific lamprey
- Steelhead–Northern California DPS *winter run*
- Tidewater goby

Potential impacts from the project on these fish species include temporary increases in turbidity and sedimentation, potential discharges of contaminants, construction noise and vibration, hydroacoustic effects (injury or mortality) from pile driving, demolition noise, and dewatering, strandings in temporary cofferdams, and habitat alteration. Standard measures and BMPs (Section 1.6) would be implemented to avoid and minimize the temporary impacts on these species. Mitigation for impacts would include a combination of on-site and off-site habitat restoration efforts including enhancing estuarine function, connectivity, and creation of off-channel habitat, and/or preservation of existing habitat through purchase. Other projects within the region that could affect special-status fish species include the Eureka/Arcata Corridor Improvement Project, HUM-101 Drainage North, Humboldt Bay Trail South, Bay to Zoo Trail, King Salmon Fisherman's Channel Maintenance, Humboldt Bay periodic dredging, and the Nordic Aquafarm; however, these are not expected to result in significant adverse impacts on these fish species. The Offshore Wind Heavy Lift Terminal may also impact these species; however, at this stage in the project's development, the level of impact to these resources is unknown. Additionally, the Elk River Restoration Project and Elk River Recovery Program would have *beneficial impacts* to special-status fish species.

With incorporation of Standard Measures and BMPs and off-site mitigation to compensate for effects, there would be no cumulatively significant impacts; therefore,

there would be no cumulatively considerable impacts to Chinook salmon–California Coastal ESU, coho salmon–Southern Oregon/Northern California Coast ESU, Coastal cutthroat trout, longfin smelt, North American green sturgeon–Southern DPS, Pacific lamprey, Steelhead–Northern California DPS *winter run*, and tidewater goby.

Special-status Marine Mammals

Special-status marine mammals (Section 2.4.4) that may occur within the project area include California sea lion, harbor porpoise, and harbor seal. Potential impacts from the project on these marine mammals include noise, vibration, and visual disturbance associated with bridge construction and demolition. Standard Measures and BMPs (Section 1.6) and mitigation would be implemented to avoid and minimize the temporary impacts on these species. Other projects within the region that could affect marine mammals include Humboldt Bay periodic dredging; however, this is not expected to result in significant adverse impacts on marine mammals. The Offshore Wind Heavy Lift Terminal may also impact these species, however, at this stage in the project's development, the level of impact to marine mammals is unknown. With incorporation of Standard Measures and BMPs, there would be no cumulatively significant impacts; therefore, there would be no cumulatively considerable impacts to California sea lion, harbor porpoise, and harbor seal.

No Build Alternative

Under the No Build Alternative, the existing conditions would remain, and the project would not be constructed. Therefore, there would be no cumulative impacts to any resource.

3.2.18.4 Avoidance, Minimization, and/or Mitigation Measures

The project was determined to not have cumulatively considerable impacts to any resource area. No avoidance, minimization, and/or mitigation measures are proposed based on cumulative impacts.

3.2.19 Mandatory Findings of Significance

Question	CEQA Determination
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
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	No Impact
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	Less Than Significant Impact

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?

As described in Section 3.2.3, *Biological Resources*, Build Alternatives 2A and 2B would have a **"Less than Significant Impact with Mitigation Incorporated "** impact on estuarian marsh (Alternative 2B only), marine mammals, Coastal cutthroat trout, Pacific lamprey, CC Chinook salmon, SONCC coho salmon, longfin smelt, sDPS green sturgeon, NC steelhead, and tidewater goby.

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)?

As described in, Section 2.5, *Cumulative Impacts*, the project does not have impacts that are individually limited, but cumulatively considerable; therefore, there would be **"No Impact"**.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The project would have *less than significant impacts* to humans during construction activities. As described in the CEQA Checklist sections, the project would affect Aesthetics, Air Quality, Energy, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Water Quality, Noise, Transportation, and Utilities and Service Systems. The completed project would provide two new bridges built to current seismic standards, wider shoulders to accommodate disabled or emergency vehicles, an adjusted vertical curvature to increase sight distance, and multimodal features to improve transportation options for bicyclists and pedestrians. Any adverse effect on humans would be **"Less Than Significant"**.

3.3 Senate Bill 743/Induced Demand Analysis

Senate Bill 743 (2013) amended CEQA to allow the Governor's Office of Planning and Research (OPR) to develop new guidelines under CEQA establishing alternative metrics to levels of service (LOS) for the analysis of transportation impacts. On December 28, 2018, the Office of Administrative Law approved the amendments to the CEQA Guidelines including changes related to Senate Bill 743. The amended CEQA Guidelines add a new section on determining the significance of transportation impacts, and generally specify vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts.

The Build Alternatives are not capacity increasing as there would be no increase in travel lanes, substantial lengthening of the roadway, or a change in travel demand or traffic patterns. The Build Alternatives would not result in an increase in VMT.

The No-Build Alternative would not change existing conditions and would therefore not result in a change in traffic patterns or induce an increase in travel demand. The No Build Alternative would not result in an increase in VMT.

3.4 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the Earth's climate system. The Intergovernmental Panel on Climate Change, established by the United Nations and World Meteorological Organization in 1988, is devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy. Climate change in the past has generally occurred gradually over millennia, or more suddenly in response to cataclysmic natural disruptions. The research of the Intergovernmental Panel on Climate Change and other scientists over recent decades, however, has unequivocally attributed an accelerated rate of climatological changes over the past 150 years to GHG emissions generated from the production and use of fossil fuels.

Human activities generate GHGs consisting primarily of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring and necessary component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2 that is the main driver of climate change. In the U.S. and in California, transportation is the largest source of GHG emissions, mostly CO_2.

The impacts of climate change are already being observed in the form of sea level rise, drought, extended and severe fire seasons, and historic flooding from changing storm patterns. The most important strategy to address climate change is to reduce GHG emissions. Additional strategies are necessary to mitigate and adapt to these impacts. In the context of climate change, "mitigation" involves actions to reduce GHG emissions to lessen adverse impacts that are likely to occur. "Adaptation" is planning for and responding to impacts to reduce vulnerability to harm, such as by adjusting transportation design standards to withstand more intense storms, heat, and higher sea levels. This analysis will include a discussion of both in the context of this transportation project.

3.4.1 Regulatory Setting

For a full list of laws, regulations, and guidance related to climate change (GHGs and adaptation), please refer to Caltrans' Standard Environmental Reference (SER), Chapter 16 - Climate Change | Caltrans.

3.4.1.1 Federal

To date, no nationwide numeric mobile-source GHG reduction targets have been established; however, federal agencies are mandated to consider the effects of climate change in their environmental reviews.

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) is the basic national charter for protection of the environment which establishes policy, sets goals, and provides direction for carrying out the policy. NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea level rise, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2022). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values— "the triple bottom line of sustainability" (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

Early efforts by the federal government to improve fuel economy and energy efficiency to address climate change and its associated effects include *The Energy Policy and Conservation Act of 1975* (42 USC Section 6201) and *Corporate Average Fuel Economy (CAFE) Standards*. The U.S. Department of Transportation's National Highway Traffic and Safety Administration (NHTSA) sets and enforces corporate average fuel economy (CAFE) standards for on-road motor vehicles sold in the United States. The Environmental Protection Agency (U.S. EPA) calculates average fuel economy levels for manufacturers, and also sets related GHG emissions standards for vehicles under the Clean Air Act. Raising CAFE standards leads automakers to create a more fuel-efficient fleet, which improves our nation's energy security, saves consumers money at the pump, and reduces GHG emissions (USDOT 2014). These standards are periodically updated and published through the federal rulemaking process.

3.4.1.2 State

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and executive orders (EOs).

In 2005, EO S-3-05 initially set a goal to reduce California's GHG emissions to 80 percent below year 1990 levels by 2050, with interim reduction targets. Later EOs and Assembly and Senate bills refined interim targets and codified the emissions reduction goals and strategies. The California Air Resources Board (CARB) was directed to create a climate change scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Ongoing GHG emissions reduction was also mandated in Health and Safety Code (H&SC) Section 38551(b). In 2022, the California Climate Crisis Act was passed, establishing state policy to reduce statewide human-caused GHG emissions by 85 percent below 1990 levels, achieve net zero GHG emissions by 2045, and achieve and maintain negative emissions thereafter.

Beyond GHG reduction, the State maintains a climate adaptation strategy to address the full range of climate change stressors, and passed legislation requiring state agencies to consider protection and management of natural and working lands as an important strategy in meeting the state's GHG reduction goals.

3.4.2 Environmental Setting

The project is located on U.S. 101 in Humboldt County near the northern limits of the city of Eureka. The project area includes a 0.7 mile length of U.S. 101 from Post Mile 79.5 to Post Mile 80.2. Within the project limits, U.S. 101 is a four-lane divided highway. The highway is the primary north-south route in Caltrans District 1, traversing Mendocino, Humboldt, and Del Norte counties. U.S. 101 serves interregional and interstate traffic, and the Eureka Slough bridges accommodate a relatively high traffic volume. The City of Eureka road and street network adjacent to the project area is well-developed, serving mainly commercial businesses and some residential buildings. City of Eureka zoning designations for properties surrounding the project area include Service Commercial, Natural Resource, and Water Conservation.

In the Humboldt Bay area, the Eureka Slough bridges provide an essential link between the cities of Eureka and Arcata. Regionally, the bridges provide access from the communities south of the bridges to the communities north of the bridges. The U.S. 101/State Route 299 interchange is located approximately 9.5 miles north of Eureka Slough and the U.S. 101/ State Route 36 interchange is located approximately 23 miles south of Eureka Slough. Both of these routes provide crucial eastbound access for the region. In the event of a U.S. 101 closure at the Eureka Slough bridges or along the U.S. 101 corridor between Eureka and Arcata, State Route 255 and Myrtle Avenue are the only nearby alternate routes.

The Humboldt County Association of Governments (HCAOG) guides transportation development within the project area. Humboldt County and the City of Eureka address GHGs within the project area in the Circulation, Safety, and Traffic elements of their General Plans. The HCAOG Regional Transportation Plan (RTP), Variety in Rural Options of Mobility (VROOM) (HCAOG 2022), is a long range planning document that sets goals, objectives, and policies for Humboldt County. The Humboldt Regional Climate Action Plan (County of Humboldt, et al., 2022) is a collaborative effort between Humboldt County and the cities of Arcata, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, and Trinidad to reduce greenhouse gas emissions.

3.4.2.1 GHG Inventories

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and the CARB does so for the state of California, as required by H&SC Section 39607.4. Cities and other local jurisdictions may also conduct local GHG inventories to inform their GHG reduction or climate action plans.

National GHG Inventory

The annual GHG inventory submitted by the U.S. EPA to the United Nations provides a comprehensive accounting of all human-produced sources of GHGs in the United States. Total national GHG emissions from all sectors in 2022 were 5,489.0 million metric tons (MMT), factoring in deductions for carbon sequestration in the land sector. (Land Use, Land Use Change, and Forestry provide a carbon sink equivalent to 15% of total U.S. emissions in 2022 [U.S. EPA 2024a].) While total GHG emissions in 2022 were 17% below 2005 levels, they increased by 1% over 2021 levels. Of these, 80% were CO_2, 11% were CH_4, and 6% were N_2O; the balance consisted of fluorinated gases. From 1990 to 2022, CO_2 emissions decreased by only 2% (U.S. EPA 2024a).

The transportation sector's share of total GHG emissions remained at 28% in 2022 and continues to be the largest contributing sector (Figure 79). Transportation activities accounted for 37% of U.S. CO_2 emissions from fossil fuel combustion in 2022. This is a decrease of 0.5% from 2021 (U.S. EPA 2024a, 2024b)).

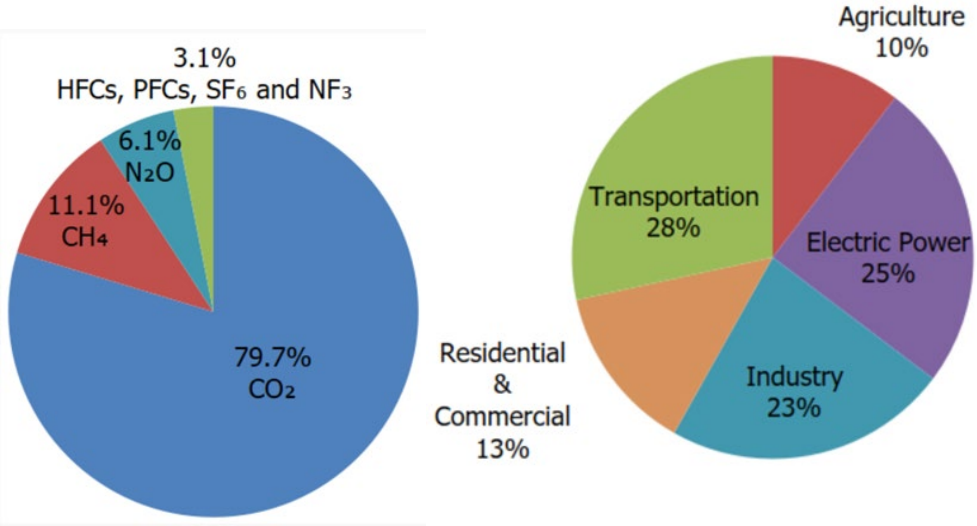


Figure 79. U.S. 2022 Greenhouse Gas Emissions

State GHG Inventory

CARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. Overall statewide GHG emissions declined from 2000 to 2021 despite growth in population and state economic output (Figure 80). Transportation emissions remain the largest contributor to GHG emissions in the state (Figure 81)(CARB 2023).

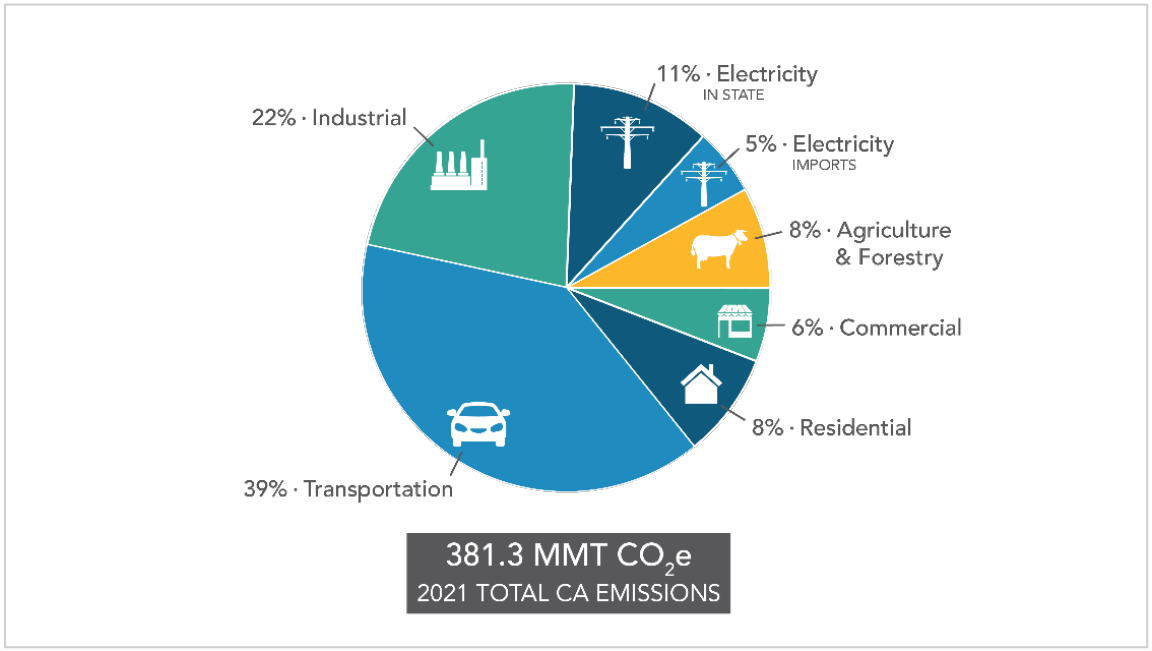


Figure 80. California 2021 Greenhouse Gas Emissions by Economic Sector

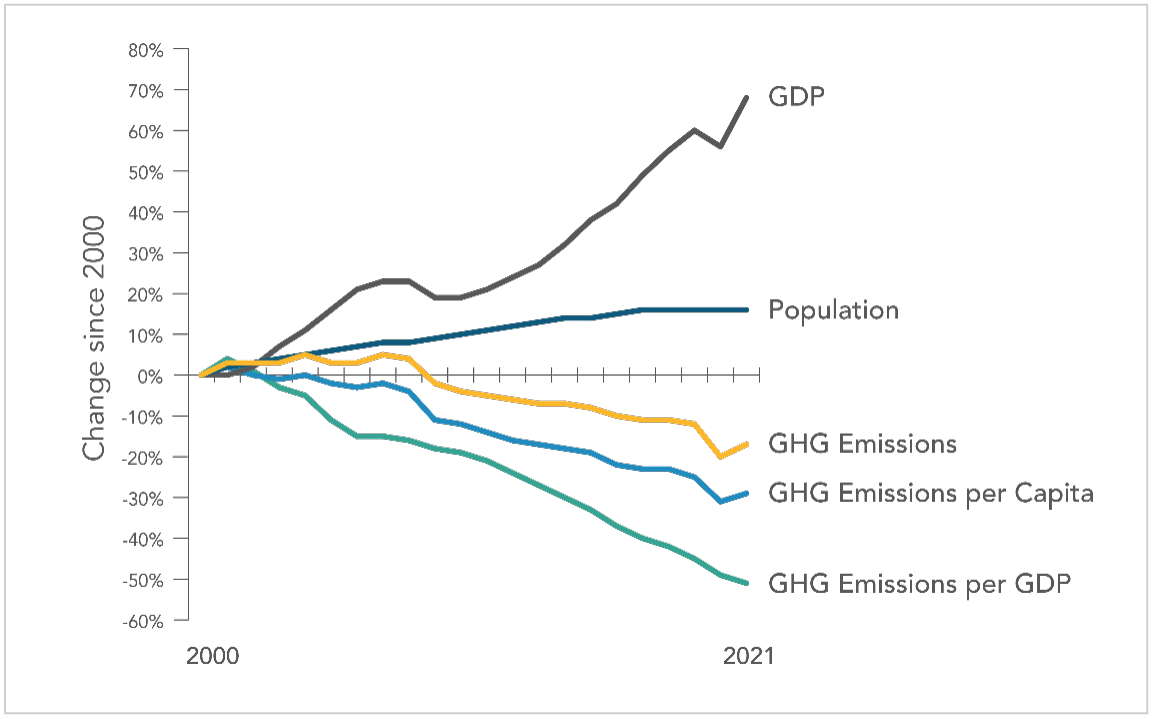


Figure 81. Change in California GDP, Population, and GHG Emissions since 2000

AB 32 required CARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every 5 years. The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions. CARB adopted the first scoping plan in 2008. The second updated plan, California's 2017 Climate Change Scoping Plan, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The 2022 Scoping Plan for Achieving Carbon Neutrality, adopted September 2022 ((ARBCARB 2008), assesses progress toward the statutory 2030 reduction goal and defines a path to reduce human-caused emissions to 85 percent below 1990 levels and achieve carbon neutrality no later than 2045, in accordance with AB 1279 (CARB 2022a).

3.4.2.2 Regional Plans

As required by The Sustainable Communities and Climate Protection Act of 2008, CARB sets regional GHG reduction targets for California's 18 metropolitan planning organizations (MPOs) to achieve through planning future projects that will cumulatively achieve those goals, and reporting how they will be met in the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The project area is not within the jurisdiction of an MPO and therefore not subject to CARB GHG reduction targets. However, the HCAOG is the regional transportation planning agency for the area.

The 2022 RTP, VROOM (Variety in Rural Options of Mobility) (HCAOG 2022), identifies short-term and long-term goals for GHG reduction strategies. Some of the goals identified in the RTP include:

- Reduce countywide emissions by 40% of 1990 levels by 2030
- By 2035 have 100% zero-emission vehicle sales of passenger cars and trucks
- From 2030 to 2045, fully transition from fossil fuels to 100% renewable energy
- Make progress towards zero net greenhouse gas emissions by 2045
- By 2045 have statewide carbon neutrality and net-negative emissions thereafter
- By 2050 reduce GHG emissions to 80% below 1990 levels
- Improve accessibility of public transit
- Expand shared mobility
- Expand and increase safety of active transportation modes like walking and biking
- Make communities more compact and connected

The City of Eureka General Plan (City of Eureka 2018) includes strategies aimed at reducing GHG emissions through air quality and mobility goals including:

- Planning and funding non-motorized transportation and development of a bicycle and pedestrian master plan
- Design and construct complete streets elements and promote multimodal access to activity centers
- Establish an interconnected transportation network with continuous pedestrian and bicycle systems

The Humboldt Regional Climate Action Plan (County of Humboldt et al., 2022) identifies GHG emissions goals including:

- Improve accessibility of new development by transit, walking and biking
- Expand regional trail and bike lane network
- Implement complete streets measures

As a non-capacity increasing project, the project would not result in increased vehicle miles traveled and would not result in an increase in operational GHG emissions. The project incorporates multimodal features to support the safety and connectivity of active transportation options in the area. The project would not conflict with any plan, policy, or regulation established for the reduction of GHG.

3.4.3 Project Analysis

GHG emissions from transportation projects can be divided into those produced during operation and use of the State Highway System (SHS) (operational emissions) and those produced during construction (construction emissions). The primary GHGs produced by the transportation sector are CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of burning gasoline or diesel fuel in internal combustion engines, along with relatively small amounts of CH_4 and N_2O. A small amount of HFC emissions related to refrigeration is also included in the transportation sector. (GHGs differ in how much heat each traps in the atmosphere, called global warming potential, or GWP. CO2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called “carbon dioxide equivalent”, or CO_2e. The global warming potential of CO_2 is assigned a value of 1, and the GWP of other gases is assessed as multiples of CO_2).

The CEQA Guidelines generally address greenhouse gas emissions as a cumulative impact due to the global nature of climate change (Public Resources Code, § 21083(b)(2)). As the California Supreme Court explained, “because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself.”

(Cleveland National Forest Foundation *v.* San Diego Assn. of Governments (2017) 3 Cal.5th 497, 512.). In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits greenhouse gases must necessarily be found to contribute to a significant cumulative impact on the environment.

3.4.3.1 Operational Emissions

The purpose of the project is to replace the existing Eureka Slough bridges to improve the function and geometrics of the bridges and ensure uninterrupted traffic movement in the event of an emergency incident or any other catastrophic event. The new bridge structures would be designed to current standards with separated bicycle/pedestrian lanes to promote and enhance safe mobility for all modes of transportation. The project would not increase the vehicle capacity of the roadway. Because the project would not increase the number of travel lanes on U.S. 101, the project would not increase vehicle miles traveled (VMT). This type of project generally causes minimal or no increase in operational GHG emissions. While some GHG emissions during the construction of the project would be unavoidable, no long-term or post-construction increase in operational GHG emissions would occur as a result of the project.

Table 52 shows the CO_2 emissions for existing conditions in 2019 and the projected CO_2 emissions for the No Build and Build Alternatives in 2033 (opening year) and 2053 (design year). Emissions would be the same for all Build Alternatives. For both the opening and the design years, there is no expected change in GHG between the Build Alternatives and the No Build Alternative. CO_2 is expected to decrease in emissions from the baseline year to the design year. This change is due to fleet turnover. While these emissions estimates are useful for comparing alternatives, they do not necessarily accurately reflect what the true CO_2 emissions would be because CO_2 emissions are dependent on additional factors that are not part of the CT-EMFAC model, such as fuel mix, rate of acceleration, and the aerodynamics and efficiency of the vehicles.

Table 54. Modeled Annual CO2e Emissions

Alternative	CO2e Emissions (Metric Tons/Year)	Difference Build vs No Build (MT)	Change over Existing/Baseline (MT)
Baseline (Existing Conditions) 2019	3450	--	--
All Build Alternatives 2033	3013	--	-437
No-Build Alternative 2033	3013	0	-437
All Build Alternatives 2053	3062	--	-388
No-Build Alternative 2053	3062	0	-388

CO_2e = carbon dioxide equivalent

Source: CT-EMFAC2021

3.4.3.2 Construction Emissions

Construction GHG emissions would result from material processing and transportation, on-site 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. While construction GHG emissions are only produced for a short time, they have long-term effects in the atmosphere, so cannot be considered "temporary" in the same way as criteria pollutants that subside after construction is completed.

Use of long-life pavement, improved Transportation Management Plans, and changes in materials can also help offset GHG emissions produced during construction by allowing longer intervals between maintenance and rehabilitation activities.

Construction is expected to begin in 2029. Build Alternative 2A is estimated to take up to 5 construction seasons to complete and Build Alternative 2B is estimated to take up to 4 construction seasons. The total CO_2e produced during construction is estimated to be 1,494 metric tons for Build Alternative 2A and 1,487 metric tons for Build Alternative 2B. Table 53 summarizes total GHG generated from on-site construction equipment for Alternative 2A, and Table 54 summarizes total GHG generated from on-site construction equipment for Alternative 2B. Construction emissions were estimated using the CAL-CET2021 v1.0.2.

The average carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), Black Carbon (BC), and hydrofluorocarbon-134a (HFC-134a) emissions from construction activities were estimated and presented in CO_2e.

CO_2e is a quantity of GHG expressed as an equivalent of carbon dioxide, and is estimated by multiplying each GHG (carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbons (HFCs)) by its global warming potential (GWP). Each GWP of CO_2, CH_4, N_2O, and HFCs is 1, 25, 298, and 14,800, respectively.

Table 55. Alternative 2A GHG Generated From On-Site Construction Equipment

Construction Year	CO_2 (Ton)	CH_4 (Ton)	N_2O (Ton)	BC (Ton)	HFC-134a (Ton)	CO_2e* (Metric Ton)
2029	235	0.006	0.012	0.006	0.005	226
2030	279	0.006	0.016	0.006	0.006	268
2031	321	0.007	0.017	0.009	0.007	309
2032	279	0.006	0.014	0.009	0.006	269
2033	172	0.003	0.010	0.006	0.003	166
2034	267	0.004	0.018	0.004	0.006	257
Total	**1,553**	**0.031**	**0.088**	**0.041**	**0.033**	**1,494**

Table 56. Alternative 2B GHG Generated From On-Site Construction Equipment

Construction Year	CO_2 (Ton)	CH_4 (Ton)	N_2O (Ton)	BC (Ton)	HFC-134a (Ton)	CO_2e* (Metric Ton)
2029	261	0.006	0.014	0.007	0.005	251
2030	386	0.008	0.023	0.008	0.009	371
2031	327	0.007	0.017	0.010	0.008	316
2032	274	0.005	0.015	0.009	0.006	264
2033	295	0.004	0.020	0.005	0.008	285
Total	**1,543**	**0.030**	**0.090**	**0.039**	**0.036**	**1,487**

All Caltrans construction contracts include Standard Specifications related to air quality and emissions reduction, which require contractors to comply with all laws applicable to the project and to certify they are aware of and would comply with all CARB emission reduction regulations. Standard Measures for GHG are listed in Section 1.6, *Project Features, Standard Measures, and Best Management Practices Common to all Build Alternatives* and in Section 3.4.4.3, *Project Level GHG Reduction Strategies*.

Certain common regulations (such as equipment idling restrictions) that reduce construction vehicle emissions also help reduce GHG emissions.

Please see Section 2.3.6, *Air Quality*, for information related to GHG and air quality. Section 2.3.9, *Energy*, includes additional information on short-term direct energy use during construction.

3.4.3.3 CEQA Conclusion

The project would result in GHG emissions during construction; however, standard specifications would be implemented to reduce and minimize GHG during construction. The project would not add travel lanes or increase roadway capacity or vehicle miles traveled; therefore, the project would not increase greenhouse gas emissions, either directly or indirectly, that would have a significant impact on the environment. For both Build Alternatives, GHG CEQA Environmental Checklist impact a) would be less than significant, and no mitigation is required.

The project supports the goals and strategies of regional plans to implement multimodal transportation opportunities in the region, encouraging active transportation and non-motorized travel and reduction in GHG emissions. The project does not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The project would result in GHG emissions during construction; however, standard specifications would be implemented to reduce and minimize GHG during construction. Operation of the project would not increase GHG emissions. For both Build Alternatives, GHG CEQA Environmental Checklist impact b) would be less than significant and no mitigation is required.

3.4.4 Greenhouse Gas Reduction Strategies

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

3.4.4.1 Statewide Efforts

In response to Assembly Bill 32, the Global Warming Solutions Act, California is implementing measures to achieve emission reductions of GHGs that cause climate change. Climate change programs in California are effectively reducing GHG emissions from all sectors of the economy. These programs include regulations, market programs, and incentives that will transform transportation, industry, fuels, and other sectors to take California into a sustainable, cleaner, low-carbon future, while maintaining a robust economy (CARB 2022b).

Major sectors of the California economy, including transportation, will need to reduce emissions to meet 2030 and 2050 GHG emissions targets. The Governor's Office of Planning and Research identified five sustainability pillars in a 2015 report: (1) Increasing the share of renewable energy in the State's energy mix to at least 50 percent by 2030; (2) Reducing petroleum use by up to 50 percent by 2030; (3) Increasing the energy efficiency of existing buildings by 50 percent by 2030; (4) Reducing emissions of short-lived climate pollutants; and (5) Stewarding natural resources, including forests, working lands, and wetlands, to ensure that they store carbon, are resilient, and enhance other environmental benefits (California Governor's OPR 2015).

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

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

Subsequently, Governor Gavin Newsom issued Executive Order N-82-20 to combat the crises in climate change and biodiversity. It instructs state agencies to use

existing authorities and resources to identify and implement near- and long-term actions to accelerate natural removal of carbon and build climate resilience in our forests, wetlands, urban greenspaces, agricultural soils, and land conservation activities in ways that serve all communities and in particular low-income, disadvantaged, and vulnerable communities. To support this order, the California Natural Resources Agency released Natural and Working Lands Climate Smart Strategy (California Natural Resources Agency 2022).

3.4.4.2 Caltrans Activities

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

Climate Action Plan for Transportation Infrastructure

The *California Action Plan for Transportation Infrastructure* (CAPTI) builds on executive orders signed by Governor Newsom in 2019 and 2020 targeted at reducing GHG emissions in transportation, which account for more than 40 percent of all polluting emissions, to reach the state's climate goals. Under CAPTI, where feasible and within existing funding program structures, the state will invest discretionary transportation funds in sustainable infrastructure projects that align with its climate, health, and social equity goals (California State Transportation Agency 2021).

California Transportation Plan

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. It serves as an umbrella document for all the other statewide transportation planning documents. The CTP 2050 presents a vision of a safe, resilient, and universally accessible transportation system that supports vibrant communities and improves public and environmental health. The plan's climate goal is to achieve statewide GHG emissions reduction targets and increase resilience to climate change. It demonstrates how GHG emissions from the transportation sector can be reduced through advancements in clean fuel technologies; continued shifts toward active travel, transit, and shared mobility; more efficient land use and development practices; and continued shifts to telework (Caltrans 2021c).

Caltrans Strategic Plan

The Caltrans 2020–2024 Strategic Plan includes goals of stewardship, climate action, and equity. Climate action strategies include developing and implementing a

Caltrans Climate Action Plan; a robust program of climate action education, training, and outreach; partnership and collaboration; a VMT monitoring and reduction program; and engaging with the most vulnerable communities in developing and implementing Caltrans climate action activities (Caltrans 2021b).

Caltrans Policy Directives and Other Initiatives

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) established a policy to ensure coordinated efforts to incorporate climate change into Caltrans decisions and activities. Other Director's policies promote energy efficiency, conservation, and climate change, and commit Caltrans to sustainability practices in all planning, maintenance, and operations. Caltrans Greenhouse Gas Emissions and Mitigation Report (Caltrans 2020d) provides a comprehensive overview of Caltrans' emissions and current Caltrans procedures and activities that track and reduce GHG emissions. It identifies additional opportunities for further reducing GHG emissions from Department-controlled emission sources, in support of Caltrans and State goals.

3.4.4.3 Project-Level GHG Reduction Strategies

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

AR-2: Temporary access roads, construction easements, and staging areas that were previously vegetated would be revegetated.

AR-5: Where feasible, the removal of established trees and vegetation would be minimized. Environmentally sensitive areas would have Temporary High Visibility Fencing (THVF) installed before start of construction to demarcate areas where vegetation would be preserved, and root systems of trees protected.

EN-1: The contractor will limit the idling of construction vehicles and equipment when feasible. In cases where more restrictive idling measures are applicable (i.e. GHG-1, GHG-2, and GHG-3), those measures will take precedence.

EN-2: The project will include the consideration of energy efficient options which would be considered when replacing old highway lighting and other highway infrastructure.

GHG-1: The project will comply with Caltrans Standard Specification "Air Quality" which requires compliance to all applicable laws and regulations related to air quality (Caltrans Standard Specification [SS] 14-9).

GHG-2: The contractor will comply with Title 13 of the California Code of Regulations (CCR), which restricts idling of diesel-fueled commercial motor vehicles

and equipment with gross weight ratings of greater than 10,000 pounds to no more than 5 minutes.

GHG-3: The contractor will comply with Caltrans Standard Specification "Emissions Reduction" which ensures construction activities adhere to the most recent emissions reduction regulations mandated by the California Air Resource Board (CARB) (Caltrans SS 7-1.02C).

GHG-4: The project will include the use of a Transportation Management Plan (TMP) to minimize vehicle delays and idling emissions. Traffic will be scheduled and directed to reduce congestion and related air quality impacts caused by idling vehicles along the highway during peak travel times.

GHG-5: The project will include the revegetation of all areas temporarily disturbed during construction would be revegetated with appropriate native species. The revegetated landscaping would reduce surface warming and, through photosynthesis, decreases CO_2 helping to offset any potential CO_2 emissions increase.

GHG-6: The project would maintain pedestrian and bicycle access during project activities.

3.4.5 Adaptation

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; and 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.

Furthermore, the combined effects of transportation projects and climate stressors can exacerbate the impacts of both on vulnerable communities in a project area. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

3.4.5.1 Federal Efforts

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

The Fifth National Climate Assessment, published in 2023, presents the most recent science and "analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; [It] analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years…to support informed decision-making across the United States." Building on previous assessments, it continues to advance "an inclusive, diverse, and sustained process for assessing and communicating scientific knowledge on the impacts, risks, and vulnerabilities associated with a changing global climate" (U.S. Global Change Research Program 2023).

The U.S. Department of Transportation recognizes the transportation sector's major contribution of GHGs that cause climate change and has made climate action one of the department's top priorities (USDOT 2023). FHWA's policy is to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2022).

The National Oceanic and Atmospheric Administration provides sea level rise projections for all U.S. coastal waters to help communities and decision makers assess their risk from sea level rise. Updated projections through 2150 were released in 2022 in a report and online tool (NOAA 2022).

3.4.5.2 State Efforts

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. A number of state policies and tools have been developed to guide adaptation efforts.

California's Fourth Climate Change Assessment (Fourth Assessment) (State of California 2018) provides information to help decision makers across sectors and at state, regional, and local scales protect and build the resilience of the state's people, infrastructure, natural systems, working lands, and waters. The Fourth Assessment reported that if no measures are taken to reduce GHG emissions by 2021 or sooner, the state is projected to experience an up to 8.8 degrees Fahrenheit increase in average annual maximum daily temperatures; a two-thirds decline in water supply from snowpack resulting in water shortages; a 77% increase in average area burned by wildfire; and large-scale erosion of up to 67% of Southern California beaches due to sea level rise. These effects will have profound impacts on infrastructure, agriculture, energy demand, natural systems, communities, and public health (State of California 2018).

Sea level rise is a particular concern for transportation infrastructure in the Coastal Zone. Major urban airports will be at risk of flooding from sea level rise combined with storm surge as early as 2040; San Francisco airport is already at risk. Miles of coastal highways vulnerable to flooding in a 100-year storm event will triple to 370 by 2100, and 3,750 miles will be exposed to temporary flooding. The Fourth Assessment's findings highlight the need for proactive action to address these current and future impacts of climate change.

To help actors throughout the state address the findings of California's Fourth Climate Change Assessment, AB 2800's multidisciplinary Climate-Safe Infrastructure Working Group published Paying it Forward: The Path Toward Climate-Safe Infrastructure in California. This report provides guidance on assessing risk in the face of inherent uncertainties still posed by the best available climate change science. It also examines how state agencies can use infrastructure planning, design, and implementation processes to respond to the observed and anticipated climate change impacts (Climate-Safe Infrastructure Working Group 2018).

EO S-13-08, issued in 2008, directed state agencies to consider sea level rise scenarios for 2050 and 2100 during planning to assess project vulnerabilities, reduce risks, and increase resilience to sea level rise. It gave rise to the 2009 California Climate Adaptation Strategy, the Safeguarding California Plan, and a series of technical reports on statewide sea level rise projections and risks, including

the State of California Sea-Level Rise Guidance Update in 2018. The reports addressed the full range of climate change impacts and recommended adaptation strategies. The current California Climate Adaptation Strategy incorporates key elements of the latest sector-specific plans such as the Natural and Working Lands Climate Smart Strategy, Wildfire and Forest Resilience Action Plan, Water Resilience Portfolio, and the CAPTI (described above). Priorities in the 2023 California Climate Adaptation Strategy include acting in partnership with California Native American tribes, strengthening protections for climate-vulnerable communities that lack capacity and resources, implementing nature-based climate solutions, using best available climate science, and partnering and collaboration to best leverage resources (California Natural Resources Agency 2023).

EO B-30-15 recognizes that effects of climate change threaten California's infrastructure and requires state agencies to factor climate change into all planning and investment decisions. Under this EO, the Office of Planning and Research published Planning and Investing for a Resilient California: A Guidebook for State Agencies, to encourage a uniform and systematic approach to building resilience.

SB 1 Coastal Resources: Sea Level Rise (*in* Atkins 2021) established statewide goals to "anticipate, assess, plan for, and, to the extent feasible, avoid, minimize, and mitigate the adverse environmental and economic effects of sea level rise within the Coastal Zone." As the legislation directed, the Ocean Protection Council collaborated with 17 state planning and coastal management agencies to develop the State Agency Sea-Level Rise Action Plan for California in February 2022. This plan promotes coordinated actions by state agencies to enhance California's resilience to the impacts of sea level rise (California Ocean Protection Council 2022).

3.4.5.3 Caltrans Adaptation Efforts

Caltrans Vulnerability Assessments

Caltrans completed climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects of precipitation, temperature, wildfire, storm surge, and sea level rise.

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 guide analysis of at-risk assets and development of Adaptation Priority Reports as a method to make capital programming decisions to address identified risks.

Caltrans Sustainability Programs

The Director's Office of Equity, Sustainability and Tribal Affairs supports implementation of sustainable practices at Caltrans. The Sustainability Roadmap is a periodic progress report and plan for meeting the Governor's sustainability goals related to EOs B-16-12, B-18-12, and B-30-15. The Roadmap includes designing new buildings for climate change resilience and zero-net energy, and replacing fleet vehicles with zero-emission vehicles (Caltrans 2023f).

3.4.5.4 Project Adaptation Analysis

The Caltrans Climate Change Vulnerability Assessments District 1 Technical Report (Caltrans 2019) identified key climate-related stressors that may affect transportation infrastructure in the district: These stressors are discussed below.

Sea Level Rise

A sea level rise (SLR) analysis was conducted to determine the potential for inundation of the project area due to SLR. The SLR analysis applies to both Build Alternatives. Structures, such as bridges, have an expected design life of 75 years. Accordingly, SLR projections from the California Ocean Protection Council's 2022 *State Agency Sea-Level Rise Action Plan for California* (California Ocean Protection Council 2022) were consulted using the project's expected design life applied to future emissions scenarios and a risk level.

The nearest tide gauge is located west of the project area at the Humboldt Bay North Spit. Projections are shown for high emissions (years 2030-2110) and low emissions (years 2070-2110) scenarios for the North Spit tide gauge. Project risks, including the consequences of SLR impacts to the project, assess the project's capacity to adapt to impacts, and who or what would be affected by an impact are considered along with the emissions scenario to determine an appropriate SLR projection to apply to a project. Emissions and risk aversion scenarios are shown in Table 55.

Table 57. Sea Level Rise Projection (in feet) for North Spit Tide Gauge

	Likely Range	1-In-200 Chance	H++ Scenario
	Low Risk Aversion	Medium-High Risk Aversion	Extreme Risk Aversion (High emissions only))
High Emissions			
2030	0.7	1.0	1.2
2040	1.1	1.6	2.0
2050	1.5	2.3	3.1
Low Emissions 2070	2.0	3.5	--
High Emissions 2070	2.4	4.0	5.6
Low Emissions 2090	2.7	5.3	--
High Emissions 2090	3.5	6.2	8.9
Low Emissions 2100	3.1	6.3	--
High Emissions 2100	4.1	7.6	10.9
Low Emissions 2110	3.3	7.1	--
High Emissions 2110	4.3	8.0	12.7

Note: High Emission Scenario. SLR based on a base year of 2000, NAVD 88 FT.

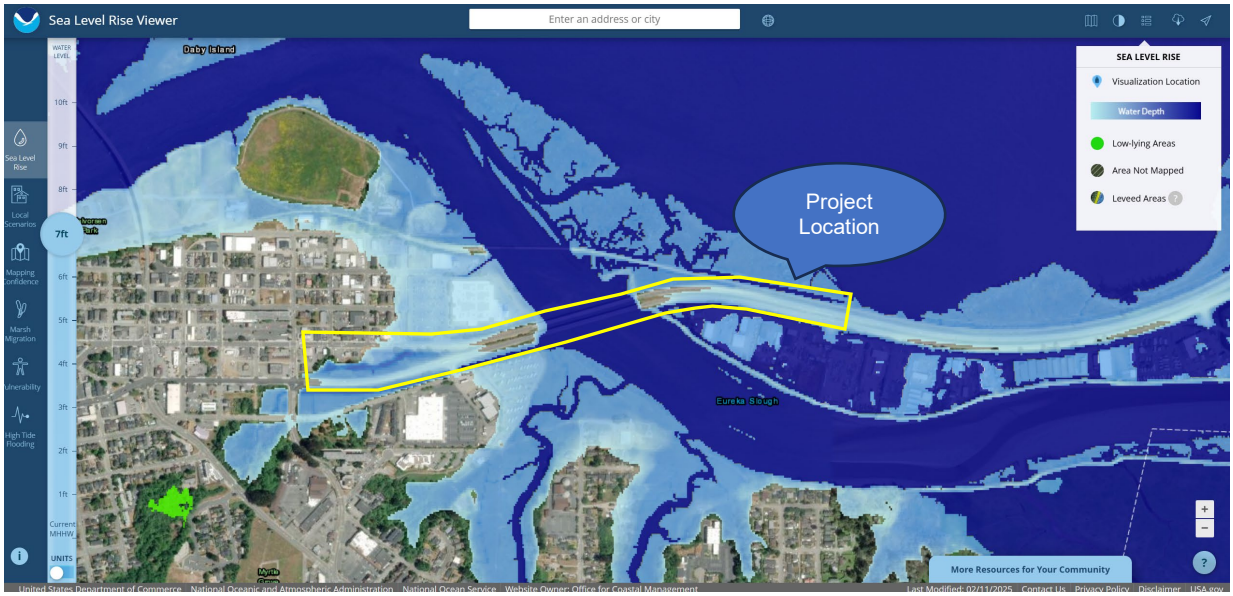
The project would be at the end of its design life in 2110. The consequences of SLR on the project would include road closures and detours. The project has limited ability to adapt to rising sea levels, although the bridges would be designed to be raised if needed. This would cause inconvenience, but not irreversible conditions or a threat to public safety. Closures of U.S. 101 would have local and regional impacts to residents, businesses, visitors, the transport of goods, and the ability to provide services. Based on a high emission, medium-high risk aversion scenario, the project is projected to experience 8.0 feet of SLR in the year 2110.

Figures 82 and 83 below show current and projected 2110 sea levels. Water depth is illustrated in blue, ranging from dark blue at the deepest locations to light blue where inundation is shallower. The bridges would span the channel under all scenarios without becoming inundated. Currently, there is approximately 16 feet of clearance under the bridges during mean higher high water (MHHW). The new bridge structures would be designed to the existing structure elevation. The new bridges would not be lower than the existing bridges. The lowest point of the project area is at PM 82.5, the northern “end construction” location, at an elevation of 5 feet

(NAVD 88). This area would be utilized only for construction staging and would not contain any project structures or permanent improvements.



Figure 82. Visualization of Current Sea Level (2025)



Source: NOAA Sea Level Rise Viewer (NOAA 2024)

Figure 83. Visualization of Sea Level Rise at Project Design Year 2110

The project is within the Coastal Zone. Consistency with Coastal Zone policies of the California Coastal Commission and the City of Eureka LCP are evaluated in Section 2.2.3, *Coastal Zone*. The proposed project would not affect beach areas, beach nourishment, or sand supply. Even though the project ESL is within flood hazard, tsunami, or seiche zones, given the bridges would be replaced with equivalent structures, the project would not be expected to exacerbate or be affected by these hazards (Caltrans 2023c).

Precipitation and Flooding

Historically, the project region has received on average 39.45 inches of rainfall per year which is approximately the same as the average annual rainfall over the past 20 years (40.3 inches). In general, climate change in this region is not expected to result in less total precipitation, but the precipitation may come in heavier individual events (U.S. Global Change Research Program 2023). The 100-year storm rainfall event in the project region is expected to increase by 5 to 9% through 2085, according to mapping in the *Caltrans Climate Change Vulnerability Assessments District 1 Technical Report* (Caltrans 2019).

Flooding and extreme weather events may disrupt construction activities and damage equipment and facilities used during the construction period. Changes in the frequency or intensity of these events are uncertain during the construction period. However, these events are typical for the region and are expected to be managed through existing construction management procedures, including appropriate construction scheduling, contingency budgeting, and emergency management protocols.

The project limits are within the 100-year floodplain and the project area is at risk from flooding and storm surge (Caltrans 2023c). Increased flooding and extreme weather events due to climate change can be expected to place increasing stress on infrastructure. The replacement bridges would be designed such that the post-construction flows would not have negative impact to the 100-year storm event elevations. The Build Alternatives would incorporate features into the replacement bridge design to minimize risk from intense rainfall and flooding, including Standard Specification HF-1 which ensures no new structures would be placed that would result in a substantial backflow during a flood event, and HF-2 which ensures existing bridge pilings are removed below the bed of the channel, reducing resistance and blockage of water moving downstream in a flood event.

Wildfire

The project is not located within a California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zone (FHSZ) in a State Responsibility Area (Figure 84) (CAL FIRE 2024). The project area is located within a Local Responsibility Area served by Humboldt Bay Fire. There are no areas designated as *Very High* Fire Hazard Severity within five miles of the project area and the nearest designated Severity Zone (moderate) is approximately two miles to the east. Given the project limits are in an urban setting and located over a slough, the *Caltrans Climate Change Vulnerability Assessments District 1 Technical Report* (Caltrans 2019) climate change mapping tool indicates the project limits would remain at low exposure for wildfire through 2085. Standard fire prevention measures would be implemented during construction to minimize risk, including Standard Measure UE-3, which requires the use of a Fire Prevention Plan. The project would not result in changes to the highway facilities or environment that would exacerbate fire risk.

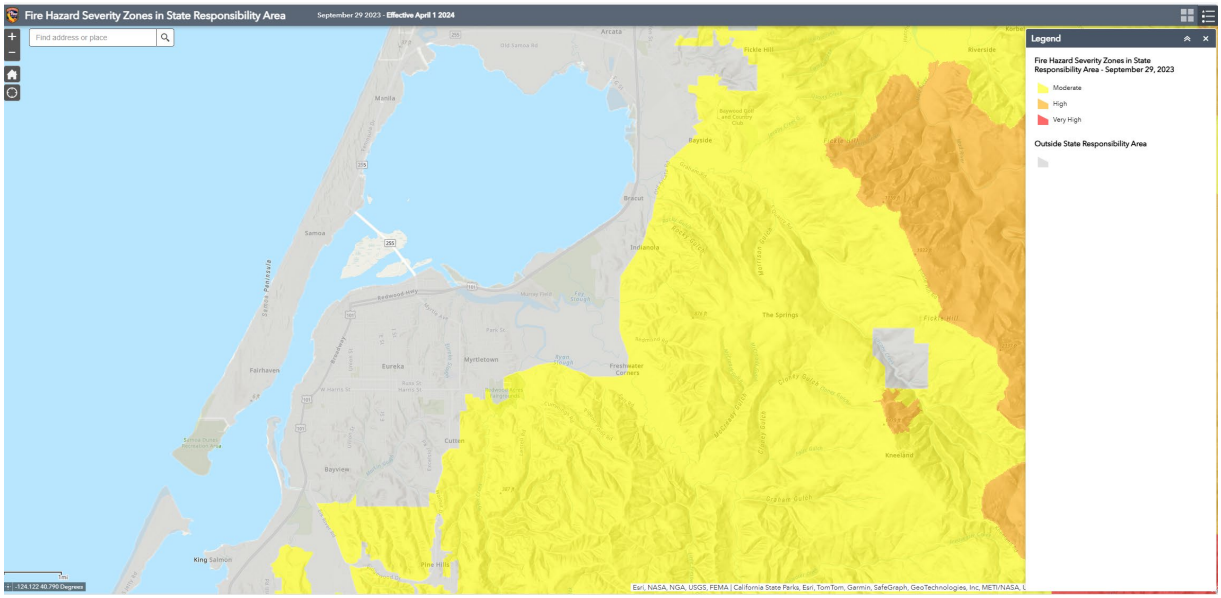


Figure 84. Fire Hazard Severity Zone

Temperature

The District Climate Change Vulnerability Assessment shows that average annual temperatures in the region that includes Humboldt County are anticipated to rise by 4 to 11.9°F (includes minimum and maximum ranges) by the year 2085, with interior regions experiencing the greatest warming. The District Climate Change Vulnerability Assessment mapping of change in average absolute maximum temperatures over 7 days within the project area shows a potential increase of 4.0 to 5.9°F by 2055 (midpoint of years 2040 to 2069) and 8 to 9.9°F by 2085 (midpoint of years 2070 to 2099) (Caltrans 2019). No projections beyond 2099 are provided.

Both alternatives would experience temperature changes similarly but given the relatively low baseline temperatures in the region (41 to 63°F), this range of temperature changes during the project's lifetime would not likely require adaptive changes in pavement design or maintenance practices.



Chapter 4 Comments and Coordination

This chapter discusses the public outreach, comments, and coordination associated with the project.

4.1 Notice of Preparation and Public Outreach

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization, and/or mitigation measures and related environmental requirements. Agency and tribal consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including interagency coordination meetings, public notices, virtual public scoping meeting, and Project Development Team (PDT) meetings. This chapter summarizes the results of Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1.1 Notice of Preparation

A Notice of Preparation (NOP) was filed September 19, 2023, then advertised again March 7, 2024 (Appendix D). A Public Scoping Meeting was held online on March 12, 2024. Caltrans received comments on the NOP from the California Highway Patrol (CHP), California Department of Fish and Wildlife, the California Native American Heritage Commission, and from Colin Fiske of the Coalition for Responsible Transportation Priorities. Their comments and responses to their comments are provided in Section 4.2.1.

4.1.2 Public and Agency Outreach

The following table (Table 58) documents coordination efforts with project stakeholders.

Table 58. Agency and Public Coordination

Date	Parties Involved	Summary
May 13, 2020	Caltrans CCC	Early kick-off meeting to discuss ideas and challenges for the project. Design not yet at the stage to discuss specific design elements or alternatives.
October 21, 2020	Caltrans, CDFW, NMFS	Level 1 Consultation to discuss potential effects, survey needs, mitigation opportunities for salmonids, eelgrass, marine mammals, and rare plants.
April 19, 2021	Caltrans, CDFW	Meeting to discuss rare plant survey and impacts.
September 17, 2021	Caltrans CCC	Early coordination meeting for Caltrans to provide updated project description and current design alternatives to the California Coastal Commission and facilitate opportunities for feedback and discussion.
April 6, 2022	California Department of Fish and Wildlife, California Coastal Commission, North Coast Regional Water Quality Control Board, Humboldt Bay Harbor District, National, Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, City of Eureka, County of Humboldt	AB 1282 coordination. The intent of this bill is to conduct early engagement with all parties involved in a transportation project development, ultimately aiming to streamline environmental permit approvals by establishing reasonable deadlines and clarifying permit requirements, thus reducing processing time and improving project certainty.
March 7, 2023	California Department of Fish and Wildlife, California Coastal Commission, North Coast Regional Water Quality Control Board, Humboldt Bay Harbor District, National, Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, City of Eureka, County of Humboldt	AB 1282 consultation.
April 4, 2023	Caltrans, CDFW	Field visit to discuss potential mitigation options at the Samoa Mitigation site for Eureka Slough Bridges Replacement Project.
July 11, 2023	Caltrans, USFWS, CDFW, NMFS	Coordination on expected work windows for the project.

Date	Parties Involved	Summary
November 7, 2023	California Department of Fish and Wildlife, California Coastal Commission, North Coast Regional Water Quality Control Board, Humboldt Bay Harbor District, National, Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, City of Eureka, County of Humboldt	AB 1282 consultation.
February 7, 2024	Caltrans, CDFW	Field meeting to evaluate potential for mud shrimp presence.
March 7 2024	Caltrans, City of Eureka	Project update meeting. Schedule and current project layouts and anticipated approvals needed from the City of Eureka.
March 12 2024	Virtual Public Scoping Meeting	Meeting to present project purpose and need, and defining the project scope and current planning alternatives to the public. Meeting seeking public comments and questions.
July 5, 2024	Humboldt Bay National Wildlife Refuge (USFWS): Cashell Villa Caltrans: Jason Meyer, Felicia Zimmerman, and Kevin Lee	General project overview, including reviewing project layouts, preliminary right of way maps. Additional information shared related to potential refuge impacts and the project's schedule.
July 17, 2024	Caltrans, CDFW	Follow up meeting on mud shrimp.
July 30, 2024	Caltrans, HBNWR (Refuge)	Kick off meeting for 4(f) discussion with Refuge.
August 29 2024	Caltrans, FHWA, USCG	FHWA and USCG coordination in determining the project is exempt from a USCG bridge permit (Rivers and Harbors Act)

Date	Parties Involved	Summary
September 5, 2024	Humboldt Bay National Wildlife Refuge (USFWS): Jason Storlie, Cashell Villa, and Viola Randal Caltrans: Jason Meyer, Felicia Zimmerman, and Jeff Pimentel	As a Section 4(f) property, USFWS indicated they would not be able to provide a temporary or permanent easement, nor would they support permanent incorporation (acquisition). They indicated an exchange fee acquisition (land swap) would need to take place and Caltrans needs to find a suitable property to exchange within one mile of the Refuge. They stated the transfer/exchange would need to take place prior to construction. They also mentioned a temporary construction easement would require SUP (Special Use Permit).
October 2, 2024	Caltrans, City of Eureka	Meeting to discuss utilities. The Eureka Slough Boat Launch and Eureka Waterfront Trail.
December 2, 2024	Lazy J Trailer Park residents	Community Impact Assessment outreach.
December 3, 2024	Silvercrest Retirement Community residents	Informational meeting.
December 10, 2024	Caltrans, HBNWR	4(f) discussion and potential options regarding right of way.
December 12, 2024	Caltrans, NMFS, USFWS, CDFW, CCC	Begin Section 7 consultations and discuss marine mammal LOA, ITPs and the CDP.
February 5, 2025	Humboldt Bay National Wildlife Refuge (USFWS): Jason Storlie, Cashell Villa, Jason Storlie, Jessica Blancher, Kristina Hanson, and Viola Randal Caltrans: Felicia Zimmerman, Christine Hamilton, Prairie Moore, and Steve Croteau	Meeting included introducing new Caltrans project team members, and mainly focused on allowable uses under Section 4(f).

4.2 Comments and Response to Comments

Comments submitted by the public and other stakeholders during the NOP and Draft Environmental Impact Report/Statement circulation period and public scoping meeting are responded to in Sections 4.2.1 and 4.2.2.

4.2.1 Notice of Preparation

Table 59 below provides comments and responses to the Notice of Preparation (NOP).

Table 59. NOP Comments and Responses

Commenter, Date Rec'd, Format	Comment	Response
Sergeant Gabriel Parker, California Highway Patrol, October 10, 2023, Email	Good afternoon, After reviewing the Eureka Slough Bridges Replacement Project environmental documents, the lead agency (Caltrans) is proposing to replace the two existing bridges which are deemed to be structurally and geometrically deficient. This replacement will have moderate to major traffic impact to northbound and southbound U.S. 101. Although Caltrans has not yet specified traffic mitigation measures, it is expected that onsite traffic safety signage, warnings, diversions, and detours will be implemented with Caltrans being the lead agency. With mitigation measures in place in the form of traffic diversions and detours, travel through the area will flow at a slower pace until the completion of the project. This project would have less impact if the involved construction occurred during the hours of darkness. The Humboldt CHP Area recommends safety messages and advisories be disseminated to the media platforms by Caltrans throughout Humboldt County prior to the construction date. As the project timeframe approaches, the Humboldt CHP Area request updates from Caltrans on planned traffic mitigation measures, notification of any changes in the expected impact from the lead agency (Caltrans), and advisement if reimbursable contracts with CHP will be requested.	Thank you for your email, Sergeant Parker. All feasible measures to minimize traffic impacts would be included as part of the project (see Section 2.2.11). Per CHP's request, safety messages and advisories would be provided to media, and updates would be provided to CHP.

Commenter, Date Rec'd, Format	Comment	Response
Colin Fiske, 3/11/2024, Email	I am not available to attend tomorrow night's scoping meeting, but would like to submit the following comments on behalf of CRTP: • We strongly support the addition of bicycle and pedestrian facilities on these bridges. • Please consider safe bicycle and pedestrian connectivity, and work to ensure safe bicycle and pedestrian connections to and from the new facilities on the bridges. • Please consider and minimize impacts to bicyclists and pedestrians during construction. This includes providing alternate routes for bicyclists and pedestrians using the bridges, as well as any impacts to users of the Class I trail facility (Eureka Waterfront Trail) running under the bridges. • Please consider including design features on the southbound bridge to calm traffic entering the lower-speed urban environment. • Please consider how the bridges will interact with the urban corridor of 4th/5th Streets, in terms of operating speeds, safety, and vehicle miles traveled. Consider flexible designs which would allow future lane reductions and further bicycle, pedestrian and transit improvements, but not lane additions, in order to avoid VMT-inducing impacts.	Thank you for your email, Mr. Fiske. We appreciate your support and all suggestions have been taken into consideration.

Michael van Hattem, CDFW, 10/19/2023, Letter	The California Department of Fish and Wildlife (Department) received the Notice of Preparation (NOP) for a Draft Environmental Impact Report (EIR) from the California Department of Transportation (Caltrans, or Lead Agency) for the Eureka Slough Bridges Replacement Project (project) pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines. Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the project that may affect California fish and wildlife resources. Likewise, we appreciate the opportunity to provide early guidance regarding aspects of the Project that the Department, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the California Fish and Game Code (CFGC). **DEPARTMENT ROLE** The Department is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the state (FGC §711.7, subd. (a) and §1802; Public Resources Code, §21070; CEQA Guidelines, §15386, subd. (a)). The Department, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, §1802). Similarly, for purposes of CEQA, the Department is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources. The Department is also responsible for marine biodiversity protection under the Marine Life Protection Act in coastal marine waters of California and ensuring fisheries are sustainably managed under the Marine Life Management Act. The Department is also submitting comments as a Responsible Agency under CEQA (Pub. Resources Code, §21069; CEQA Guidelines, §15381) and may need to exercise regulatory authority as provided by the FGC. As proposed, the Project may result in "take" as defined by State law of species protected under the California Endangered Species Act (FGC, §2050 et seq.), and related authorization as provided by the FGC will be required. Additionally, the Project is subject to Lake and Streambed Alteration Notification requirements (FGC, §1600 et seq.). **CALIFORNIA ENDANGERED SPECIES ACT (CESA)** The CESA provides for the protection of rare, threatened, candidate and endangered plants and animals, and prohibits	Thank you for the letter, Mr. van Hattem. Caltrans appreciates the detailed information, and all species and other resources needing evaluation have been included in the DED. Please see Chapter 1 for project description details, and Sections 2.4 and 3.2.3 for biological resources information.

Commenter, Date Rec'd, Format	Comment	Response
	the taking of such species without authorization (FGC, §2050). The Department maintains a list of rare, threatened, and endangered plants and animals that can be found on the Department's web site: https://wildlife.ca.gov/Data/CNDDB. The Department recommends including a full analysis of CESA listed species that may be within the project area and potential impacts in the Draft EIR. Adverse impacts from the Project leading to take of CESA listed species would require take authorization from the Department according to Fish and Game Code §2081. **LAKE AND STREAMBED ALTERATION (LSA)** Fish and Game Code Section §1602 requires any person, state or local governmental agency, or public utility to notify the Department prior to beginning any activity that may do one or more of the following: divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; or deposit or dispose of material into any river, stream, or lake. The Department requires an LSA Agreement when a project activity may substantially adversely affect fish and wildlife resources. More information on LSA Notifications requirements can be found on the Departments website: https://wildlife.ca.gov/Conservation/Environmental-Review/LSA. **PROJECT DESCRIPTION SUMMARY** **Proponent and Lead Agency:** California Department of Transportation (Caltrans) **Objective:** The Project proposes to address seismic deficiencies and vertical curvature by replacing two existing bridges with two new structures. The Project alternatives in the Draft EIR may consist of: 1. Retrofit of both existing structures; 2. Replace existing bridges with two new structures. Each new bridge would have two traffic lanes, standard inside and outside shoulders and a separated bicycle/pedestrian path on the outside edge; 3. Similar to Alternative 2, but with the addition of a third bridge to provide a local south/westbound connection from Jacobs Avenue to 6th Street in Eureka. The bicycle/pedestrian path would be constructed on the outside edge of the third bridge; and 4. No build alternative.	

Commenter, Date Rec'd, Format	Comment	Response
	Location: The Eureka Slough bridges span the Eureka Slough Channel in Humboldt Bay on US Highway 101 between post miles 79.5 and 80.2. **Timeline:** The timeline for the proposed Project is not included in the NOP. **BIOLOGICAL CONTEXT** The Project is located on Eureka Slough, where the 56 square mile Freshwater Creek watershed flows into Humboldt Bay. Humboldt Bay is California's second largest bay, and the largest estuary on the Pacific coast between San Francisco Bay and Oregon's Coos Bay. The marine and estuarine habitats of Humboldt Bay provide refuge and nursery habitat for more than 300 fish and invertebrate species, many with important associated commercial and recreational fisheries. Humboldt Bay and its wetlands and dunes are habitat for at least 20 State and federally listed species and numerous California Species of Special Concern (SSC). Sensitive Natural Communities (SNC) and special-status species that are listed under the California Endangered Species Act (CESA), Federal Endangered Species Act, Fish and Game Code as Fully Protected (FP), California Species of Special Concern (SSC) or Watch List (WL), the California Rare Plant Ranking (CRPR) System, or the Vegetation Classification and Mapping Program with sensitive Global (G) / State (S) Heritage Ranks occur in or nearby the Project area and may be impacted by direct and/or indirect Project impacts. These special-status resources include but are not limited to: **Fish** • Coho salmon (*Oncorhynchus kisutch),* State and federally-threatened (Southern Oregon/Northern California (SONCC) Evolutionarily Significant Unit (ESU)); • Chinook salmon (*O. tshawytscha)*, federally-threatened (California Coastal ESU); • Coastal cutthroat trout (*O. clarki clarki)*, State SSC; • Steelhead trout (*O. mykiss)*, federally-threatened (Northern California Distinct Population Segment (DPS) • Longfin smelt (*Spirinchus thaleichthys)*, State-threatened; • Eulachon (*Thaleichthys pacificus)*, federally-threatened (southern DPS); • Green sturgeon (*Acipenser medirostris)*, federally-threatened (southern DPS), State SCC (northern and southern DPS);	

Commenter, Date Rec'd, Format	Comment	Response
	• Tidewater goby (*Eucyclogobius newberryi*), federally-endangered; • Pacific lamprey (*Entosphenus tridentatus)*, State SSC; and • Western river lamprey (*Lampetra ayresii)*, State SSC. **Birds** • Black brant (*Branta bernicla nigricans)*, State SSC; • Vaux's swift (*Chaetura vauxi)*, State SSC; • Northern harrier (*Circus hudsonius),* State SSC; • White-tailed kite (*Elanus leucurus),* State FP; • Long-billed curlew (*Numenius americanus)*, State WL; • Osprey (*Pandion haliaetus)*, State WL; • American peregrine falcon (*Falco peregrinus anatum*), State FP; • Double-crested cormorant (*Phalacrocorax auritus)*, State WL; and • California brown pelican (*Pelecanus occidentalis californicus)*, State FP. **Plants** • Humboldt Bay owl's-clover (*Castilleja ambigua* var. *humboldtiensis*), CRPR 1B.2; • Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*), CRPR 1B.2; • Lyngbye's sedge (*Carex lyngbyei*), CRPR 2B.2; • Sea-watch (*Angelica lucida*), CRPR 4.2; • Small spikerush (*Eleocharis parvula*), CRPR 4.3; • Dwarf alkali grass (*Puccinellia pumila*), CRPR 2B.2; • Western sand-spurrey (*Spergularia canadensis* var. *occidentalis*), CRPR 2B.1; and • Short-leaved evax (*Hesperevax sparsiflora)*, CRPR 1B.2. **Sensitive Natural Communities** • Lyngbye's sedge swathes, S1; • Slough sedge - Water-parsley - Small-fruited bulrush marsh, S3; • Coastal dune willow - Sitka willow - Douglas spiraea thickets, S3; • Pickleweed mats, S3; • Common three-square marsh, 3.2; • Eelgrass beds, S3;	

Commenter, Date Rec'd, Format	Comment	Response
	• Salmonberry - Wax myrtle scrub, S3; and • Coastal tufted hair grass - Meadow barley - California oatgrass meadow, S3. **Insects** • Western Bumble Bee (*Bombus occidentalis),* State Candidate; and • Obscure Bumble Bee (*B. caliginosus)*; State SSC. In addition, several species with important commercial, recreational, and cultural importance also exist within and adjacent to the proposed Project area and could be impacted by Project activities, including: • Harbor seal (*Phoca vitulina*); • Dungeness crab (*Cancer magister)*; • Pacific herring (*Clupea pallasii)*; • Northern anchovy (*Engraulis mordax)*; • Rockfish (*Sebastes* spp.); and • California halibut (*Paralichthys californicus).* **COMMENTS AND RECOMMENDATIONS** The Department offers the comments and recommendations below to assist Caltrans in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. **Environmental Setting** **Comments:** The impacts of the Project should be evaluated by comparing expected environmental conditions after Project implementation to existing baseline conditions. The changes in environmental conditions between baseline and post-Project represent the environmental impacts of the Project. **Recommendations:** The Draft EIR should include a comprehensive Environmental Setting description that characterizes existing environmental conditions, including resources that are rare or unique to the region (CEQA Guidelines, §15125). **Project Description Comments:** Several important aspects of the Project have not been described in the NOP. This	

Commenter, Date Rec'd, Format	Comment	Response
	limits the Department's ability to evaluate the potential impact to trustee resources. **Recommendations:** The Department recommends the Draft EIR include a comprehensive project description, including but not limited to: • all in-water work for bridge replacement (e.g., methods, equipment, materials, work windows); • anticipated impacts to eelgrass and intertidal mudflat habitat; • anticipated impacts to CESA-listed species; • measures to avoid, minimize, and mitigate for impacts to biological resources; and • anticipated timeline of construction. **Eelgrass Habitat Comments:** Native eelgrass beds (*Zostera marina*) are an important part of the Humboldt Bay ecosystem and are recognized by state and federal statutes as both highly valuable and sensitive habitats. Humboldt Bay holds approximately 37% of the known mapped eelgrass in the state (Serpa, 2016). Eelgrass provides primary production and nutrients to the ecosystem along with spawning, foraging, and nursery habitat for fish and other species. Pursuant to the federal Magnuson-Stevens Fishery Conservation and Management Act, eelgrass is designated as Essential Fish Habitat for various federally managed fish species within the Pacific Coast Groundfish and Pacific Coast Salmon Fisheries Management Plans (FMP). Eelgrass is also considered a habitat area of particular concern for various species within the Pacific Coast Groundfish FMP. Eelgrass habitats are further protected under state and federal "no-net-loss" policies for wetland habitats. Additionally, the importance of eelgrass protection and restoration, as well as the ecological benefits of eelgrass, is identified in California Public Resources Code (PRC Section 35630). The NOP does not describe impacts to eelgrass or propose mitigation. However, from previous correspondence with Caltrans on this Project, the Project is anticipated to impact approximately 0.012-0.025 acres of eelgrass habitat. The Department recommends a comprehensive impact analysis and mitigation plan be provided in the Draft EIR, as outlined below. Eelgrass mitigation efforts in Humboldt Bay from previous projects have presented challenges and several projects have been unsuccessful at meeting their mitigation requirements resulting in a net loss of eelgrass habitat. To	

Commenter, Date Rec'd, Format	Comment	Response
	ensure eelgrass mitigation success, the Department recommends Caltrans coordinate with the natural resource agencies and begin mitigation prior to Project construction. **Recommendations:** The Department recommends the proposed Project avoid and minimize impacts to eelgrass and fully mitigate any remaining impacts. The Department makes the following recommendations for the Draft EIR: • A comprehensive analysis of impacts to eelgrass habitat. The Department recommends the Draft EIR include maps and acreage of baseline eelgrass habitat within the proposed Project footprint and fully analyze the impact to eelgrass habitat from direct and indirect activities such as: bridge demolition, bridge construction, shading, and changes in circulation, scour and sedimentation. Impacts to eelgrass habitat should be analyzed for each of the Project alternatives. The Department recommends multiple years of eelgrass survey data be included in the impact analysis, including up to date surveys conducted in the growing season, to account for temporal and spatial variability in eelgrass distribution. • A comprehensive eelgrass mitigation and monitoring plan. To ensure no net loss, the Department recommends the Draft EIR include avoidance and minimization measures as well as require the development of a comprehensive monitoring and mitigation plan, as defined in the California Eelgrass Mitigation Policy (CEMP) (NMFS, 2014). This plan should include mitigation for temporal and permanent impacts to eelgrass habitat. The Department recommends conducting baseline eelgrass habitat surveys prior to construction and multiple years of post-construction eelgrass surveys. Post-construction surveys should capture both direct and indirect effects to eelgrass density and percent vegetated cover within and adjacent to construction areas. Multiple years of post-construction surveys may be necessary to evaluate if indirect effects resulted later in time due to altered physical conditions (changes in circulation, sedimentation, etc.). As described in the CEMP, an estimate of likely impacts should be made prior to implementation of the proposed Project based on the best available information (e.g., shading analyses, wave and current modeling). The Department recommends eelgrass mitigation occur prior to Project construction to ensure success and minimize temporal loss. • Scientific Collecting Permit (SCP). If transplanting of eelgrass is required for mitigation, a SCP from the	

Commenter, Date Rec'd, Format	Comment	Response
	Department will be required prior to harvest and transplanting activities. The SCP may include conditions such as donor bed surveys, limits on number and density of turions collected, methods for collection and transplanting, notification of activities, and reporting requirements. Please visit the Department's SCP webpage for more information: https://wildlife.ca.gov/Licensing/Scientific-Collecting. • Consultation with respective agencies. The Department recommends that Caltrans consult with the appropriate permitting agencies for review of all eelgrass monitoring, mitigation, and adaptive management efforts. **Mud Shrimp** **Comments:** The Blue Mud Shrimp (*Upogebia pugettensis*) inhabit soft intertidal sediments of bays and estuaries from Alaska to Baja California (Williams 1986). These shrimp dig burrows up to one meter deep which greatly influence community composition and structure (Dumbauld et al. 1996). Blue Mud Shrimp have been shown to have important density dependent effects on organic matter decomposition and carbon cycling in estuarine environments (D'Andrea and DeWitt 2009, Griffen et al. 2004). The construction of burrows creates a network of tubes perforating the seafloor which can greatly increase the surface area available for nutrient exchange by 1-5 times (D'Andrea and DeWitt 2009). Studies have shown that Blue Mud Shrimp have the ability to filter the entire volume of water overlying their burrows more than once per day and that carbon and nitrogen cycling increase with density of burrows (D'Andrea and DeWitt 2009, Griffen et al. 2004). Predators of Blue Mud Shrimp include Pacific Staghorn Sculpin, Leopard Shark, Brown Smooth-Hound Shark, Dungeness Crab, Sea-Run Cutthroat Trout, and intertidally foraging birds. Shrimp larvae have also been identified as a food source for juvenile Salmon (Chapman and Carter 2014). Declining populations of Blue Mud Shrimp between Morro Bay, California and Vancouver, British Colombia have been observed and many populations appear to be functionally extinct or are in severe decline since the 1980s (Chapman and Carter 2014, Chapman et al. 2012, Markham 2004). Department staff conducted a survey for mud shrimp within the project area on July 04, 2023, with Caltrans staff. No mud shrimp species were observed that day, but suitable habitat does exist within the Project area. Additional surveys will inform Draft EIR analysis of potential mud shrimp occurrence within the Project area at interannual time scales, and potential Project impacts.	

Commenter, Date Rec'd, Format	Comment	Response
	Recommendations: The Department recommends Caltrans conduct additional mud shrimp surveys to assess potential presence over interannual time scales. Additionally, the Draft EIR should include an analysis of potential mud shrimp occurrence and Project impacts. The Department is available to coordinate and provide consultation on benthic habitat characterization and survey methods. **Pile Driving** **Comments:** The Project is expected to require removal of existing piers and replacement with new piers within the Eureka Slough channel. The NOP does not provide details on methods for pier demolition and construction (e.g., impact hammer, vibratory hammer), types of piles, number of piles, or hydroacoustic impacts expected from pile installation/removal. Pile driving produces intense sound vibrations that are injurious (i.e., barotrauma) to fish (Popper et al., 2006). The Department is signatory to the Interim Criteria for Injury to Fish from Pile Driving Activities (Interim Criteria; Attachment 1). According to the Interim Criteria, the sound pressure levels should not exceed 206 dB peaks and 187 dB accumulated sound exposure level (SEL) for all listed fish except those that are less than 2 grams. In that case, the criteria for the accumulated SEL should be 183 dB. The Project area is an important migratory corridor for CESA-listed species, including longfin smelt and coho salmon, which are both known to spawn further upstream in Freshwater Creek. Early life stages of longfin smelt (<2 grams) may be present within the project area depending on the timing of pile driving. **Recommendations:** The Department recommends the Draft EIR include the following: • Analysis of impacts from pile driving. The Draft EIR should include a comprehensive analysis of impacts to sensitive species from pile driving. The analysis should describe the material and size of new piles (including temporary construction piles), method of pile driving, size of the pile driving hammer, underwater sound monitoring methods, work windows, and mitigation measures to avoid injurious sound pressure levels to fish and marine mammals. • Take coverage and mitigation for CESA-listed species: If sound pressure levels are expected to exceed the established Interim Criteria for Injury to Fish, the Department recommends Caltrans consult on obtaining an	

Commenter, Date Rec'd, Format	Comment	Response
	a CESA Incidental Take Permit to address impacts of "take" pursuant to Fish and Game Code Sections 2080.1 or 2081(b), and California Code of Regulations Title 14 (14 CCR) § 783 et seq. • Sound attenuation monitoring plan. The Department recommends Caltrans develop and provide a sound attenuation monitoring plan for this Project. The Department also requests to receive daily, near real time sound monitoring results during pile driving activities to assess impacts from the Project. Should sound levels exceed the agreed upon criteria, work should immediately stop, the Department notified, and appropriate minimization measures should be added in consultation with the Department and other appropriate resource agencies. **In-Water Construction & Water Quality** **Comments:** The Department is concerned with impacts to sensitive species and habitats from potential in-water construction activities, including installation of cofferdams and dewatering of bay habitat. The Department is also concerned with impacts to bay water quality from in-water construction and operation of heavy equipment along the shoreline, including increased turbidity and risk of oil and hazardous material spills. **Recommendations:** • The Draft EIR should include a comprehensive description and analysis of impacts from all proposed in-water work, such as installation of cofferdams and dewatering areas for construction. • The Draft EIR should disclose whether any water intake systems are proposed to be installed in the bay for dewatering activities. To minimize impacts to CESA-listed species that occur in Humboldt Bay, including salmonids and longfin smelt, any proposed bay water intakes utilized for the Project should comply with the attached Department's Fish Screening Criteria (see Attachment 2). If intake systems are proposed, we recommend the Project proponent consult with the Department regarding potential "take" of CESA-listed species from intake systems and the potential need for an ITP. • The Draft EIR should describe the risk of oil and hazardous material spills, the potential impacts to coastal and marine resources in the event of a spill, and spill prevention and response measures.	

Commenter, Date Rec'd, Format	Comment	Response
	• The Draft EIR should also include measures to avoid and minimize increased turbidity levels in the bay from Project activities. **Mitigation Measures** **Comments:** When preparing an EIR, the Lead Agency must include feasible mitigation measures to reduce impacts to a less than significant level (CEQA Guidelines, §21002), with sufficient details and performance standards to avoid improperly deferring mitigation until some future time (CEQA Guidelines §15126.4 (a)(1)(B)). **Recommendations:** • To ensure the mitigation measures are implemented, the Lead Agency shall adopt a mitigation monitoring or reporting program/plan (MMRP; CEQA Guidelines §15097). Monitoring ensures Project compliance is checked on a regular basis to evaluate the measurable success of mitigation measures. Reporting on monitoring will ensure compliance with mitigation requirements. • An adequate MMRP should, at a minimum, describe (1) roles and responsibilities for various aspects of monitoring; (2) timing/implementation; (3) reporting and support responsibilities; (4) other responsibilities of the Project proponent; (5) general standards for determining Project compliance with the mitigation measures or revisions and related conditions of approval; and (6) enforcement procedures for noncompliance or adaptive management. **ENVIRONMENTAL DATA** CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: https://wildlife.ca.gov/Data/CNDDB/SubmittingData#44524420-pdf-field-survey-form The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the	

Commenter, Date Rec'd, Format	Comment	Response
	following link: https://wildlife.ca.gov/Data/CNDDB/Plants-and-Animals **FILING FEES** The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by the Department. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.) **CONCLUSION** We appreciate the opportunity to comment on the Eureka Slough Bridges Replacement Project to assist Caltrans in identifying and mitigating Project impacts on biological resources.	

Cameron Vela, California Native American Commission, 9/25/2023, Letter	The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE). CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply. The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as	Thank you for the letter, Cameron Vela. Caltrans appreciates the detailed information. Caltrans approaches Native American consultation with utmost importance, ensuring full compliance for all regulations and laws. Please see Sections 2.2.13 and 3.2.4 for cultural resources information.

Commenter, Date Rec'd, Format	Comment	Response
	possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws**. AB 52 has added to CEQA the additional requirements listed below, along with many other requirements: <u>AB 52</u> 1. <u>Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project</u>: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes: • A brief description of the project. • The lead agency contact information. • Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)). • A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073). 2. <u>Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report:</u> A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative	

Commenter, Date Rec'd, Format	Comment	Response
	declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)). • For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)). 3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation: • Alternatives to the project. • Recommended mitigation measures. • Significant effects. (Pub. Resources Code §21080.3.2 (a)). 4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation: • Type of environmental review necessary. • Significance of the tribal cultural resources. • Significance of the project's impacts on tribal cultural resources. • If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)). 5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).	

Commenter, Date Rec'd, Format	Comment	Response
	6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following: • Whether the proposed project has a significant impact on an identified tribal cultural resource. • Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)). 7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs: • The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or • A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)). 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)). 9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible	

Commenter, Date Rec'd, Format	Comment	Response
	mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)). 10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources: • Avoidance and preservation of the resources in place, including, but not limited to: • Planning and construction to avoid the resources and protect the cultural and natural context. • Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria. • Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following: • Protecting the cultural character and integrity of the resource. • Protecting the traditional use of the resource. • Protecting the confidentiality of the resource. • Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places. • Protecting the resource. (Pub. Resource Code §21084.3 (b)). • Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)). • Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991). 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental	

Commenter, Date Rec'd, Format	Comment	Response
	Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs: • The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2. • The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process. • The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)). The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf. Some of SB 18's provisions include: 1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).	

Commenter, Date Rec'd, Format	Comment	Response
	2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation. 3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)). 4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which: -The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or -Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18). Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/. NAHC Recommendations for Cultural Resources Assessments To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions: 1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:	

Commenter, Date Rec'd, Format	Comment	Response
	-If part or all of the APE has been previously surveyed for cultural resources. -If any known cultural resources have already been recorded on or adjacent to the APE. -If the probability is low, moderate, or high that cultural resources are located in the APE. -If a survey is required to determine whether previously unrecorded cultural resources are present. 2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey. -The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure. -The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center. 3. Contact the NAHC for: -A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE. -A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures. 4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence. -Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified	

Commenter, Date Rec'd, Format	Comment	Response
	archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities. -Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans. -Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.	

4.2.2 Draft Environmental Impact Report/Statement

After the Draft Environmental Impact Report/Environmental Assessment circulation period, all comments received will be responded to in this section.



Chapter 5 List of Preparers

The following contributed to the preparation of this EIR/EA.

Name	Role/Qualifications
Andrew Rogers, Gwen Erickson, Oscar Rodriguez	Stormwater and Water Quality Specialists
Kristina Crawford	Senior Environmental Planner (Archaeologist) – Cultural Resources Compliance
Caity Bishop	Associate Environmental Planner (Archaeologist)
Steve Croteau	Senior Environmental Scientist – EIR/EA Preparation/Oversight
Christian Figueroa	Senior Engineering Geologist
Paul Sundberg	Engineering Geologist – Hazardous Materials and Paleontological Specialist
Stephanie Frederickson	Senior Biological Resources Specialist – Mitigation Specialist
Jason Meyer	Senior Environmental Scientist – Revegetation
Christine Hamilton	Environmental Scientist (Biologist) – Biological Surveys and Report Reviews
Jeremiah Joyner	Senior Right of Way Agent
Kidianga Tshiunza	Transportation Engineer – Project Design
Aaron Bali	Transportation Engineer - Air Quality, GHG, and Energy Specialist
Jamie Lusk	Transportation Engineer – Traffic Management Information
Kevin Lee	Senior Transportation Engineer – Project Design
Monica Garcia-Zalik	Hydraulics Engineer – Hydraulic Study/Floodplain Evaluation Report
Prairie Moore	Environmental Scientist (Coordinator) – Biological Reports and EIR/EA Preparation
Jeff Pimentel	Project Manager
Ryan Pommerenck	Transportation Engineer – Noise Report/Hydroacoustic Analysis/Assessment of Airborne Construction Noise for Marine Mammals
Nick Burke	Landscape Associate – Visual Impact Assessment
Karen Radford	Associate Environmental Planner – EIR/EA Technical Editor
Grant Schuster	Senior Bridge Engineer – Project Design
Samson Toe	Transportation Engineer – Project Design
Denise Walker-Brown, Jessica Barger	Environmental Scientist (Mitigation Specialist) – Mitigation Development
Eric Wilson	Geotechnical Engineer – Geotechnical Report
Cari Williams	Associate Environmental Planner – Peer Review
Felicia Zimmerman	Associate Environmental Planner (Coordinator) – Lead EIR/EA Preparer



Chapter 6 Distribution List

The Draft EIR/EA has been distributed to the following entities:

6.1 Federal Agencies

Federal Agency	Address
Federal Highway Administration	Shawn Oliver, Planning and Environmental Unit Federal Highway Administration 650 Capitol Mall Suite 4-100 Sacramento, CA 95814
National Marine Fisheries Service	Dan Free, Branch Chief National Marine Fisheries Service 1655 Heindon Road Arcata, CA 95518
Humboldt Bay National Wildlife Refuge	Ms. Cashell Villa, Refuge Manager U.S. Fish and Wildlife Service Humboldt Bay National Wildlife Refuge PO Box 576 Loleta, CA 95551
U.S. Army Corps of Engineers	Katerina Galacatos, Ph.D. Senior Project Manager San Francisco District, U.S. Army Corps of Engineers 450 Golden Gate Avenue, 4th Floor San Francisco, CA 94102
U.S. Environmental Protection Agency	Carolyn Mulvihill NEPA Reviewer – Transportation U.S. Environmental Protection Agency Region IX, WTR-8 75 Hawthorne Street San Francisco, CA 94105
U.S. Fish and Wildlife Service	Matt Parker Fish and Wildlife Biologist U.S. Fish and Wildlife Service 1655 Heindon Road Arcata, CA 95521

Federal Agency	Address
U.S. Coast Guard	Carl Hausner Chief, Bridge Section Eleventh Coast Guard District Coast Guard Island, Bldg 50-2 Alameda, CA 94501-5100

6.2 State Agencies

State Agency	Address
California Coastal Commission	Melissa Kramer, North Coast District Manager California Coastal Commission PO Box 4908 Eureka, CA 95502
California Department of Fish and Wildlife	Greg O'Connell, Senior Environmental Scientist California Department of Fish and Wildlife 619 Second Street Eureka, CA 95501
California Highway Patrol	Sergeant Gabriel Parker California Highway Patrol Humboldt Area 255 East Samoa Blvd. Arcata, CA 95521
State Office of Historic Preservation	State Historic Preservation Officer State Office of Historic Preservation 1725 23rd Street, Suite 100 Sacramento, CA 95816
State Water Resources Control Board	Susan Stewart, Environmental Scientist North Coast Regional Water Quality Control Board 5550 Skylane Boulevard Suite A Santa Rosa, CA 95403

6.3 Regional/County/Local Agencies

Regional/County/Local Agency	Address
City of Eureka	Jesse Willor, City Engineer City of Eureka 531 K Street Eureka, CA 95501
City of Eureka	Cristin Kenyon, Development Services Director City of Eureka 531 K Street Eureka, CA 95501
Eureka Chamber of Commerce	Eureka Chamber of Commerce 612 G Street, Suite 101 Eureka, CA 95501
Humboldt Bay Harbor District	Chris Mikkelsen, Executive Director 601 Startare Drive Eureka, CA 95501
Humboldt County Clerk/Recorder	County Clerk Recorder 825 5th Street #5 Eureka, CA 95501
Humboldt County Roads Division	Steve Finch, Roads Division Manager 1106 Second Street Eureka, CA 95501
Humboldt County Association of Governments	Kim Bergel Humboldt County Association of Governments 611 I Street, Suite B Eureka, CA 95501
Humboldt County Board of Supervisors	Natalie Arroyo, District 4 Supervisor Humboldt County Board of Supervisors 825 5th Street Eureka, CA 95501
Great Redwood Trail Agency	Elaine Hogan c/o Blue Lake City Hall PO Box 458 Blue Lake, CA 95525

6.4 Tribal Governments

Tribal Office	Address
Bear River Band of the Rohnerville Rancheria	Josefina Cortex, Tribal Chair 266 Keisner Loleta, CA 95551
Wiyot Tribe	Ted Hernandez, Tribal Chair 1000 Wiyot Drive Loleta, CA 95551
Blue Lake Rancheria	Jason Ramos, Tribal Chair PO Box 428 Blue Lake, CA 95525

6.5 Utilities

Name of Utility Company	Address
Humboldt Bay Community Services District	Director 5055 Walnut Drive Eureka, CA 95503
City of Eureka Water and Sewer	Director, Water and Sewer City of Eureka 531 K Street Eureka, CA 05501
Pacific Gas & Electric	Manager, PGE Eureka 2475 Myrtle Ave Eureka, CA 95501
AT&T (communication)	ATT John Stankey, CEO 208 Akard St. Dallas, TX 75202
Suddenlink (communication)	Suddenlink Dennis Mathew, CEO 520 Maryville Centre Drive St. Louis, MO 63141

6.6 Interested Groups, Organizations, and Individuals

Name	Address
Coalition for Responsible Transportation Priorities	Colin Fiske, Executive Director and President Coalition for Responsible Transportation Priorities 145 G Street Suite A Arcata, CA 95521
Environmental Protection Information Center	Tom Wheeler, Executive Director Environmental Protection Information Center 145 G Street, Suite A Arcata, CA 95521
Humboldt Waterkeeper	Humboldt Waterkeeper Jennifer Kalt, Executive Director 600 F Street, Suite 3 #810 Arcata, CA 95521
Silvercrest Residence	Eureka Silvercrest Senior Citizens' Residence 2141 Tydd Street Eureka CA 95501

6.7 Businesses

Name	Address
Shoreline RV Park	Shoreline RV Park 2600 6th Street Eureka, CA 95501
Target	Target Attn: Manager 2525 4th Street Eureka, CA 95501
Target Corp in Minnesota	Brian Cornell, Chief Executive Officer 1000 Nicollet Mall Minneapolis, MN 55403
Ayers Family Cremation	Ayers Family Cremation 2620 Jacobs Ave Eureka, CA 95501
Redwood Market and Chevron	Redwood Market and Chevron 2480 6th Street Eureka, CA 95501

6.8 Elected Officials

Name	Address
City of Eureka Ward 4	Scott Bauer, Councilmember 531 K Street Eureka, CA 95501
Office of Representative Jared Huffman	Office of Representative Jared Huffman Eureka District Office 317 3rd Street, Suite 1 Eureka, CA 95501
Office of Senator Mike McGuire	Office of Senator Mike McGuire 1036 5th Street, Suite D Eureka, CA 95501
Office of Assembly Member Jim Wood	Office of Assembly Member Jim Wood 1036 5th Street, Suite D Eureka, CA 95501

6.9 Emergency Responders

Name	Address
CAL FIRE Humboldt	Kurt McCray, Chief Humboldt-Del Norte Unit Fire Chief 118 N Fortuna Blvd Fortuna, CA 95540
City of Eureka Fire and Rescue	Kevin Carey, Fire Chief City of Eureka Fire and Rescue 533 C Street Eureka, CA 95501
Humboldt County Sheriff	William Honsal, Sheriff 826 4th Street Eureka, CA 95501
Humboldt County Office of Emergency Services	Ryan Derby Emergency Services Manager Humboldt County Office of Emergency Services 825 5th Street Eureka, CA 95501

Chapter 7 References

Allen, S, E. Ojerholm, and M. Wallace. 2016. Juvenile salmonid use and restoration assessment of the tidal portions of selected tributaries to Humboldt Bay, California, 2013-2015. Fisheries Restoration Grant Program Final Report Contract P1110524.

Anderson C. W. and D. Ward. 2016. Results of Freshwater Creek salmonid life cycle monitoring station 2015-2016. Humboldt State University, Department of Fisheries Biology.

Barnhart, R. A., M. J. Boyd, and J. E. Pequegnat. 1992. The Ecology of Humboldt Bay, California: An Estuarine Profile. U.S. Fish and Wildlife Service. Biological Report 1.

Baxter, R. 1999. Osmeridae. Pages 179–216 in J. Orsi, editor. Report on the 1980–1995 fish, shrimp, and crab sampling in the San Francisco Estuary, California. California Department of Fish and Game, Technical Report 63, Stockton..

Bell, E. and W. G. Duffy. 2007. Previously undocumented two-year freshwater residency of juvenile coho salmon in Prairie Creek, California. Transactions of the American Fisheries Society 136(4):966-970.

Buehler, D. A. 2000. Bald eagle (Haliaeetus leucocephalus). In A. Poole and F. Gill, eds. The Birds of North America. Philadelphia, PA.

California Air Resources Board (CARB). 2008. Climate Change Scoping Plan Appendices. Volume II: Analysis and Documentation. Appendix I, p. I-19. December. https://ww3.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm. Accessed: June 14, 2024.

_____. 2022a. Scoping Plan for Achieving Carbon Neutrality. Executive Summary. https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents. Accessed: June 14, 2024.

_____. 2022b. Climate Change. https://ww2.arb.ca.gov/our-work/topics/climate-change. Accessed: June 14, 2024.

_____. 2023. California Greenhouse Gas Emissions Inventory Data–2023 Edition, 2000-2021. https://ww2.arb.ca.gov/ghg-inventory-data. Accessed: June 14, 2024.

California Department of Fish and Wildlife (CDFW). 2005. Harbor Seals [ds106]. Digital map. Available: https://apps.wildlife.ca.gov/bios6/ Accessed March 1, 2024.

_____. 2018. Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities. https://wildlife.ca.gov/Conservation/Survey-Protocols#377281280-plants

_____. 2022. California Department of Fish and Wildlife Aquatic Invasive Species Decontamination Protocol 2022 (Northern Region). https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=43333&inline.

_____. 2023. California Monitoring Plan for Salmon and Steelhead. Population Data. Available: https://wildlife.ca.gov/Conservation/Fishes/Salmonid-Monitoring/CMP Accessed March 1, 2024.

_____. 2025. California Natural Diversity Database (CNDDB) RareFind 5 (online edition). Department of Fish and Wildlife, Sacramento, CA. Available: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed January 2023.

California Department of Forestry and Fire Protection (CAL FIRE). 2022. FHSZ Viewer. Available: https://egis.fire.ca.gov/FHSZ/. Accessed: November 25, 2024.

California Department of Toxic Substances Control (DTSC). 2016. Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils. Health and Safety Code Section 25187(b)(5).

California Department of Tax and Fee Administration (CDTFA). 2022. CDTFA Annual Report 2021-22. July. Available: https://www.cdtfa.ca.gov/formspubs/pub306-2021-22.pdf

California Department of Transportation (Caltrans). 2000. Asbestos and Lead Survey Report

_____. 2004. National Register of Historic Places Evaluation Report for the Eureka Slough Bridges Replacement Project.

_____. 2006. Caltrans Guidance for Preparers of Growth-related, Indirect Impact Analysis.

_____. 2010. Asbestos-Containing Materials and Lead-Containing Paint Survey

_____. 2013.Technical Noise Supplement. Environmental Program, Noise, Air Quality, and Hazardous Waste Management Office. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tenssep2013-a11y.pdf.

_____. 2016. Caltrans Storm Water Management Plan. https://dot.ca.gov/-/media/dot-media/programs/construction/documents/environmental-compliance/stormwater/october2016-swppp-manual-a11y.pdf

_____. 2017. Geoarchaeological Assessment and Proposal for Extended Phase I Exploration for the Eureka Slough Bridges Replacement Project (Far Western Anthropological Research Group, Inc.

_____. 2018. Section 106 Compliance - Screened Undertaking for the Eureka Slough Bridge Geoarchaeological Coring Project

_____. 2019. Caltrans Climate Change Vulnerability Assessments. District 1 Technical Report. Prepared by WSP. https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/air-quality-and-climate-change/2019-climate-change-vulnerability-assessments. Accessed: April 13, 2023.

_____. 2020a. Temporary Pedestrian Access Routes Handbook

_____. 2020b. Aerially Deposited Lead Site Investigation Report for the Eureka Slough Bridges Replacement Project.

_____. 2020c. Limited Asbestos and Lead-Containing Paint Survey Report for the Eureka Slough Bridges Replacement Project.

_____. 2020d. Caltrans Greenhouse Gas Emissions and Mitigation Report. Final. August. Prepared by ICF, Sacramento, CA. https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/air-quality-and-climate-change (located under the Technical Resources, Tools and Training tab). Accessed: June 14, 2024.

_____. 2020e. Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects. August. Sacramento, CA. Available: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/traffic-noise-protocol-april-2020-a11y.pdf. Accessed: May 23, 2023

_____. 2020f. Caltrans Transportation and Construction Vibration Guidance Manual.

_____. 2021a. Initial Site Assessment Memo for the Eureka Slough Bridges Replacement Project.

_____. 2021b. Caltrans 2020-2024 Strategic Plan. https://dot.ca.gov/-/media/dot-media/programs/risk-strategic-management/documents/sp-2020-16p-web-a11y.pdf. Accessed: June 14, 2024

_____. 2021c. California Transportation Plan 2050. February. https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/state-planning-equity-and-engagement/california-transportation-plan. Accessed: June 14, 2024

_____. 2022a. Archaeological Survey Report for the Eureka Slough Bridges Replacement Project. May 2022

_____. 2022b. Results of Extended Phase I Geoarchaeological Exploration for the Eureka Slough Bridges Replacement Project. Prepared by Far Western Anthropological Research Group. June 2022

_____. 2022c. Historic Property Survey Report for the Eureka Slough Bridges Replacement Project. October 2022

_____. 2022d. Initial Site Assessment Memo for the Eureka Slough Bridges Replacement Project. August 2023

_____.2023a. Traffic Data and Designation Request for the Eureka Slough Bridges Replacement Project. October 2023

_____.2023b. Hydraulic Recommendations Report for the Eureka Slough Bridges Replacement Project.

_____. 2023c. Preliminary Hydraulics Report for the Eureka Slough Bridges Replacement Project. December 2023

_____. 2023d. Caltrans Structures Preliminary Geotechnical Report for Eureka Slough Bridges. April 2023

_____. 2023e. Initial Site Assessment Memo for the Eureka Slough Bridges Replacement Project. August 2023

_____. 2023f. Sustainable Operations at Caltrans https://dot.ca.gov/programs/esta/sustainable-caltrans. Accessed: June 14, 2024

_____. 2024a. Feasibility Report for Public Access to Eureka Slough for the Eureka Slough Bridges Replacement Project. November 2024

_____. 2024b. Draft Transportation Management Plan for the Eureka Slough Bridges Replacement Project. December 2024

_____. 2024c. Project Visual Impact Assessment Memorandum Scenic Resource Evaluation. October 2024

_____. 2024d. Water Quality Assessment Report for the Eureka Slough Bridges Replacement Project. April 2024

_____. 2024e. Paleontological Identification Report/Paleontological Evaluation Report for the Eureka Slough Bridges Replacement Project. December 2024

_____. 2024f. Air Quality, Greenhouse Gas, and Climate Change Technical Memo for the Eureka Slough Bridges Replacement Project. October 2024

_____.2024g. Noise Study Report for the Eureka Slough Bridges Replacement Project. October 2024

_____. 2024h. Energy Analysis Report for the Eureka Slough Bridges Replacement Project. September 2024

_____. 2024i. Hydroacoustic Assessment for the Eureka Slough Bridges Replacement Project. September 2024

_____. 2024j. Assessment of Airborne Construction Noise for Marine Mammals for the Eureka Slough Bridges Replacement Project. September 2024

_____. 2025a. Community Impact Assessment for the Eureka Slough Bridges Replacement Project. February 2025

_____. 2025b. Natural Environment Study for the Eureka Slough Bridges Replacement Project. March 2025

California Governor's Office of Planning and Research (OPR). 2015. A Strategy for California @ 50 Million. November. https://opr.ca.gov/planning/environmental-goals/. Accessed: June 14, 2024.

California Natural Resources Agency. 2022. Nature-Based Climate Solutions: Natural and Working Lands Climate Smart Strategy. https://resources.ca.gov/Initiatives/Expanding-Nature-Based-Solutions. Accessed: June 14, 2024.

_____. 2023. California Climate Adaptation Strategy. https://climateresilience.ca.gov/overview/index.html. Accessed: June 14, 2024.

California Ocean Protection Council. 2022. State Agency Sea-Level Rise Action Plan for California. February. https://www.opc.ca.gov/climate-change/sea-level-rise-2/. Accessed: June 14, 2024.

California State Transportation Agency. 2021. Climate Action Plan for Transportation Infrastructure (CAPTI). Adopted July 2021. https://calsta.ca.gov/subject-areas/climate-action-plan. Accessed: June 14, 2024.

California State Water Resources Control Board. 2022 GeoTracker Map. https://geotracker.waterboards.ca.gov/map/. Accessed December 6, 2022.

Capitolo, P. J., H. R. Carter, J. L. Yee, G. J. Chesney, M. W. Parker, R. J. Young, R. T. Golightly, and W. B. Tyler. 2019. Changes in breeding population sizes of double-crested cormorants Phalacrocorax auritus in the Humboldt Bay area, California, 1924-2017. Marine Ornithology 47:115-126.

Chamberlain, C. D. 2006. Environmental variables of Northern California lagoons and estuaries and the distribution of tidewater goby (Eucyclogobius newberryi). Arcata Fisheries Technical Report Number TR 2006-04. U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata, California..

Chamberlain, R. H., and R. A. Barnhart. 1993. Early use by fish of a mitigation salt marsh, Humboldt Bay, California. Estuaries 16(4):769-783.

City of Eureka. 2015. Community Background Report. June. Available : https://www.eurekaca.gov/DocumentCenter/View/3242/City-of-Eureka-CBR-June-2015

_____. 2018. City of Eureka 2040 General Plan. Adopted October 15, 2024. Available: https://www.eurekaca.gov/DocumentCenter/View/1190/2040-General-Plan-PDF

Climate-Safe Infrastructure Working Group. 2018. Paying it Forward: The Path Toward Climate-Safe Infrastructure in California. September. https://files.resources.ca.gov/climate/climate-safe-infrastructure-working-group/. Accessed: June 14, 2024..

Cole, M. E. 2004. Distribution of fish species in Humboldt Bay, Humboldt County, California, USA: A GIS Perspective. Master's Thesis. Humboldt State University.

Collins, B. W. 2004. Report to the National Marine Fisheries Service for Instream Fish Relocation Activities Associated with Fisheries Habitat Restoration Program Projects Conducted under Department of the Army (Permit No. 22323N) within the United States Army Corps of Engineers, San Francisco District during 2002 and 2003. California Department of Fish and Game, Northern California and North Coast Region, Fortuna, California.

County of Humboldt. 2017. Humboldt County General Plan. Adopted October 23, 2017. Available: https://humboldtgov.org/205/General-Plan

County of Humboldt, City of Arcata, City of Eureka, City of Ferndale, City of Blue Lake, City of Rio Dell, City of Trinidad, City of Fortuna. 2022. Humboldt Regional Climate Action Plan. Available: https://humboldtgov.org/DocumentCenter/View/106404/Humboldt-Regional-CAP----Public-Review-Draft-4-7-22-PDF

Davis, J. and B. E. Deuel. 2008. Brant (Branta bernicla). In: California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. (Shuford, W. D., and T. Gardali, eds.). Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

EBird. 2021. Marbled Murrelet records in Humboldt Bay. Available: https://ebird.org/explore. Accessed August 5, 2021.

Eldridge, M. B. and C. F. Bryan. 1972. Larval Fish Survey of Humboldt Bay. NOAA Technical Report NMFS SSRF-665. National Oceanic and Atmospheric Administration. National Marine Fisheries Service.

Environmental Laboratory. 1987. U.S. Army Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Federal Highway Administration (FHWA). 2006. Roadway Construction Noise Model (FHWA RCNM). Version 1.0.

_____. 2022. Sustainability. https://www.fhwa.dot.gov/environment/sustainability/resilience/. Last updated July 29, 2022. Accessed: June 14, 2024.

_____. No date. Sustainable Highways Initiative. https://www.fhwa.dot.gov/environment/sustainability/initiative/. Accessed: June 14, 2024.

Fisheries Hydroacoustic Working Group (FHWG). 2008. Memorandum: Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities. Available: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/ser/bio-fhwg-criteria-agree-a11y.pdf. Accessed April 23, 2025.

Frimodig, A. J. and G. H. Goldsmith. 2008. First record of a cymothoid isopod from a tidewater goby and three new tidewater goby localities in Humboldt County, California. California Fish and Game 94:194-199.

Garwood, R. S. 2017. Historic and contemporary distribution of Longfin Smelt (Spirinchus thaleichthys) along the California coast. California Fish and Game 103:96-117.

Goetz, B. J. 1983. Harbor porpoise (Phocoena phocoena) movements in Humboldt Bay, California, and adjacent ocean waters. Master's thesis. Humboldt State University, Arcata, California.

Gleason, E., T. Mulligan, and R. Studebaker. 2007. Fish distribution in Humboldt Bay, California: a GIS perspective by habitat type. Pages 105-169 in Current Perspectives on the Physical and Biological Processes of Humboldt Bay (S. C. and R. Rasmussen, eds.). California Sea Grant, Eureka, California.

Gustafson, R. G., M. J. Ford, D. Teel, and J. S. Drake. 2010. Status review of eulachon (Thaleichthys pacificus) in Washington, Oregon, and California. NOAA-Fisheries Tech. Memo. NMFSNWFSC-105.

Hamer, T. E., and S. K. Nelson. 1995. Nesting chronology of the Marbled Murrelet. Pp. 49-56 in: Ecology and conservation of the Marbled Murrelet (C. J. Ralph, G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt, eds.). U.S. Forest Service, Gen. Tech. Rep. PSW-GTR-152, Pacific Southwest Research Station, Albany, CA.

Harvey, H. T. and Associates. 2012. Humboldt Bay Regional *Spartina* Eradication Plan Draft. California State Coastal Conservancy, Oakland, CA.

Hastings, M. C. and A. N. Popper. 2005. Effects of Sound on Fish. Prepared for Jones & Stokes and the California Department of Transportation. Sacramento, CA.

Hayes, D. B., C. P. Ferreri, and W. W. Taylor. 1996. Active Fish Capture Methods. Pages 193–220 in B.R. Murphy and D.W. Willis, editors. Fisheries Techniques, 2nd edition. American Fisheries Society. Bethesda, Maryland. 732 pp.

Healey, M. C. 1991. Life history of Chinook salmon (Oncorhynchus tshawytscha). Pp. 311-393 in: Pacific salmon life histories. (C. Groot and L. Margolis, eds.). University of British Columbia Press, Vancouver, Canada.

Hébert, P. N., and R. T. Golightly. 2006. Movements, nesting, and response to anthropogenic disturbance of Marbled Murrelets (Brachyramphus marmoratus) in Redwood National and State Parks, California. Unpublished report. Department of Wildlife, Humboldt State University, Arcata, California and California Department of Fish and Game Report 2006-02, Sacramento, California.

Hellmair, A. P. and Kinziger, 2014. Increased extinction potential of insular fish populations with reduced life history variation and low genetic diversity. PLoS ONE 9(11):e113139. doi:10.1371/journal.pone.0113139

Humboldt County Association of Governments (HCAOG). 2022. Regional Transportation Plan Variety in Rural Options of Mobility (VROOM) 2022-2042. Available: https://www.hcaog.net/sites/default/files/vroom_2022-2042_full_report.pdf

_____. 2023. Humboldt County Transit Development Plan 2023-2028. October 20. Available: https://www.hcaog.net/sites/default/files/humboldt_county_transit_development_plan_-_final_report_no_appendices_compressed.pdf

Hunter, J. E., D. Fix, G. A. Schmidt, and J. C. Power. 2005. Atlas of the Breeding Birds of Humboldt County, California. Redwood Region Audubon Society, Eureka, CA.

Hurlburt, G. G. 2013. Hall Creek, Mad River Fish Passage Mitigation. Final report, California Department of Fish and Wildlife Grant #723006. Caltrans reference EA 01-296124.

Jennings, M. R. 1996. Past occurrence of Eulachon, Thaleichthys pacificus, in streams tributary to Humboldt Bay, California. California Fish and Game 82:147-148.

Keeley, E. R. 2003. An Experimental Analysis of Self-thinning in Juvenile Steelhead Trout. Oikos 102.3 (2003):543–550.

Kelly, J. T., A. P. Klimley, and C. E. Crocker. 2007. Movements of green sturgeon, Acipenser medirostris, in the San Francisco Bay Estuary, California. Environmental Biology of Fishes 79:281-295.

Kimmerer, W. J., E. S. Gross, and M. L. MacWilliams. 2009. Is the response of estuarine nekton to freshwater flow in the San Francisco Estuary explained by variation in habitat volume? Estuaries and Coasts 32:375–389.

Lindley, S. T., M. L. Moser, D. L. Erickson, M. Belchik, D. W. Welch, E. Rechisky, J. T. Kelly, J. Heublein, and A. P. Klimley. 2008. Marine migration of North American green sturgeon. Transactions of the American Fisheries Society 137:182-194.

Lindley, S. T., D. L. Erickson, M. L. Moser, G. Williams, O. P. Langness, B. McCovey, Jr., D. Vogel, W. Pinnix, J. T. Kelly, J. C. Heublein, and A. P. Klimley. 2011. Electronic tagging of green sturgeon reveals population structure and movement among estuaries. Transactions of the American Fisheries Society 140:108-122.

Loughlin, T. R. 1974. The distribution and ecology of the harbor seal in Humboldt Bay, California. M.A. Thesis, Humboldt State University, CA.

Mathis, R. L., M. A. Colwell, L. W. Leeman, and T. S. Leeman. 2006. Long-billed curlew distributions in intertidal habitats: scale-dependent patterns. Western Birds 37:156-168.

McCauley, R. D., J. Fewtrell, and A. N. Popper. 2003. High intensity anthropogenic sound damages fish ears. Journal of the Acoustical Society of America 113: 638–642.

Meeuwig, M. H., J. M. Bayer, and J. G. Seelye. 2005. Effects of Temperature on Survival and Development of Early Life Stage Pacific and Western Brook Lampreys. Transactions of the American Fisheries Society 134:19–27.

Mersel, M. K. and R. W. Lichvar. 2014. A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States. ERDC/CRREL TR-14-13. U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory. Wetland Regulatory Assistance Program.

Moore, J. E., and J. M. Black. 2006. Historical changes in black brant Branta bericla nigricans use on Humboldt Bay, California. Wildlife Biology 12:151-162.

Moore, J. E., M. A. Colwell, R. L. Mathis, and J. M. Black. 2004. Staging of Pacific flyway Brant in relation to eelgrass abundance and site isolation, with special

consideration of Humboldt Bay, California. Biological Conservation 115:475-486.

Moser, M. L. and S. T. Lindley. 2007. Use of Washington estuaries by subadult and adult green sturgeon. Environmental Biology of Fishes 79:243-253.

Moyle, P. B. 2002. Inland Fishes of California. University of California Press, Berkeley.

Moyle, P. B., P. J. Foley, and R. M. Yoshiyama. 1992. Status of green sturgeon, Acipenser medirostris, in California. Final Report submitted to National Marine Fisheries Service. 11 pp. University of California, Davis, California.

Moyle, P. B., J. A. Israel, and S. E. Purdy. 2008. Salmon, steelhead and trout in California: status of an emblematic fauna. Prepared for California Trout by University of California, Davis, Center for Watershed Science. 316 pp.

Naslund, N. L. 1993. Why do marbled murrelets attend old-growth forest nesting areas year-round? Auk 110:594-602.

National Marine Fisheries Service (NMFS). 2014. Endangered Species Conservation: Southern Oregon/Northern California Coast Coho Salmon. National Marine Fisheries Service West Coast Region. Available: https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/southern-oregon-northern-california-coast-coho-salmon.

National Oceanic and Atmospheric Administration. (NOAA). 2022. 2022 Sea Level Rise Technical Report. https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report.html. Accessed: November 13, 2023.

_____. 2023. NOAA Digital Coast Data Access Viewer. https://coast.noaa.gov/dataviewer/#/. Accessed April 20, 2023.

_____. 2024. NOAA Sea Level Rise Viewer. https://coast.noaa.gov/dataviewer/#/. Accessed 2024.

Ougzin. A. M. 2013. Foraging behavior of the Pacific harbor seal (Phoca vitulina richardsi) in Humboldt Bay, California. Master's thesis. Humboldt State University, Arcata, California.

Pacific Fishery Management Council [PFMC]. 2014. Amendment 11 to the Pacific Coast Groundfish Fishery Management Plan. 45 pp.

Pinnix, W. D., T. A. Shaw, and N. J. Hetrick. 2004. Fish communities in eelgrass, oyster culture, and mudflat habitats of North Humboldt Bay, California Progress

Report. U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata Fisheries Technical Report Number AFWO-F-07-04, Arcata, California.

Pinnix, W. D., T. A. Shaw, K. C. Acker and N. J. Hetrick. 2005. Fish communities in eelgrass, oyster culture, and mudflat habitats of North Humboldt Bay, California Final Report. U. S. Fish and Wildlife Service, Arcata Fish and Wildlife Office, Arcata Fisheries Technical Report Number TR2005-02, Arcata, California.

Pinnix, W. D., P. A. Nelson, G. Stutzer, and K. A. Wright. 2013. Residence time and habitat use of coho salmon in Humboldt Bay, California: an acoustic telemetry study. Environmental Biology of Fishes 96:315-323.

Popper, A. N. and M. C. Hastings. 2009. Effects of anthropogenic sources of sound on fishes. Journal of Fish Biology 75:455–498.

Ralph, C. J., G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt. 1995. Ecology and conservation of the Marbled Murrelet in North America: an overview. Pp. 3-23 In: Ecology and conservation of the Marbled Murrelet (C. J. Ralph, G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt, eds.). U.S. Forest Service, Gen. Tech. Rep. PSW-GTR-152, Pacific Southwest Research Station, Albany, CA.

Rebenack, J. J., S. Ricker, C. Anderson, M. Wallace, and D. Ward. 2015. Early emigration of juvenile coho salmon: implications for population monitoring. Transactions of the American Fisheries Society 144:163-172.

Richards, J. E., & Beamish, F. W. H. 1981. Initiation of feeding and salinity tolerance in the Pacific lamprey Lampetra tridentata. Marine Biology, 63(1):73-77.

Richter, A., and S. A. Kolmes. 2005. Maximum temperature limits for Chinook, coho, and chum salmon, and steelhead trout in the Pacific Northwest. Reviews in Fisheries Science 13:23–49.

Ritter, A. F., K. Wasson, S. I. Lonhart, R. K. Preisler, A. Woolfolk, K. A. Griffith, S. Connors, and K. W. Heiman. 2008. Ecological signatures of anthropogenically altered tidal exchange in estuarine ecosystems. Estuaries and Coasts 31:554–571.

Shapovalov, L. and A. C. Taft. 1954. The life histories of the steelhead rainbow trout (Salmo gairdneri gairdneri) and silver salmon (Oncorhynchus kisutch). California Department Fish and Game, Fish Bulletin 98.

Shuford, W. D., and T. Gardali. 2008. California Bird Species of Special Concern. A ranked assessment of species, subspecies, and distinct population of birds of immediate conservation concern in California. Studies of Western Birds 1.

Western Field Ornithologists, Camarillo, California Department of Fish and Game, Sacramento.

Simpson, S., A. Radford, S. Nedelec, M. C. O. Ferrari, D. P. Chivers, M. I McCormick, and M. G. Meekan. 2016. Anthropogenic noise increases fish mortality by predation. Nature Communications 7:10544.

State of California. 2018. California's Fourth Climate Change Assessment. https://climateassessment.ca.gov/. Accessed: June 14, 2024.

Stillwater Sciences. 2006. Guidelines to Evaluate, Modify and Develop Estuarine Restoration Projects for Tidewater Goby Habitat. Final report. Arcata, California. Prepared for U.S. Fish and Wildlife Service, Arcata, California.

_____. 2016. Pacific Lamprey in Humboldt Bay Tributaries: A Summary of Information and Identification of Research Needs. Prepared by Stillwater Sciences, Arcata, California for Wiyot Tribe, Loleta, California.

Sullivan, R. M. 1979. Behavior and ecology of harbor seals, Phoca vitulina, along the open coast of Northern California. M.S. Thesis, Humboldt State University, CA. 115 pp.

Swenson, R. O. 1999. The ecology, behavior, and conservation of the tidewater goby, Eucyclogobius newberryi. Environmental Biology of Fishes 55:99–119.

Teachout, E. 2012. Evaluating the Effects of Underwater Sound from Pile Driving on the Marbled Murrelet and the Bull Trout. Washington Fish and Wildlife Office, Lacey, Washington.

The Xerces Society. 2024. Bumble Bee Watch. Wildlife Preservation Canada, York University, University of Ottawa, The Montreal Insectarium, The London Natural History Museum, BeeSpotter. Available: https://www.bumblebeewatch.org/sightings/bee/. Accessed: February 29, 2024.

U.S. Army Corps of Engineers [USACE]. 2005. Regulatory Guidance Letter: Ordinary High Water Mark Identification. 7 December 2005. No. 05-05.

_____. 2010. Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). J. S. Wakeley, R. W. Lichvar, and C. V. Noble, eds. ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Census Bureau. 2021. 2017-2021 American Community Survey 5-Year Estimates. https://data.census.gov/. Accessed March 9, 2023.

U.S. Department of Transportation (USDOT). 2014. Corporate Average Fuel Economy (CAFE) Standards. https://www.transportation.gov/mission/sustainability/corporate-average-fuel-economy-cafe-standards. Accessed: June 14, 2024.

_____. 2023. Climate Action Plan: January. https://www.transportation.gov/priorities/climate-and-sustainability/climate-action. Accessed: June 14, 2024.

U.S. Environmental Protection Agency (U.S. EPA). 2024a. Data Highlights. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks. Accessed: June 14, 2024.

_____. 2024b. Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2022. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks. Accessed: June 14, 2024.

U.S. Fish and Wildlife Service (USFWS). 2005. Recovery Plan for the Tidewater Goby (Eucyclogobius newberryi)

_____. 2010. Best Management Practices to Minimize Adverse Effects to Pacific Lamprey (Entosphenus tridentatus). April 2010.

U.S. Geological Survey. 2022. Interactive Quaternary Faults Database. https://doi.org/10.5066/F7S75FJM. Accessed December 6, 2022.

U.S. Global Change Research Program. 2023. Fifth National Climate Assessment. https://nca2023.globalchange.gov/chapter/front-matter/. Accessed: June 14, 2024.

Voellmy, I. K., J. Purser, D. Flynn, P. Kennedy, S. D. Simpson, and A. N. Radford. 2014. Acoustic noise reduces foraging success in two sympatric fish species via different mechanisms. Animal Behavior 89:191-198.

Wallace, M. 2006. Juvenile salmonid use of Freshwater Slough and tidal portion of Freshwater Creek, Humboldt Bay, California. 2003 Annual Report. Inland Fisheries Administrative Report 2006-04. California Department of Fish and Game, Sacramento, USA.

Wallace, M. and S. Allen. 2012. Juvenile salmonid use of the tidal portions of selected tributaries to Humboldt Bay, California, 2009-2011. Prepared by the Natural Stocks Assessment Project, California Department of Fish and Game and Pacific States Marine Fisheries Commission. June. 45 pp.

Wallace, M., E. Ojerholm, A. Scheiff, and S. Allen. 2018. Juvenile salmonid use and restoration assessment of the tidal portions of selected tributaries to Humboldt Bay, California, 2015-2017. Fisheries Restoration Grant Program Final Report Contract P1310520.

Ward, D. M., K. H. Nislow, J. D. Armstrong, S. Einum, C. L. Folt. (2007). Is the Shape of the Density-Growth Relationship for Stream Salmonids Evidence for Exploitative Rather than Interference Competition? Journal of Animal Ecology, 76:135–138.

