Hunter and Panther Creek Bridges Seismic Restoration Project

DEL NORTE COUNTY, CALIFORNIA
DISTRICT 1–DN–US 101 (PM 8.2/8.7)
EA# 01-0B090
Project ID# 0100020444

Initial Study with Proposed Mitigated Negative Declaration / Environmental Assessment

Prepared by the State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 USC 327.

June 2016

Caltrans

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General Information about This Document

What is in this document?

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study/Environmental Assessment (IS/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed Hunter and Panther Creek Bridges Seismic Restoration project located on United States Highway 101 (US 101) in Del Norte County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The document tells you why the project has been proposed, the alternatives considered, how the existing environment could be affected, the potential impacts of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you can do:

The electronic version of this document can be viewed at http://www.dot.ca.gov/dist1/d1projects/hunter_panther/

Copies of this document are also available for review at the following locations:

- Yurok Tribal Office, 190 Klamath Boulevard, Klamath
- Del Norte County Library, 190 Price Mall, Crescent City
- Humboldt County Library, Eureka Branch, 1313 3rd Street, Eureka
- Caltrans District 1 Office, 1656 Union Street, Eureka

We would appreciate receiving any feedback you may have on the project. If you have any comments, please send them via the following methods.

Send comments via postal mail to:

California Department of Transportation
Attn: Steve Croteau
North Region Environmental-Branch E1
1656 Union St
Eureka, CA 95501
(707) 441-5615

Send comments via email to: steven.croteau@dot.ca.gov

This document will be publicly circulated for review and comment between July 14 and August 15, 2016. Please submit any comments by August 15, 2016.

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.

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, Attn: Steve Croteau, Environmental Planning, 1656 Union Street, Eureka, CA 95501; (707) 441-5615 (Voice), or use the California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

SCH Number: Pending
01-DN-101-PM 8.2/8.7
EA: 01-0B090 / 0100020444

Hunter and Panther Creek Bridges Seismic Restoration Project

Seismic Restoration of the Panther Creek Bridge and Hunter Creek Bridge on U.S. 101 Del Norte County

Initial Study with Proposed Mitigated Negative Declaration / Environmental Assessment

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

The State Department of Transportation (Caltrans)
Lead Agency

June 30, 2016
Date of Approval

Sandra Rosas, Office Chief
North Region Environmental Services, North (Eureka)
California Department of Transportation
NEPA Lead Agency

June 30, 2016
Date of Approval

Sandra Rosas, Office Chief
North Region Environmental Services, North (Eureka)
California Department of Transportation
CEQA Lead Agency

SCH Number: Pending
01-DN-101-PM 8.2/8.7
EA: 01-0B090 / 0100020444

Proposed Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study/Environmental Assessment (IS/EA), which examines the potential environmental impacts of alternatives considered for the proposed project located in southwestern Del Norte County. The project is on U.S. Highway 101 (US 101) between post miles (PM) 8.2 and 8.7, 18 miles south of Crescent City. Caltrans proposes to replace Hunter Creek Bridge and Panther Creek Bridge to provide sound structures that meet current highway design standards. The existing Panther Creek Bridge is a three-span structure with piers in the water supporting the bridge, and its replacement would be a single-span, steel tied-arch structure without piers in the water. The existing Hunter Creek Bridge is a continuous three-span structure with two piers in the stream channel, and its replacement would be a two-span structure with only one pier in the stream channel.

Determination

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

Caltrans has prepared an Initial Study for this project and, pending public review, expects to determine that the proposed project would not have a significant effect on the environment for the following reasons:

- The proposed project would have no effect on agriculture/forest resources, air quality, cultural resources, hazards/hazardous materials, land use/planning mineral resources, population/housing, recreation, geology/soils, noise, transportation/traffic, hydrology/water quality, and utilities/service systems.
- The proposed project would have a less than significant impact on wetlands, listed species, and all other potentially affected biological resources.

_____
Date of Approval

_____
Sandra Rosas, Office Chief
North Region Environmental Services, North (Eureka)
California Department of Transportation

TABLE OF CONTENTS

Chapter 1 Proposed Project **1**
1.1 Introduction 1
1.2 Purpose and Need 4
1.2.1 Purpose 4
1.2.2 Need 4
1.3 Independent Utility and Logical Termini 4
1.4 Project Description 6
1.5 Alternatives 13
1.5.1 Build (Action) Alternative 13
1.5.2 No-Build (No Action) Alternative 26
1.5.3 Alternatives Considered but Eliminated from Further Discussion 26
1.6 Permits and Approvals Needed 32
1.7 Standard Measures and Best Management Practices (BMPs) Included in All Alternatives 33
1.7.1 Utilities and Emergency Services 33
1.7.2 Traffic and Transportation 33
1.7.3 Visual Aesthetics 34
1.7.4 Cultural Resources 34
1.7.5 Hydrology and Floodplain 35
1.7.6 Water Quality and Stormwater Runoff 35
1.7.7 Hazardous Waste and Material 37
1.7.8 Geology and Seismic/Topography 37
1.7.9 Wetlands and Other Waters 37
1.7.10 Threatened and Endangered Species 38
1.7.11 Plant Species 39
1.7.12 Animal Species 40
1.7.13 Invasive Species 42

Chapter 2 Affected Environment, Environmental Consequences, and Mitigation Measures 43

2.1 Resources That Would Not be Impacted by the Project 47

2.2 Biological Environment 54

2.2.1 Natural Communities 59

2.2.2 Wetland and Other Waters 67

2.2.3 Threatened and Endangered Species 76

2.2.4 Plant Species 98

2.2.5 Animal Species 100

2.2.6 Invasive Species 115

2.3 Climate Change 117

2.4 Temporary Construction Effects 129

Chapter 3 Comments and Coordination 131

3.1 Scoping Process 131

3.2 Agency Consultation and Coordination 132

3.2.1 Interagency Coordination and Professional Contacts 133

3.2.2 Native American Coordination 135

Chapter 4 List of Preparers 137

APPENDICES

Appendix A: CEQA Environmental Checklist

Appendix B: Title VI Non-Discrimination Policy Statement

Appendix C: Mitigation Measures Summary

Appendix D: Project Layout Sheets

Appendix E: Signed THPO Concurrence Letter

Appendix F: California Coastal Commission Coastal Zone Management Act "No Effects Determination

Appendix G: List of Definitions and Bridge Design

Appendix H: List of Abbreviations and Acronyms

Appendix I: References Used

LIST OF FIGURES

Figure 1—1. Project Vicinity 3
Figure 1—2. Project Area Layout 7
Figure 1—3. Existing Hunter Creek Bridge 9
Figure 1—4. Proposed Hunter Creek Bridge 9
Figure 1—5. Existing Panther Creek Bridge 11
Figure 1—6. Proposed Panther Creek Bridge 11
Figure 1—7. Panther Creek Bridge General Plan 15
Figure 1—8. Hunter Creek Bridge General Plan 21
Figure 2—1. Map of Biological Study Area 54
Figure 2—2. Wetland and Riparian Impacts – Hunter and Panther Creek Bridges Seismic Restoration Project 65
Figure 2—3. California Greenhouse Gas Forecast 122
Figure 2—4. Mobility Pyramid 124

LIST OF TABLES

Table 1—1. Project Alternatives Considered but Rejected 28
Table 1—2. Permits and Approvals Needed 32
Table 2—1. Studies Conducted for the Proposed Project, Project Personnel, and Qualifications 56
Table 2—2. Agency Coordination and Professional Contacts Since 2014. 57
Table 2—3. Vegetation Communities Known to Occur in the Project Area 61
Table 2—4. Summary of Impacts to Waters of the U.S. and State and Associated Riparian Vegetation 73
Table 2—5. Approximate Impacts to Waters of the U.S. and State and Associated Riparian Vegetation by Type and Community 74
Table 2—6. Threatened or Endangered Species Potentially Occurring or Known to Occur in the Project Area 78
Table 2—7. Summary of 2009 Hunter Creek Snorkel Surveys 81
Table 2—8. Summary of 2010 Hunter Creek Snorkel Surveys 82
Table 2—9. Fish Population Estimates in Panther Pond (2009-2010) 83
Table 2—10. Provisional Abundance Estimates for Panther Pond Coho Salmon 84
Table 2—11. Special Status Animal Species Potentially Occurring or Known to Occur in the Project Area 101
Table 2—12. Climate Change/CO2 Reduction Strategies 125
Table 3—1. Agency Coordination for Biological Resources 133
Table 3—2. Agency Coordination with Yurok Tribe 136

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this joint document, an Initial Study/Environmental Assessment (IS/EA), which examines the potential environmental impacts of alternatives considered for the proposed project located on US Highway 101 (US 101) in Del Norte County, California. The bridges include Hunter Creek Bridge (Bridge #01-0003, Post Mile [PM] 8.51) and Panther Creek Bridge (Bridge #01-0025, PM 8.34) (Figure 1–1). Additional layouts of the project are included in Appendix D. Appendix G includes a list of definitions to assist the public and other reviewers in understanding technical terms describing methods of construction used in bridge replacement. A list of abbreviations and acronyms is provided in Appendix H.

This project is included in the Bridge Seismic Restoration Program (201.113) of the 2014 State Highway Operation and Protection Program (SHOPP). This purpose of the Bridge Seismic Restoration Program is to reduce risk of bridge failure resulting from earthquakes. Cost, scope, and schedule are based on the replacement of the Panther Creek Bridge with a tied-arch[1] structure and replacement of Hunter Creek Bridge with a cast-in-place (CIP) structure (Figures 1–2 through 1–8). The Panther Creek Bridge is currently a three-span bridge with two piers in the water. The new bridge would be a single-span bridge without piers in the water. The existing Hunter Creek Bridge is a three-span bridge with two piers, and the new bridge would be a two-span bridge with only one pier. As proposed, the design of the new structures would include the removal of permanent fill (bridge piers) from the stream channels, would increase safety, and enhance pedestrian and cyclist access. The total project cost (construction and right of way) for these two alternatives has been estimated at $15,770,000 (Caltrans District 1 Advanced Planning, 2013). All bridge and highway construction activities would occur within California state right of way, and no new right of way for construction activities would be required. The purchase of property might be necessary in order to fulfill any potential mitigation requirements.

[1] *The tied-arch bridge design uses the outward-directed horizontal forces of the arch, or top chord, to bear the tension of the structure. They can be prefabricated off-site and require less robust foundations. Though more costly to construct, they can be utilized to minimize the need for piers under the bridge and are suitable for unstable ground.*

Caltrans 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 principal responsibility of approving a project that is subject to CEQA and NEPA. The lead agency is responsible for determining and preparing the appropriate environmental document. The document explains why the project is being proposed, what design options have been considered, how the existing environment could be affected, the potential impacts of each of the design options, and the proposed mitigation measures.

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program), pursuant to 23 United States Code (USC) 327, for more than five years beginning July 1, 2007 and ending September 30, 2012. Moving Ahead for Progress in the 21st Century (MAP-21), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a revised and permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a NEPA memorandum of understanding (MOU) with FHWA pursuant to 23 USC 327. The NEPA Assignment MOU became effective October 1, 2012. The NEPA Assignment MOU incorporates by reference the terms and conditions of the Pilot Program MOU. 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 The NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. (Senate and House of Representative [sic] of the United State [sic] of America in Congress, 2012)

Project Background

Originally, this bridge replacement project was part of an overall Klamath Grade Raise and Rehabilitation Project (KGR). The KGR Project, which would have constructed a grade raise of up to five feet between PM 6.05 and PM 7.83, was shelved due to environmental constraints. Smaller projects were created in an effort to address the system needs and constraints. In 2013, drainage facilities were repaired to improve drainage along US 101. In 2014 and 2015, a roadway rehabilitation project placed rubberized hot mix asphalt from PM 4.4 to PM 9.4.

Numerous technical studies were completed for the KGR Project including a Community Impact Analysis (CIA) and Value Analysis (VA). Relevant portions of these technical documents were used to analyze the impacts of this bridge replacement project.

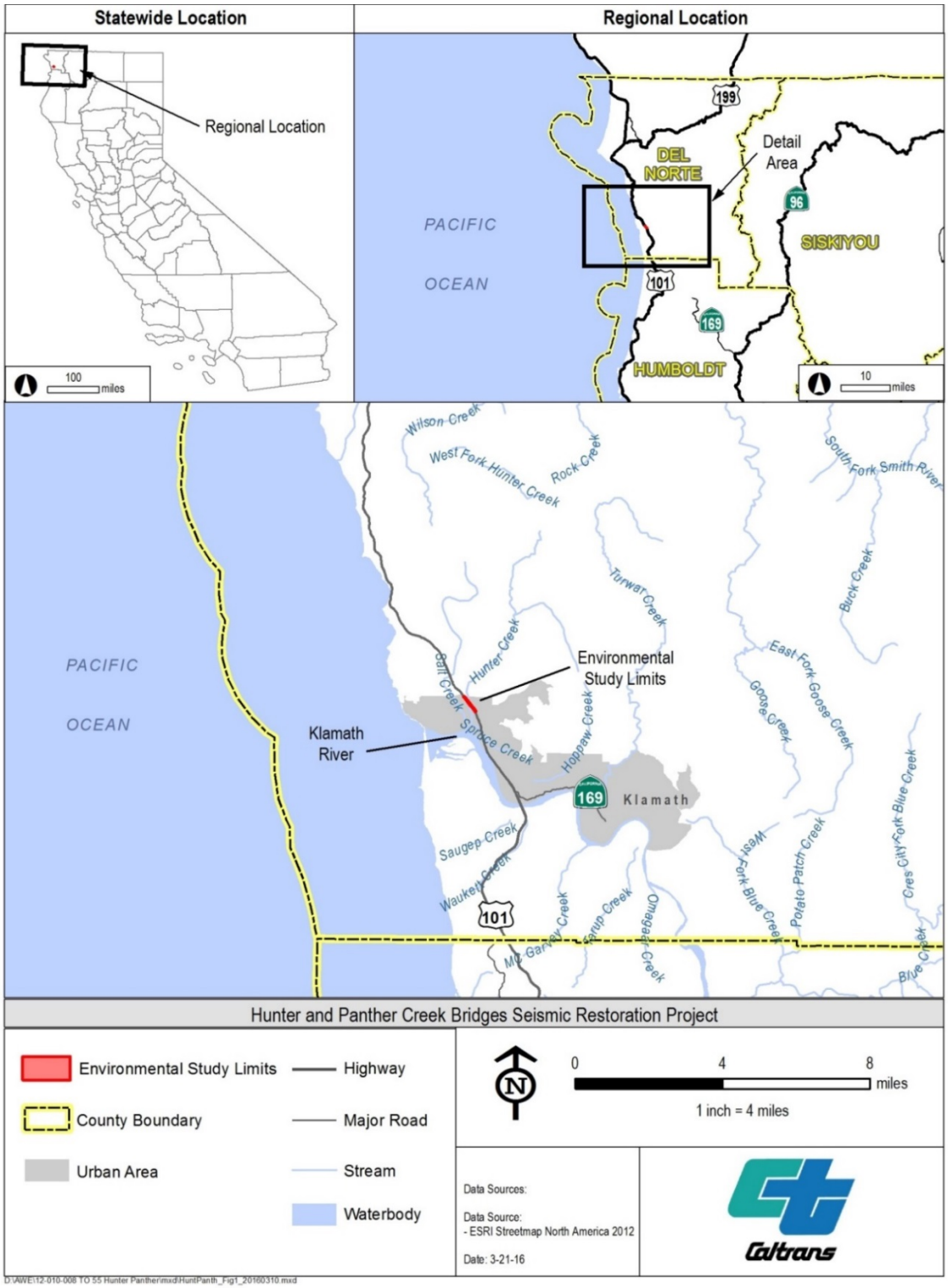

Figure 1—1. Project Vicinity

1.2 Purpose and Need

1.2.1 Purpose

The purpose of the Project is to upgrade Hunter Creek Bridge (Bridge #01-0003, PM 8.51) and Panther Creek Bridge (Bridge #01-0025, PM 8.34) to meet current seismic and design standards while providing the best ratio of economic value and durability.

1.2.2 Need

The project is needed because the existing structures are over 50 years old and do not meet Caltrans requirements for earthquake (seismic) safety. A 2005 geologic analysis revealed that due to soil conditions, the existing bridges may be susceptible to seismic and liquefaction[2] hazard during a maximum credible earthquake[3]. Both structures do not meet current seismic standards, as identified in a Caltrans report titled Structure Replacement and Improvement Needs (STRAIN). The project is also needed because the structures fail to meet current highway design standards.

The project is consistent with goals set forth by Caltrans, as well as the Del Norte County Regional Transportation Plan (2011), 2016 Del Norte Draft Regional Transportation Plan, Del Norte County 2003 General Plan and 2011 General Plan Update, Federal Transportation Improvement Program, Yurok Constitution, Yurok Tribe Hazard Mitigation Plan, and Yurok Tribe Transportation Plan.

1.3 Independent Utility and Logical Termini

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

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[2] Liquefaction describes a process by which water-saturated soils lose strength in response to stress such as a strong earthquake.

[3] A "maximum credible earthquake" or "maximum credible event" is the largest earthquake that appears capable of occurring under the known tectonic framework for a specific fault or seismic source.

Federal Highway Administration (FHWA) regulations (23 CFR 771.111(f)]) state that an action evaluated shall:

- Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
- 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; and
- Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Based on the scope of the project, the project would have independent utility and logical termini. The project would replace existing structures that are currently located on an existing highway. The bridges would be replaced in-kind, along the same highway centerline alignment. Although transportation improvements might be made in the project area in the future, the bridges would be functionally independent and would not require any other projects to be implemented. The bridge design would not impede other potential transportation projects in the area.

Caltrans' Complete Streets— Deputy Directive 64-R2— establishes a policy within the State Highway system that provides for the various needs of travelers. This policy document defines the term "Complete Streets" as "a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, and others." The intent is to ensure travelers of all ages and abilities can move safely and efficiently along a network of complete streets. US 101 from Route 1 at Leggett to the California/Oregon state line is legislatively designated as the "Pacific Coast Bike Route" with only a few non-continuous, alternative routes. The existing bridges at Panther Creek and Hunter Creek lack accessibility for pedestrians and cyclists. This project proposes design standards for complete streets through the incorporation of separated pedestrian walkways and increased shoulder widths.

1.4 Project Description

This section describes the proposed action and the alternatives which were developed to meet the identified purpose and need of the project. Alternatives selection considered construction effort, environmental impacts, and expenditure of public resources. Alternatives considered, but rejected due to lack of viability or greater environmental impacts, are listed in section 1.5.3.

Replacement of Panther Creek and Hunter Creek bridges is necessary to ensure US 101 remains passable after a seismic event. Structural and geologic investigations conducted have determined the existing bridges are vulnerable to liquefaction during strong earthquakes. The replacement of Hunter Creek and Panther Creek Bridges would provide seismically sound structures that meet current design standards.

The existing Hunter Creek Bridge is a continuous three-span structure with two piers (pier walls) in the stream channel, and its replacement would be a two-span structure with only one pier in the stream channel (Figures 1-3 and 1-4). The existing Panther Creek Bridge is a three-span structure with piers in the water supporting the bridge, and its replacement would be a single-span, steel tied-arch structure without piers in the water (Figures 1-5 and 1-6). As proposed, the design of the new structures would include the removal of permanent fill (bridge piers) from the stream channels and would increase safety and improve access. In order to meet design standards the new bridge shoulders would be eight feet in width (the existing bridge shoulders are two feet wide). All construction activities would take place within the existing Caltrans right of way. The project layout can be seen in Figure 1-2.

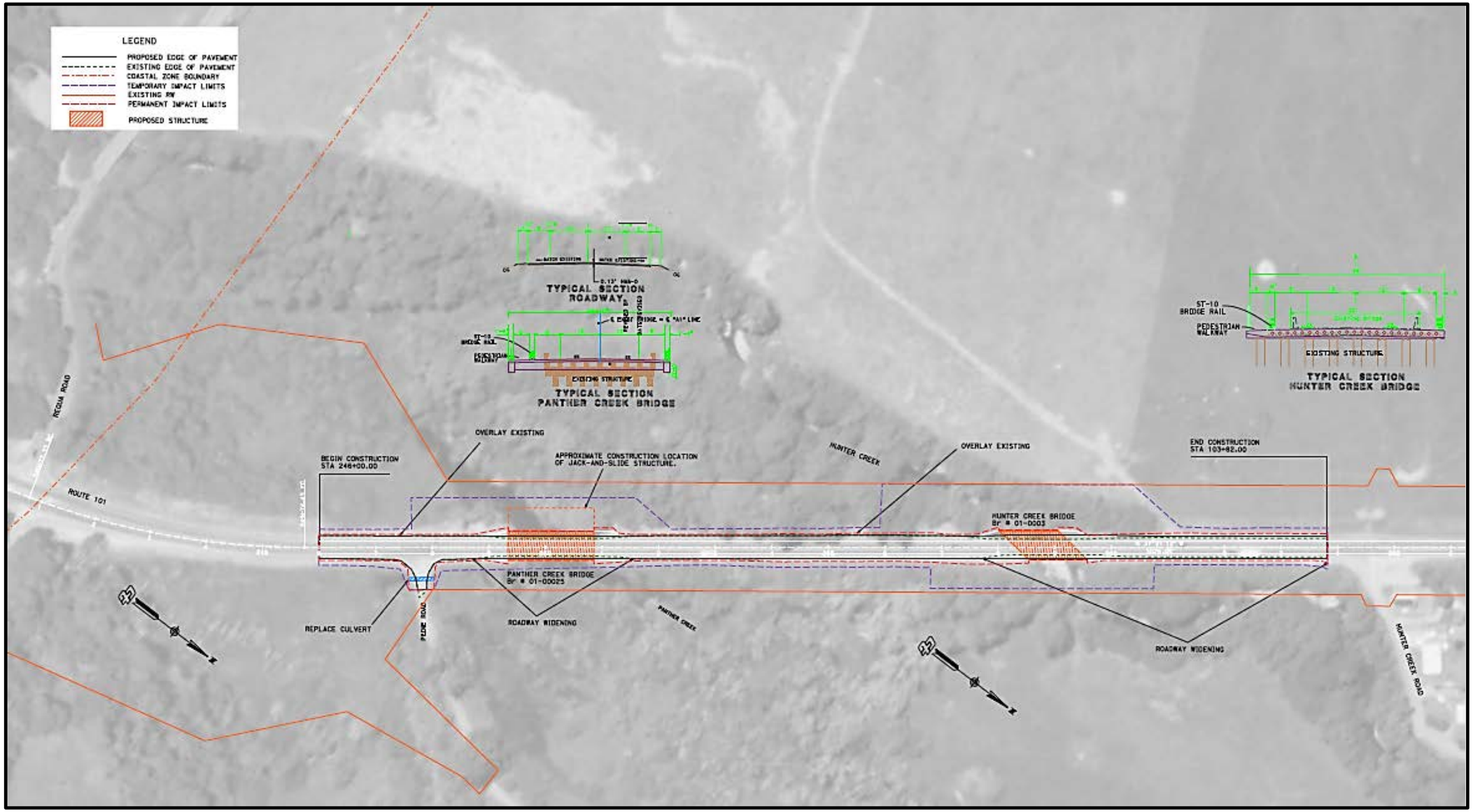

Figure 1—2. Project Area Layout

Figure 1–2. Layout of Project Area

Figure 1—3. Existing Hunter Creek Bridge

Figure 1—4. Proposed Hunter Creek Bridge

Figure 1—5. Existing Panther Creek Bridge

Figure 1—6. Proposed Panther Creek Bridge

1.5 Alternatives

This section describes the proposed Build Alternatives as well as the No-Build Alternative. This section also briefly outlines the expected construction and demolition scenarios for both bridges. Any proposed avoidance, minimization, or mitigation measures are listed in relevant sections of Chapter 2 and in Appendix C.

Pursuant to section 3-502 "Authority of the Engineer" of the Caltrans Construction Manual, the State does not dictate the "details and methods" in the execution of the contract, except under special circumstances. Therefore, the construction scenarios shall be considered a best estimate of what would occur in the field.

1.5.1 Build (Action) Alternative

Panther Creek Bridge Replacement with Isolated, Single-Span, Steel Tied-arch

This alternative would construct a single-span, 160-foot-long, steel tied-arch structure (Figure 1–7). Specific design features would be installed to protect the structure from damage during seismic events. This alternative would include a 9 to 12-inch raise in elevation (grade raise) directly around the bridge to increase freeboard. Lanes would be 12-foot-wide with 8-foot-wide right shoulders. A 6-foot-wide path for pedestrians and cyclists (non-motorized path) would be included on the west side of the bridge. A metal, see-through rail barrier (ST-10 Bridge Rail) would separate the southbound highway travel lane from the non-motorized path to increase safety while maintaining visibility. The bridge would include two permanent abutments, each consisting of five 36-inch diameter piles. The ten piles would be oscillated in, with no pile driving being required. In order to accommodate year-round through traffic during construction, the project would include two temporary abutments along the western side of the structure (needed for tied-arch structure assembly). All the abutments and piles would be constructed out of the water and above the Ordinary Highwater Mark (OHWM).

This alternative was developed because the Yurok Tribe, California Coastal Commission (CCC), U.S. Fish and Wildlife Service (USFWS), and the National Oceanographic and Atmospheric Administration/National Marine Fisheries Service (NMFS) expressed concern about the potential negative effects that a two- or three-span bridge would have on salmonids. All these organizations were present at a February 2, 2011 meeting where Caltrans presented the tied-arch design alternative. Those present at the meeting unanimously agreed the tied-arch design would be preferred, as it would reduce effects on salmonids by eliminating permanent piles in the stream channel and reduce construction time.

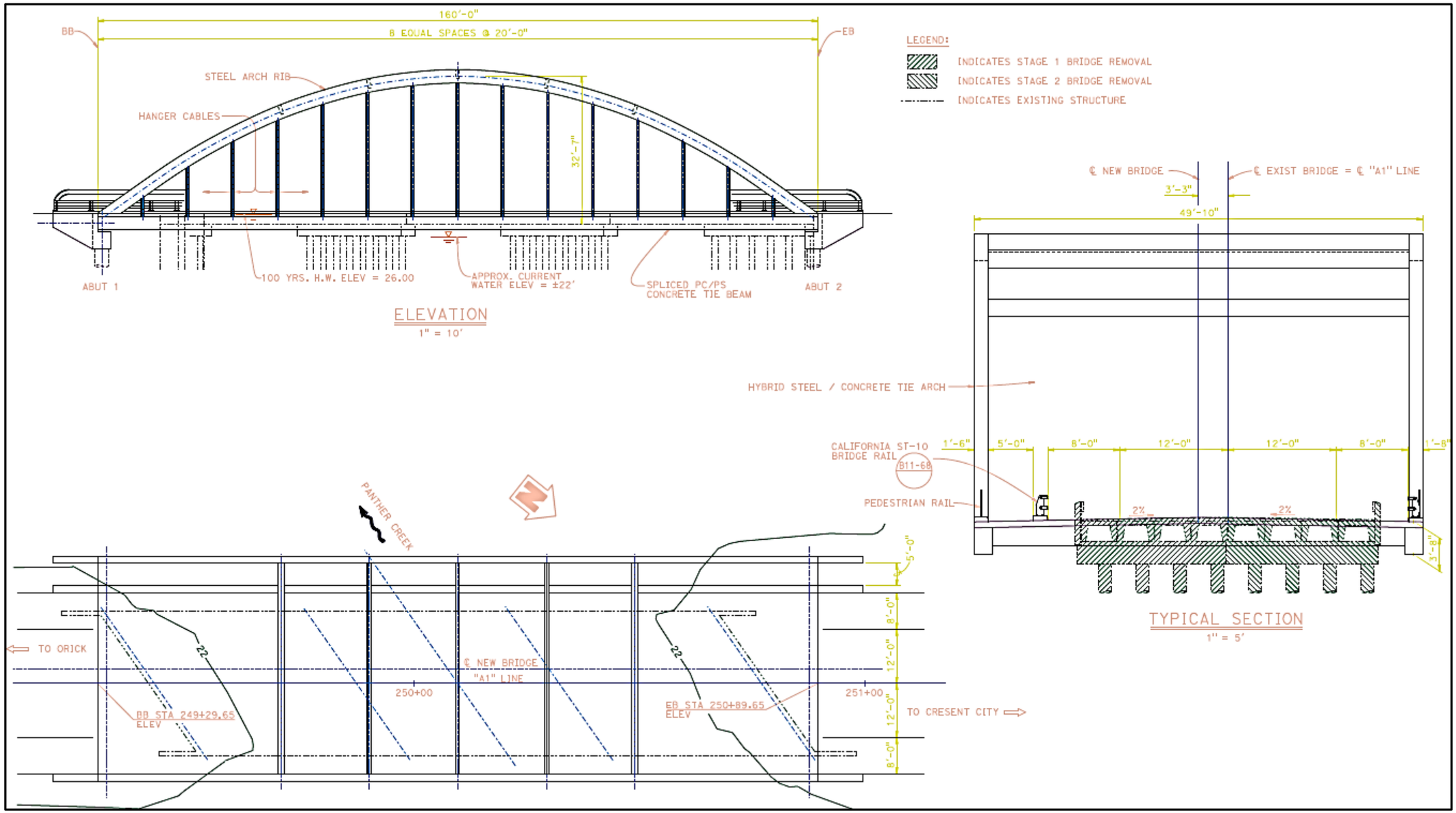

Figure 1—7. Panther Creek Bridge General Plan

Figure 1–7. Panther Creek Bridge Draft General Plan

Construction Staging and Access

The designated storage area for vehicles, supplies, and construction equipment (staging) would be in the closed southbound lane between the Hunter Creek and Panther Creek bridges. Cranes would be used for bridge construction and would require stable platforms (crane pads). Crane pads would be constructed west of the existing bridge on both sides of the channel bank above the ordinary high water mark (OHWM). The crane pads would likely consist of timbers resting on temporary steel piles, along with gravel and/or imported fill, and would be removed upon project completion. There would be no work within the wetted channel at Panther Creek.

Bridge Demolition

All demolition work would be done in conformance with an approved Demolition Plan and Debris Containment Plan, which would be prepared by the Contractor and approved by Caltrans. A temporary barrier rail would be installed on the bridge to isolate the work area from traffic. A debris containment system would be installed to prevent dropping materials into the stream below. The deck would be cut or broken into manageable pieces with a small hoe-ram or saw cut. The bridge abutments would be removed using a concrete saw. After deck removal, the contractor would remove the girders and the bent caps. The existing "Raymond can" concrete piles would then be removed. The Raymond can piles were originally installed with pile extensions that were attached at ground level above concrete piles; the extension (aboveground) portion of the piles would be pulled out of the channel with a crane. The concrete pile beneath the surface of the channel bottom would remain in place, and likely not protrude from the channel bottom. A shallow depression, roughly the diameter of the pile, might exist temporarily.

Pile Installation

Permanent Abutments

Permanent abutment piles would be installed using an oscillation method. The piles would need to be installed to a depth of at least 150 feet. The abutment piles would be oscillated all the way to their final depth, with no pile driving required.

In order to avoid the need to "proof" the abutment piles (e.g., impact driving the final five feet of a pile, which could affect State and Federal listed fish species), a pile load test would be performed on one temporary pile. A pile load test would be necessary in order to determine the required length/depth of the permanent abutment piles for them to reach bearing capacity (e.g., not sink over time).

The pile load test would consist of four reaction piles and one test pile. These five piles would be oscillated in, with no pile driving required. The test pile would be located as close as possible to the location where the permanent abutment piles would be installed. None of these piles would be placed within Panther Creek. The reaction piles would be needed in order to provide a stable support system for a "reaction" beam. A jack would be placed between the reaction beam and the test pile. Via the jack, pressure would be placed on the test pile to determine when the appropriate pile depth has been reached. If necessary, after the first test, additional pile length would be added to the test pile until the data indicates that the test pile has reached bearing capacity. Once the test is complete, the reaction piles and test pile would remain in place and be cut off below ground surface.

Temporary Piles

The temporary piles associated with the crane pads and temporary abutments would be steel H-piles. These H-piles would be vibrated into place. The total number of piles would be finalized during the design process. One cofferdam would be constructed for each abutment. The cofferdams would be constructed of sheet piles. Sheet piles would be vibrated into place and not impact driven. No temporary piles would installed within Panther Creek. All temporary piles would be removed upon completion of the project.

Superstructure/Abutment Construction

Panther Creek Bridge would be constructed using both half-width and "Jack-and-Slide" construction methods. Abutment construction would require the installation of cofferdams. Groundwater would likely seep into the cofferdams which would require dewatering while the abutment concrete was poured.

Upon cofferdam installation, the west side of the existing abutment would be removed and the area excavated. After the completion of excavation, reinforcing steel bars and forms would be placed and concrete poured for the new abutment. During the construction of the west half of the new abutments, temporary abutments would also be installed (immediately adjacent to the west of these permanent abutments). The temporary abutments would support the tied-arch structure during construction before placement on the permanent alignment. Pile installation for abutment construction is described above under "Pile Installation". Once the new western half of the permanent abutments and temporary abutments are constructed, the deck portion of the tied-arch structure would be placed on these abutments. At this point, the final assembly of the tied-arch structure would occur, and traffic would be moved to the lane on the tied-arch structure directly over the eastern half of the new structure.

The same abutment demolition and construction method described above would occur for the abutments on the east side of the existing structure. Upon completion of the eastern half of the new abutment, the tied-arch structure would be "jack and slid" over, so the structure would be entirely supported by the new abutments in its permanent position. Sliding the bridge into place would require an overnight (eight hours) closure of US 101. Temporary abutments and sheet piles would then be removed and the excavated holes backfilled.

Bridge approaches would be constructed, including minor widening. The final pavement overlay would be placed and roadway striping completed. Traffic would be moved to the new structure in its permanent location and approach rails and crash cushions constructed. Crane pads would be removed, re-contoured, and re-vegetated as appropriate.

Hunter Creek Bridge Replacement with Two-Span CIP/Pre-stressed

This alternative would construct a two-span, CIP/pre-stressed 30-foot-long structure (Figure 1–8). As a two-span structure, there would be a single pier row between the abutments (located within the creek bed) to support the bridge. Lanes would be 12-foot-wide with 8-foot-wide shoulders. Like the Panther Creek Bridge, a 6-foot non-motorized separated path would be included on the west side of the structure. Construction of the pier row would require work within the streambed, accessed by a temporary road. In order to minimize impacts, the existing wing walls and footings located adjacent to the existing bridge abutments would remain in place. The new bridge would be constructed to line up flush with these existing features (on the same alignment).

Construction Staging and Access

Staging would occur in the closed southbound lane and shoulder located between Hunter Creek Bridge and Panther Creek Bridge. Access for Hunter Creek Bridge would be via a temporary access road on the southwest side of the bridge into the channel below. The temporary road would be 18-feet-wide and would allow equipment access to the creek channel during the dry season.

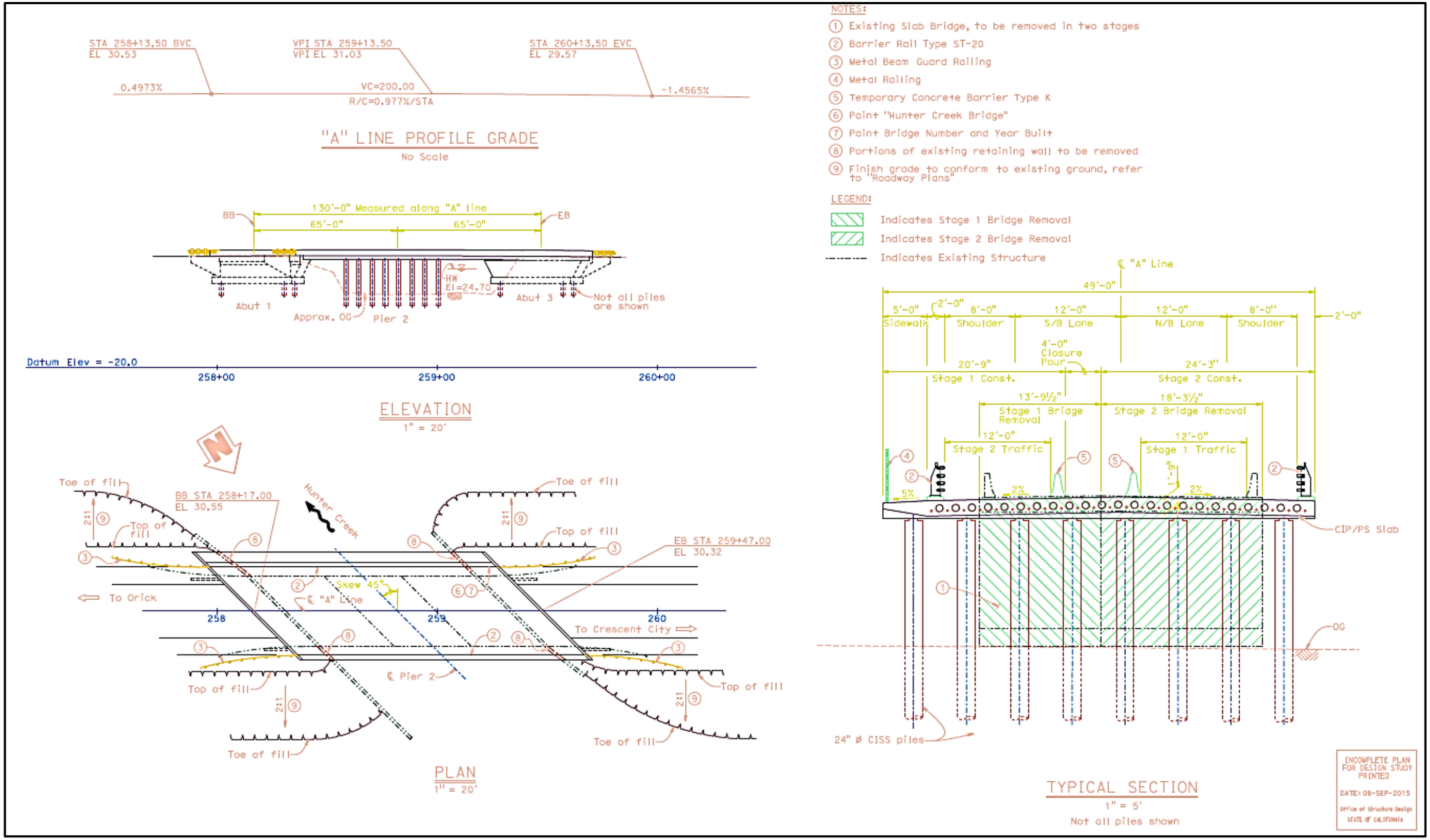

Figure 1–8. Hunter Creek Bridge Draft General Plan

Figure 1—8. Hunter Creek Bridge General Plan

Temporary Stream Diversion

Temporary stream diversion would be necessary for bridge construction at Hunter Creek. The creek would be channeled into a culvert (or culverts) during construction operations to provide equipment access across the creek while minimizing water quality and biological impacts. A combination of plastic liner, gravel bags, a water bladder, and/or other impermeable materials would be used to construct a temporary dam 50 feet upstream of the bridge, directing water through the culverts. The temporary diversion would be placed to the north side of the channel to maximize construction access.

The diversion would be removed between project seasons and upon completion of bridge construction. Any gravel added to the stream channel would be clean-washed, spawning-sized gravel. The diversion would be removed gradually to reduce turbidity. The temporary diversion would be installed during the non-rainy season and low stream flows. Temporary sediment control Best Management Practices (BMPs) would be implemented to reduce erosion.

Bridge Demolition

All demolition work would be done in conformance with the approved Demolition Plan and Debris Containment Plan. A temporary barrier rail would be installed on the bridge to isolate the work area from traffic. A debris containment system would be installed. Saws, hoe rams and/or jackhammers would be used to break apart the bridge. The debris would fall into the containment system and be retrieved by an excavator. After deck removal, the contractor would begin removing the piers and abutments. The existing piers would be removed by vibration or abandoned in place after removing the upper sections to three feet below the channel bottom. Debris from the containment system would be removed; however, the debris containment system would stay in place to catch any potential debris from bridge construction.

Pile Installation

Permanent bridge piles for the pier and abutments would be 24-inch diameter, Cast-in-Steel-Shell (CISS) piles made of 0.5-inch thick steel. The total number of permanent piles for the two-span bridge would be 22—8 for each abutment and 6 for the pier. Piles would need to be driven to a depth of at least 100 feet. Pile installation would involve vibratory, oscillation and/or driven method.

Superstructure/Pier/Abutment Construction

Cofferdams would not likely be needed, but if necessary, they would be installed as described previously under Temporary Pile Installation for Panther Creek Bridge. In addition, dewatering would not be necessary for the abutment and pier construction. The area around the abutment would be excavated to the bottom of the abutment and the remaining portion of the existing abutment demolished. Demolition of the lower portion of the abutment would be concurrent with excavation. The existing wing walls on either side of the existing abutments would be retained, with the exception of small sections that may be in conflict with access or construction of the new structure. Piles would be installed as described in the Pile Installation section. Formwork and reinforcing bars would be placed and concrete poured for the abutments.

In order to provide year-round through traffic, Hunter Creek Bridge would be constructed using the half-width construction method. The west half of the existing bridge would be dismantled and the west half of the new bridge constructed in the same location. Traffic would use the east half of the existing bridge until the west half of the new bridge was complete. Upon completion, traffic would be moved to the new west half. The east half of the existing bridge would then be dismantled and the new east half constructed.

Concrete would be poured for the superstructure after the placement of forms and reinforcement bars. An ST-10 barrier rail (similar to the rail at the Panther Creek Bridge) would be installed between the southbound travel lane and the non-motorized path. Bridge approaches would be completed, including minor widening. Approach rails and crash cushions would be constructed. Traffic would be moved to the new bridge. The final pavement overlay would be placed and roadway striping completed. The temporary access road would be removed, re-contoured, and re-vegetated as appropriate.

Activities Related to Both Bridges

Clearing and Grubbing

The contractor would clear and grub all areas where the highway, bridge, and road approaches are to be constructed. Access and staging areas would be identified and approved by Caltrans as necessary to move and store material and equipment around the project site. Where possible, trees and environmentally sensitive habitat areas would be delineated by Environmental Sensitive Area (ESA) fencing.

Utility Relocation

Existing communication utilities could potentially be in conflict with both bridge replacements. If necessary, the utilities would be temporarily relocated prior to construction. The utilities would be placed in the new structures upon completion of construction. All utility work would be handled by the utility companies involved.

Equipment

Typical equipment used for bridge construction includes pavers, cranes, hoe rams, impact pile-driving hammers, vibratory pile-driving hammers, excavators, backhoes, graders, drill rigs, concrete mixers, haul and dump trucks, compactors, generators, air compressors, boom trucks, concrete trucks, saws, pumps, jackhammers, storage containers, and water storage tanks.

Construction Schedule

Concurrent construction of both bridges is anticipated to start June 2019 and expected to be completed within two years. Construction could be longer depending on the contractor and seasonal work window restrictions defined in the permit requirements. The majority of activities would be conducted during the dry months (May through October). The specific dates of construction activities would be determined during the Section 7 Endangered Species Act consultations and permit requirements. Initial discussions about construction schedule have commenced with NMFS and California Department of Fish and Wildlife (CDFW).

1.5.2 No-Build (No Action) Alternative

The No-Build Alternative would make no improvements to the existing roadway; however, routine maintenance would still occur as necessary. By not making any improvements, this alternative would fail to deliver the safety improvements the project would provide and would not meet the purpose and need for the project as it does not address seismic deficiency, shoulder width, or pedestrian access.

1.5.3 Alternatives Considered but Eliminated from Further Discussion

This section includes all alternatives considered during the project development process, but eliminated from further consideration and the reason for rejection.

For this project, various strategies were considered for addressing the susceptibility of both Hunter Creek Bridge and Panther Creek Bridge to seismic failure and also the functional obsolescence of the structures. With the structure replacement strategy, several different structure types were considered. Most of these alternatives were evaluated for the Panther Creek crossing where year-round standing water and potential for biological impacts present complications with construction of common types of structures. In an effort to reduce impacts, some alternatives considered structures that would reduce both construction activity and placement of permanent superstructure elements within the creek channels. These alternatives essentially would be single-span structures.

All the eliminated alternatives included standard 8-foot shoulder widths, 12-foot lane widths, and a 6-foot separated path for non-motorized traffic on the southbound side of the bridges. This separated path was introduced into the scope at the request of the Yurok Tribe and other agencies.

Table 1–1 identifies the eliminated alternatives. A discussion of each eliminated alternative follows in the subsequent subsections. The majority of the replacement structures were evaluated with a service life of 75 years. The tied-arch alternative, however, was evaluated with a 100-year service life due to the use of galvanized steel in place of concrete. For the rehabilitation-retrofitting alternatives, the service life would be shorter (20 years) due to the age of the existing structures, which would require deck and substructure rehabilitation work in the near term.

PANTHER CREEK CONSIDERED BUT ELIMINATED ALTERNATIVES

Panther Creek Bridge Replacement with Two Through-Girder, Single-Span

This alternative would have replaced the existing structure with two, side-by-side single-span concrete structures. The drawback to this alternative was that a single through-girder would not support both northbound and southbound traffic simultaneously. Consequently, two separate structures would be required: one for northbound and one for southbound traffic. The height of the box girders on the outside edges of the deck would extend about 5.5 feet above the deck (creating an above grade vertical solid wall), obstructing views from the vehicle.

Compared to other alternatives for Panther Creek, this alternative's footprint would be wider due to design standards requirements of five-foot left shoulders and separation between the structures (four feet). The location of the through lanes would also be offset more than other alternatives. This would require the through lane positions to transition from their present alignments and widens the footprint outside the structure locations.

Reason for Rejection: This alternative was never fully designed, so impacts to wetlands could not be accurately quantified. However, the impacts to wetlands and ground disturbance would be significantly greater compared to the proposed tied-arch alternative. Further, this alternative would potentially have a negative visual impact on the project area.

Table 1—1. Project Alternatives Considered but Rejected

Project Alternative	Cost/Service Ratio[4]	Reason for Rejection
Panther Creek Bridge Replacement with Through-Girder, Single-span	15.4	Concern regarding distance from water in Panther Creek, as well as environmental impacts of placement and removal of formwork and alignment of highway. Tall (5.5-foot), above grade solid girders would obstruct view from bridge.
Panther Creek Bridge Replacement with Box Girder, Grade Raise	22.0	Construction requires falsework (e.g., piles) in ponded water, extensive retaining walls and fill in wetlands. Concern regarding distance from water surface, area required for formwork, vertical clearance for box girder depth, and line of sight distance.
Panther Creek Bridge Replacement with Two-span, PC/PS T-Girder	16.9	Unlikely to receive regulatory agency approval for new in-water permanent piles and work in water.
Panther Creek Bridge Replacement with Three-span, PC/PS T-Girder	16.6	Unlikely to receive regulatory agency approval for new in-water permanent piles and work in water.
Panther Creek Rehabilitation/Retrofitting	66.5	Unlikely to receive regulatory agency approval due to the need for new additional permanent piles within water, has shorter service life and conflicts with purpose and need.
Hunter Creek Bridge Replacement with Three-span CIP/RC	9.3	Increased fill and construction impacts in stream channel.
Hunter Creek Rehabilitation/Retrofitting	24.9	Unlikely to receive regulatory agency approval due to the need for new additional permanent piles within water, has shorter service life and conflicts with purpose and need.
Superbridge-Construct a Long Bridge to Span Hunter and Panther creeks	NA	The "superbridge" alternative was deemed unfeasible because of the severe negative impacts to natural resources, including wetlands. Substantial need for right of way purchases, highway realignment and fill. Impacts to community as well as visual impacts.

[4] The Cost to Service Ratio is the estimated cost of the structure relative to the service life of the structure. All replacement structures were given estimated service lives of 75 years and the rehabilitation alternatives were given service lives of 20 years. Cost to Service Ratio for the Proposed Build Alternative is 18.0 for Panther Creek and 8.4 for Hunter Creek.

Panther Creek Bridge Replacement with Box Girder, Grade Raise

This alternative would have implemented a more commonly used type of structure—a box girder. As was the case with the Panther Creek Bridge Replacement with the Two Through-Girder, Single-Span alternative, this type of structure would pass over Panther Creek in a single-span.

A drawback to this alternative would be that the grade of the highway would need to be elevated 6 to 8 feet to provide 1) freeboard, 2) area for falsework (temporary construction supports), and 3) vertical clearance for the box girder depth. This would not only affect the approaches to the bridge, but also the highway's intersection with Peine Road. As a result, this option would require a substantial amount of wetland fill. Further, at Peine Road, the grade of the local road would need to be raised to meet the new grade of the highway, which would also result in substantial wetland fill, as well as potential fill within Panther Creek.

Reason for Rejection: This alternative was never fully designed, so exact impacts to wetlands could not be quantified. However, as described above, impacts to wetlands and ground disturbance would be substantially greater compared to the proposed tied-arch alternative, and work would likely be required inside of Panther Creek near Peine Road. In addition, raising the highway and Peine Road up to eight feet would likely have a negative visual impact on the project area.

Panther Creek Bridge Replacement with Two-Span, Precast/Pre-stressed (PC/PS) T-Girder

The proposed structure of this alternative is a two-span, precast/pre-stressed (PC/PS) concrete bridge. The new structure would be 141 feet long and at the same grade and skew as the existing bridge. This option would have a single pier row within Panther Creek.

Reason for Rejection: Construction would require the installation of a pier row within Panther Creek. Also, piles for falsework and a temporary trestle would be required, as well as sheet piles for cofferdams. Given the water does not subside within the creek during the dry season, this alternative would require piles driven within the wetted channel. In-water pile driving (and cofferdam installation) would likely result in substantial impacts to aquatic species.

Panther Creek Bridge Replacement with Three-Span, PC/PS T-Girder

This alternative is almost identical to the Panther Creek Bridge Replacement two-span, precast/pre-stressed (PC/PS) T-Girder alternative except this alternative would have an additional row of piers within the wetted channel of Panther Creek.

Reason for Rejection: Construction would require the installation of a pier row within Panther Creek. Also, piles for falsework and a temporary trestle would be required, as well as sheet piles for cofferdams. Given the water does not subside within the creek during the dry season, this alternative would require piles driven within the wetted channel. In-water pile driving (and cofferdam installation) would likely result in substantial impacts to aquatic species.

HUNTER CREEK CONSIDERED BUT ELIMINATED ALTERNATIVES

Hunter Creek Bridge Replacement with Three-Span CIP/RC

The description of work for this three-span alternative is identical to the two-span alternative, except the three-span structure would have two pier rows rather than a single row within the stream channel.

Reason for rejection: Construction would require installation of two pier rows within the stream channel requiring additional work in the channel and resulting in more permanent fill in the stream channel than the two-span option.

SUPERBRIDGE ALTERNATIVE

During the Klamath Grade Raise (KGR) Project environmental analysis, a “superbridge alternative” was proposed where a bridge would span both Panther Creek and Hunter Creek (and the area between the two bridges). Given the cost and environmental impacts associated with this alternative, this alternative was never fully designed or pursued.

Reason for Rejection: The structure would be over 3,200 feet long and 59 feet wide and would require considerable right of way acquisition, wetland and creek fill, substantial pile driving, highway re-alignment, and construction of a side access road.

OTHER CONCEPTS CONSIDERED BUT DEEMED NOT TO MEET THE PURPOSE AND NEED

Panther and Hunter Creek Bridges Rehabilitation\Retrofitting

A rehabilitation/retrofit strategy for Panther Creek Bridge and Hunter Creek Bridge was evaluated to assess the cost, feasibility, and conformity with the purpose and need of the project. The assessment assumed widening of the existing structures to meet standard shoulder widths, provision of a separated non-motorized path as described in previous alternatives, and correction of seismic deficiencies.

The scope of work for this strategy would include adding new piles at the ends of the existing abutments and ends of the existing piers in order to support the new bridge deck areas and to provide additional bridge structural support. These new piles would support the new deck area through extensions of existing structures.

Reason for Rejection: This alternative was rejected because it would only extend the service life of the existing bridges by about 20 years. Further, compared to the proposed build alternatives, this alternative would result in additional permanent fill within both Panther Creek and Hunter Creek. This alternative would likely result in more environmental impacts than the proposed build alternatives, and would require subsequent replacement within 20 years.

1.6 Permits and Approvals Needed

Table 1–2 lists permits, reviews, and approvals required for project construction.

Table 1—2. Permits and Approvals Needed

Agency	Permit/Approval	Status
California Coastal Commission	Federal Consistency No Effects Determination	Received on April 16, 2016
National Marine Fisheries Service	Endangered Species Act Consultation (ESA)	Would be obtained after the circulation of the Draft IS/EA
California Department of Fish and Wildlife	Section 2080.1 Agreement for Threatened and Endangered Species	Would be obtained at the conclusion of the ESA Consultation
California Department of Fish and Wildlife	1600 Streambed Alteration Agreement	Would be obtained after the Negative Declaration and Finding of No Significant Impacts are finalized
United States Army Corps of Engineers	Section 404 Permit for filling or dredging waters of the United States	Would be obtained after the Negative Declaration and Finding of No Significant Impacts are finalized
United States Army Corps of Engineers	Jurisdictional Determination	Would be obtained concurrently with 404 permit
Yurok Tribe	401 Certification	Would be initiated after the Negative Declaration and Finding of No Significant Impacts are finalized
United States Environmental Protection Agency (EPA)	Section 401 Certification	This would be obtained from the Yurok Tribe, with the EPA providing concurrence

1.7 Standard Measures and Best Management Practices (BMPs) Included in All Alternatives

The following section provides a list of standard practices that are included as part of the project description. Standard Measures and Best Management Practices (BMPs) are prescriptive and sufficiently standardized to be generally applicable, and do not require special tailoring to a project situation. These are generally measures that result from laws, permits, guidelines and resource management plans that are relevant to the project. They contain refinements in planning policies and implementing actions. These practices predate the project's proposal and apply to all similar projects. For this reason, these measures and practices are not considered project mitigation and the effects of the project for both NEPA and CEQA would be analyzed with these measures in place. Any project-specific proposed avoidance, minimization, or mitigation measures that would be applied to reduce the effects of project impacts are listed in relevant sections of Chapter 2 and in Appendix C. Measures that are anticipated to be used may include, but are not limited to, the following:

1.7.1 Utilities and Emergency Services

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

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

1.7.2 Traffic and Transportation

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

TT-2. The Contractor would be required to reduce any access delays to driveways or public roadways within or near the work zones.

TT-3: A Traffic Management Plan (TMP) would be applied to project.

1.7.3 Visual Aesthetics

VA-1: Additional aesthetic treatment to the bridges would be included, such as Yurok Tribal patterns, to address context sensitivity.

VA-2: Riparian and wetland areas impacted by the replacement of the Hunter Creek and Panther Creek bridges would be replanted with regionally appropriate native plants.

VA-3: Any temporary access roads would be restored to a natural contour and revegetated with appropriate native plants. Plant species and locations would be developed by the project landscape architect and biologist.

VA-4: Alterations to the existing contours of any temporary construction staging areas created by the contractor would be graded to previous conditions and revegetated with appropriate native plants.

VA-5: The ST-10 see-through railing would be installed on both bridges to provide more visibility to the surrounding natural elements.

1.7.4 Cultural Resources

CR-1: Caltrans would consult with the Yurok Tribe and incorporate measures to protect tribal resource.

CR-2: An archeological monitor and Yurok tribal monitor would be utilized for ground disturbing activities.

CR-3: If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find in consultation with the State Historic Preservation Officer.

CR-4: If human remains were discovered, State Health and Safety Code § 7050.5 states that further disturbances and activities would cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to CA Public Resources Code (PRC) § 5097.98, if the remains were thought to be Native American, the coroner would notify the Native American Heritage Commission (NAHC) who would then notify the Most Likely Descendent (MLD).

At this time, the person who discovered the remains would contact the Environmental Senior and Professionally Qualified Staff so they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 would be followed as applicable.

CR-5: In the unlikely event that fossils were encountered during project excavations, Caltrans Standard Specification 14-7 would be followed. This standard specification states that if unanticipated paleontological resources were discovered at the job site, all work within 60 feet would stop, the area around the fossil would be protected, and the Resident Engineer would be notified.

1.7.5 Hydrology and Floodplain

HF-1: Bridge soffit elevation would not be lower than the existing bridge in order to maintain the same freeboard provided and not alter hydrology.

HF-2: Existing bridge pilings would be removed, which would provide less resistance and blockage of water moving downstream in a flood event.

1.7.6 Water Quality and Stormwater Runoff

WQ-1: The project would comply with the Provisions of the Caltrans Statewide National Pollution Discharge Elimination System (NPDES) Permit (Order 2012-0011-DWQ), which became effective July 1, 2013, and the Construction General Permit (Order 2009-0009-DWQ).

Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) that includes erosion-control measures and construction waste containment measures so that waters of the State were protected during and after project construction.

The SWPPP would identify the sources of pollutants that may affect the quality of stormwater; include construction site 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 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 would be continuously updated to adapt to changing site conditions during the construction phase.

Construction would likely require the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Water would be removed by means of dewatering the individual pipe piles or cofferdams.
- Water generated from the dewatering operations would be trucked off-site to an appropriate facility, or treated and used on-site for dust control, and/or discharged to an infiltration basin, or used to irrigate agricultural lands.
- Fiber rolls/or silt fences 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 limited during the rainy season.

WQ-2: The project would incorporate pollution prevention and design measures consistent with the 2003 Caltrans Storm Water Management Plan to meet Water Quality Objectives (WQOs) This Plan complies with the requirements of the Caltrans Statewide NPDES Permit (Order 2012-0011-DWQ).

The project design would likely include the following permanent stormwater treatment BMPs:

- 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.

- Existing roadway and bridge drainage systems currently discharge storm water to receiving waters through bridge deck drains and/or discharge to vegetated slopes adjacent to the highway facility. Current design for storm water management, post construction, is to perpetuate existing drainage patterns. Storm water will continue to sheet flow to vegetated slopes providing storm water treatment in accordance with Caltrans NPDES Permit.

1.7.7 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 lead-impacted soil.

HW-2: A National Emissions Standards for Hazardous Air Pollutants (NESHAP) permit is required from the NCUAQMD (North Coast Unified Air Quality Management District) for bridge demolitions.

1.7.8 Geology and Seismic/Topography

GS-1: The project would be designed to minimize slope failure, settlement, and erosion using recommended construction techniques and BMPS. New slopes should be revegetated to reduce erosion potential.

1.7.9 Wetlands and Other Waters

WW-1: The contractor would be required to place temporary barrier fencing along the boundaries of all riparian, wetland or other environmentally sensitive areas adjacent to the project footprint.

WW-2: Impacts to waters and riparian vegetation would be reduced with incorporation of the measures identified in section 1.7.

WW-3: Caltrans would be required to restore wetland and riparian areas temporarily impacted by construction to pre-existing conditions prior to completion of construction.

1.7.10 Threatened and Endangered Species

TS-1: To protect the most vulnerable life stages of sensitive fish species that occur within the project area, in-stream work would be restricted to the period between June 15th and October 15th. Construction activities restricted to this period include any work within the bed, bank or channel. Construction of the water diversion and access road at Hunter Creek, installation of the debris containment systems at Panther Creek, and construction of bridge foundations at both locations would be restricted during this time.

TS-2: A qualified biologist would monitor in-stream construction activities. The biological monitor would be present during bridge demolition, hoe-ramming, drilling for bridge foundations, and concrete pours to ensure adherence to all environmental permit conditions.

TS-3: The pre-construction meeting with the contractor would consist of a briefing on environmental permit conditions and requirements relative to each stage of the proposed project, including, but not limited to, work windows, construction site management, and how to identify and report regulated species within the project areas.

TS-4: Artificial night lighting may be required during the jack and slide operation for the Panther Creek Bridge and other operations that may necessitate a full road closure. The use of artificial lighting would be temporary and of short duration, deflectors would be used, and lighting would be directed away from the channels and focused specifically on the portion of the bridge actively under construction to reduce potential disturbance to sensitive species. To reduce the effects of artificial light on sensitive biological resources, use on the bridges and near watercourses would be limited to critical need (i.e., due to accelerated work schedule to meet permit deadlines or reaching a critical juncture in work at a time when it would be infeasible to stop construction.)

TS-5: Protocol surveys for willow flycatcher would be performed during the breeding season during all years of construction to update existing survey data and ensure avoidance of project impacts. If willow flycatcher were discovered to be nesting in or near the project area, ESA fencing would be placed so that no construction work or staging would be allowed within 100 feet of the active nest. The nest would be monitored daily, and when the nest is no longer occupied, construction work and staging could commence. Consultation with CDFW would be sought for any additional measures that may be required during activities that generate substantial noise disturbance, such as impact pile driving and hoe-ramming.

Caltrans would develop a plan in coordination with CDFW, USACE, and the State Water Resources Control Board to address any potential effects associated with the temporal loss of willow habitat.

TS-6: Hydroacoustic monitoring would be conducted during all construction activities that have the potential to produce impulsive sound waves within Panther Creek or Hunter Creek. This includes any hoe-ramming or jackhammering associated with the demolition of the Panther Creek Bridge.[5]

Hydroacoustic monitoring would ensure compliance with the terms and conditions resulting from section 7 consultation with NMFS, and provide opportunity to adopt alternative construction methods to avoid or minimize project impacts where feasible. Peak sound pressure levels would not likely reach thresholds known to be injurious to fish in Panther Creek, and the injury threshold for accumulated sound exposure levels (SEL) within a greater area of the creek would be avoided by stopping work prior to reaching the SEL threshold.

A hydroacoustic monitoring plan would be prepared prior to construction that addresses the frequency of monitoring, positions that hydrophones would be deployed, and techniques for gathering and analyzing acoustic data, quality control measures, and reporting activities.

TS-7: Fish relocation would be performed as described under AS-5 in section 1.7.12, Aquatic Species Relocation Plan.

1.7.11 Plant Species

PS-1: After all construction materials are removed, the project area would be revegetated. Replanting would be subject to a plant establishment period as defined by project permits, which would require Caltrans to adequately water plants, replace unsuitable plants, and control pests. Caltrans would implement a program of invasive weed control in all areas of soil disturbance caused by construction to improve habitat for native species in and adjacent to disturbed soil areas within the project limits.

[5] *The existing Panther Creek Bridge would likely be saw cut to minimize hydroacoustic impacts within Panther Creek.*

PS-2: The contractor would be required to place temporary barrier fencing along the boundaries of all riparian, wetland or other environmentally sensitive areas to avoid impacts to sensitive habitats that occur adjacent to the project footprint.

1.7.12 Animal Species

AS-1: To protect migratory and nongame birds, their occupied nests and eggs, nesting-prevention measures would be implemented. Vegetation removal would be restricted to the period outside of the bird breeding season (October 1 through February 28), or if vegetation removal is required during the breeding season, a nesting bird survey would be conducted within one week of removal by a qualified biologist. If an active nest were located, the biologist would coordinate with the CDFW to establish appropriate species-specific buffer(s) and any monitoring requirements. The buffer 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.

AS-2: Partially constructed and unoccupied nests within the construction area would be removed and disposed of on a regular basis throughout the breeding season (March 1 to September 30) to prevent their occupation. Nest removal would be repeated weekly under guidance of a qualified biologist to ensure nests are inactive prior to removal. Removed nest material would be prevented from falling into waterways. Exclusionary devices would not be used to prevent birds nesting on the existing bridge structures as these devices have the potential to entrap or harm night roosting bats.

AS-3: To protect night roosting bats: 1) work activities would be limited to one portion of the bridge structures at a time between the hours of 10:00 PM and sunrise and no impact pile driving or hoe-ramming would occur during these hours; 2) airspace access to the structures would not be eliminated—as long as suitable roost (resting) habitat remains on site; 3) lighting used for night work would be focused specifically on the portion of the bridge actively under construction; 4) combustion equipment, such as generators or pumps, would not be parked or operated under the structure unless they are required to be in contact with the structure; 5) ESA flagging or fencing would be used to delineate active work areas from non-active work areas; and 6) personnel would not be present under the bridge during the evening and night in non-active work areas.

AS-4: Pre-construction surveys for active raptor nests within one-fourth mile of the project area would be conducted by a qualified biologist within 15 days prior to the initiation of construction activities. Areas to be surveyed would be limited to those areas subject to increased disturbance because of construction activities (i.e., areas where existing traffic or human activity is greater than or equal to construction-related disturbance need not be surveyed). If any active raptor nests were identified, appropriate conservation measures (as determined by a qualified biologist) would be implemented. These measures may include, but are not limited to, establishing a construction-free buffer zone around the active nest site, biological monitoring of the active nest site, and delaying construction activities near the active nest site until the young have fledged.

AS-5: Prior to any dewatering or diversion of Hunter Creek, the contractor would be required to provide to Caltrans for approval an Aquatic Species Relocation Plan as part of the Construction Site Dewatering and Diversion Plan.The plan would include provisions for a pre-construction survey for lamprey in Hunter Creek by professional fisheries biologists and clearly outline the method for dewatering and fish relocation. Fish salvage would be performed by professional fisheries biologists who have experience in safe removal of all potential species within the project area. Electrofishing for salmonids must comply with the Guidelines for Electrofishing Waters Containing Salmonids listed under the Endangered Species Act published by NOAA Fisheries. If lamprey are present, dewatering and electrofishing methods must comply with Best Management Practices to Minimize Adverse Effects to Pacific Lamprey (*Entosphenus tridentatus*) (USFWS 2010).

The plan would also include provisions for a pre-construction survey for northern red-legged frog and foothill yellow-legged frog by a qualified biologist. Any frogs, tadpoles, and egg masses found during the initial survey would be netted and relocated to suitable habitat downstream of the project area by the biologist prior to conducting electrofishing for salmonids or lamprey. Gravel or any other material added to Hunter Creek for construction purposes would be introduced slowly starting upstream, giving frogs an opportunity to escape downstream. The biologist would be present during all phases of in-stream construction to assist with frog relocation efforts as they arise.

1.7.13 Invasive Species

Standard measures described in PS-1 for restoring the project site post construction are also appropriate for the control of invasive species.

PS-1: After all construction materials are removed, the project area would be restored to a natural setting by grading, placing erosion control, and replanting. Replanting would be subject to a plant establishment period as defined by project permits, which would require Caltrans to adequately water plants, replace unsuitable plants, and control pests. Caltrans would implement a program of invasive weed control in all areas of soil disturbance caused by construction to improve habitat for native species in and adjacent to disturbed soil areas within the project limits.

Chapter 2 Affected Environment, Environmental Consequences, and Mitigation Measures

This chapter explains the impacts the proposed project could have on the human, physical, and biological environments in the project area. It describes the regulatory setting, existing environment that could be affected by the project, potential impacts from the Build Alternative, and proposed avoidance, minimization, and/or mitigation measures pursuant to CEQA and NEPA requirements. A CEQA checklist that evaluates the level of impacts under each environmental resource is provided in Appendix A.

Project impact analysis under NEPA for Environmental Assessment (EA)

NEPA applies to "proposals for legislation and other major federal actions" (42 USC § 4332(2)(c)). NEPA also applies in cases where an agency is exercising its discretion in deciding whether and how to exercise its authority over an otherwise non-federal project. Under NEPA, the No-Build Alternative is used as the baseline for comparing environmental impacts**.** The NEPA regulations require a description of "the underlying purpose and need to which the agency is responding" in considering a project (40 CFR § 1502.13).

NEPA regulations use the terms "effects" and "impacts" synonymously. The NEPA determination of significance is based on context[6] and intensity[7]. Under NEPA, an Environmental Assessment (EA) can be prepared to determine whether a Finding of No Significant Impact (FONSI) can be made. Either because of the EA, or based on an initial determination that there is the potential for a significant impact if the proposal is to proceed, then an Environmental Impact Statement (EIS) is needed. The magnitude of the impact is evaluated and described in the EIS. NEPA does not compel mandatory findings of significance, and some impacts determined to be significant under CEQA may not necessarily be determined significant under NEPA. A FONSI under NEPA is a brief statement by an agency that explains why an action would not have a significant effect on the human environment (40 CFR § 1508.13).

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[6] *Context refers to the impact of the project on society as a whole including the affected region, interests, and locality. The effects are site-specific and vary depending on time and location of the proposed project.*

[7] *Intensity refers to the severity of the impact. Responsible parties must bear in mind numerous factors during the decision-making process including public health and safety, controversy, relationship to other projects, effects on existing laws and policies.*

NEPA also provides for a mitigated FONSI, where an EA provides that the action may pose some significant effects, but mitigation measures that would be adopted by the agency would reduce the effects to a level where they are no longer significant. Mitigated FONSIs are recognized as one form of a FONSI.

NEPA regulations define "effects" as "direct effects, which are caused by the action and occur at the same time and place" (40 CFR § 1508.8(a)). Indirect effects consider effects "later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR § 1508.8(b)). "Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR § 1508.8). Finally, cumulative impacts must be considered. A "cumulative impact" is the environmental impact resulting from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions that can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Impacts are to be addressed in proportion to their significance (40 CFR § 1502.2(b)), meaning that severe impacts are to be described in more detail than less consequential impacts. This is intended to help decision makers and the public focus on the project's key effects.

Project impact analysis under CEQA for Initial Study

CEQA broadly defines "project" to include "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment" (14 CCR § 15378). Under CEQA, the baseline for environmental impact analysis consists of the existing conditions at the time the environmental studies began. The CEQA Guidelines require a "statement of objectives sought by the proposed project" (14 CCR § 15124(b)).

CEQA requires the identification of each "significant effect on the environment" resulting from the action, and ways to mitigate each significant effect. Significance is defined as "Substantial or potentially substantial adverse change to any of the physical conditions within the area affected by the project" (14 CCR § 15382). The legal standard for determining the significance of impacts is whether a "fair argument" can be made that a "substantial adverse change in physical conditions" would occur. The fair argument must be backed by substantial evidence including facts, reasonable assumption predicated upon fact, or expert opinion supported by facts. Generally, an environmental professional with specific training in a particular area of environmental review can make this determination.

This determination is made prior to and separate from the development of mitigation measures for the project. Public agencies are encouraged to use thresholds of significance. In addition, the CEQA Guidelines list a number of mandatory findings of significance.

If the action may have a significant effect on any environmental resource, then an Environmental Impact Report (EIR) must be prepared. Under CEQA, the lead agency may adopt a negative declaration (ND) if there is no substantial evidence that the project may have a significant effect on the environment (14 CCR § 15070(a)). A proposed negative declaration must be circulated for public review, along with a document known as an Initial Study. CEQA allows for a "mitigated negative declaration," in which mitigation measures are proposed to reduce potentially significant effects to less than significant (14 CCR § 15369.5). Proposed mitigation measures must generally be subject to public review prior to adopting a mitigated negative declaration (14 CCR § 15073.5 [new mitigation measures necessary to reduce a significant impact require recirculation]; 15074.1 [different mitigation measures may be substituted if they are equally effective if the lead agency holds a hearing and makes a specific finding]). Under CEQA, mitigation is defined as avoiding, minimizing, rectifying, reducing, and compensating for any potential impacts (CEQA, 15370).

The environmental impacts section of CEQA documents also must consider direct and indirect impacts of the project (CAL. PUB. RES. CODE § 21065.3). They are to focus on significant impacts (14 CCR § 15126.2(a)). Impacts that are less than significant need only be briefly described (14 CCR § 15128). All potentially significant effects must be addressed. To assist lead agencies in evaluating all impacts, the CEQA Guidelines provide an environmental checklist that often guides the analysis.

Integrations of CEQA/NEPA

To reduce duplication, NEPA and CEQA allow environmental documents to reference and summarize information from other documents rather than repeating large amounts of information. Information can be incorporated by reference to keep environmental documents from becoming too large. The referenced information must be reasonably available to potentially interested persons (40 CFR § 1502.21). The framework for considering alternatives to a proposal as a means of reducing environmental impacts is similar under NEPA and CEQA. The "no action" and "no project" requirements are functionally the same and examine the reasonably foreseeable consequences of not taking the proposed action. They serve the purpose of describing the current and future state of the potentially affected environment without considering the potential impacts of the proposed action or project.

NEPA and CEQA define significance in different terms. While CEQA requires environmental documents actually reach a conclusion regarding significance, NEPA agencies generally do not make significance findings on specific effects/impacts but on the project as a whole. CEQA and NEPA practices can be aligned in a joint environmental document by explaining that CEQA requires significance determinations, but NEPA does not; therefore specific significance determinations in the document are made under CEQA. Agencies can describe each specific impact in common language that is consistent with both NEPA and CEQA practice.

Both CEQA and NEPA contain similar definitions of cumulative effects and prescribe similar approaches to the analysis. The main difference is the level of detail required for the analysis. To ensure compliance with both laws, the cumulative impact analysis may need more detail than lead agencies typically provide under CEQA.

In general, the term "mitigation" means the same thing to lead agencies for purposes of meeting their NEPA and CEQA responsibilities. There are two differences related to mitigation between NEPA and CEQA:

1) CEQA requires that any feasible mitigation measures that can reduce a significant impact be adopted, while NEPA does not (as long as the agency justifies its decision not to adopt feasible measures); and

2) CEQA mitigation requirements apply only to adverse environmental impacts found to be significant, while NEPA's regulations apply to any adverse impacts, even if not significant.

Standard Practices and Mitigation

Under NEPA, an agency is not limited to considering mitigation only for significant impacts, but should identify feasible measures for any adverse environmental impacts, even those that are not considered significant (40 CFR § 1502.16(h)). Under CEQA, agencies must adopt mitigation measures or alternatives to substantially lessen the significant effect, if feasible, before approving the project (CAL. PUB. RES. CODE §§ 21002, 21002.1.). Measures may also be adopted, but are not required, for environmental impacts that are not found to be significant (14 CCR § 15126.4(a)(3)). If an agency relies on mitigation measures to avoid preparation of an EIR, those proposed measures must be circulated for public review with a proposed mitigated negative declaration prior to adoption of the project (14 CCR 15070(b)(1)).

For clarity, this document will refer to incorporated measures that are prescriptive and sufficiently standardized to be generally applicable, and do not require special tailoring to a project situation, as "Standard Practices" or "BMPs" as discussed in Section 1.7. Measures which are not sufficiently standardized enough to be called Standard Measures or BMPs, but are proposed to reduce impacts that are not significant without mitigation are referred to as "Mitigation Measures". The determination of whether or not mitigation will be reducing impacts that are not significant, or reducing an impact to less than significant, is indicated in the CEQA determination section of each resource.

2.1 Resources That Would Not be Impacted by the Project

Based on the description of environmental impact analysis for CEQA and NEPA discussed above, the following environmental issues were analyzed and no permanent impacts were identified; therefore, this document contains minimal discussion of these issues. The regulatory setting and affected environment for many subjects (including land use, growth, farmlands, community cohesion, environmental justice, utilities, traffic and transportation, emergency services, visual aesthetics, coastal zone, Wild and Scenic Rivers, parks and recreation, and cultural resources) were analyzed separately and findings are available in a Community Impacts Analysis Memorandum that is available upon request. Potential temporary effects associated with construction activities are discussed in Section 2.4. A list of technical documents which provide support for this determination (Water Quality Analysis, Paleontological Report, Hydraulic and Floodplain Analysis, Traffic Study, Geologic Report, Visual Impact Analysis, Noise and Air Quality Study) is located in Appendix I. These documents are available upon request.

The proposed project would not affect the following resources:

Aesthetics – A Visual Impact Assessment (VIA) was conducted and found that the visual character of the proposed project would be compatible with the existing visual character of the area. The assessment indicated that the project 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. Standard measures and design features of the structures would preserve visibility and visual quality. Neither the Build nor No-Build alternative would affect aesthetics..

Agriculture and Farmlands – This project is located near farmlands and timberlands; however, given the entire project footprint is located within the state right of way, the project would not affect farmlands and timberlands. Del Norte County does not participate in the state Williamson Act program. Additionally, Del Norte County has not been mapped by the Natural Resources Conservation Service Farmland Mapping and Monitoring Program (FMMP) to define the locations of prime agricultural land. Therefore, the project would not convert prime farmland, conflict with existing zoning for agriculture/forest-land, or result in loss of agriculture/forest-land. Neither the Build nor No-Build alternative would affect farmlands and timberlands.

Air Quality – Del Norte County is in attainment[8] or is unclassified for all current National Ambient Air Quality Standards (NAAQS). Therefore, air quality conformity requirements do not apply. This bridge replacement project would replace structures in-kind and would not change traffic composition, traffic speed or traffic volume, so air quality would not be affected. The project would not conflict with any air quality plans, violate any air quality standards, result in a net increase in criteria pollutants, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people. Neither the Build nor No-Build alternative would affect air quality.

Cultural Resources – The project is located within the Yurok Tribe Reservation. After a thorough evaluation of all potential cultural resources and consultation with the Yurok Tribe regarding the resources within the Area of Potential Effects (APE), Caltrans has determined there are no recorded sites or resources eligible for inclusion in the National or California Register of Historic Places. Caltrans has also determined a finding of "No Historic Properties Affected" is appropriate for this undertaking. The signed Tribal Historic Preservation Office concurrence letter is in Appendix E. Neither the Build nor No-Build alternative would affect cultural resources.

Paleontology—All proposed project-related activities would occur within young alluvial[9] stream channel deposits. It is unlikely the project would encounter fossils (F&F GeoResources Associates, 2016); therefore, it is not expected the project would affect paleontological resources. Neither the Build nor No-Build alternative would affect paleontological resources.

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*[8] If the concentration of one or more pollutants in a designated area is above the regulated or 'threshold' level for one or more of the standards set by the NAAQS, it may be classified as a **nonattainment** area. If an area has a concentration of pollutants that are below the levels established by the NAAQS, they are considered either **attainment** or **unclassifiable** areas.*

[9] Alluvial soils, also referred to as "Alluvium" are loose soils that are not cemented together and have been shaped and moved by water. They are typically small particles of silt and clay along with sand and gravel. Most alluvium is geologically young relative to the rock and other surrounding soils.

Geology/Soils/Seismic/Topography – Only relatively minor alterations to the existing soils and topography would be necessary, and the project would be constructed consistent with Caltrans design standards (Barnes, 2013). The project would not expose people or structures to substantial effects from known earthquake faults, strong seismic shaking, seismic-related ground failure, landslides, or substantial soil erosion.

Further, the project is not located on soil that is expansive or on a geologic unit that would become unstable because of the project. As a result, neither the Build nor No-Build alternative would affect geology, soils, seismic and topography features.

Climate Change (Greenhouse Gas Emissions) - Neither the United States Environmental Protection Agency (U.S. EPA) nor FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations are to be integrated throughout the transportation decision-making process——from planning through project development and delivery.

Because there have been more requirements set forth in California legislation and executive orders on climate change, the issue is addressed in a separate CEQA discussion at the end of this chapter and may be used to inform the NEPA decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts the State of California has undertaken and is undertaking to deal with transportation and climate change. The strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours traveled.

Caltrans remains firmly committed to the implementation of measures to reduce the effects of projects on greenhouse gas emissions. The project would not result in the generation of greenhouse gas emissions beyond the baseline, and would not conflict with an applicable plan, policy, or regulation adopted for the reduction of greenhouse gas emissions. Neither the Build nor No-Build alternative would affect climate change.

Hazards and Hazardous Materials – An Initial Site Assessment (ISA) was conducted for the project. The ISA found the project would likely have only nominal hazardous waste issues related to Aerially Deposited Lead[10] (ADL) located in shallow soil material within the highway right of way and lead in traffic striping. Per Caltrans requirements, the contractor(s) would

[10] Aerially deposited lead refers to lead deposited on highway shoulders from past leaded fuel vehicle emissions. Though leaded fuel has been prohibited since the 1980's, lead may still be present in oils adjacent to highways from prior use.

prepare a project-specific Lead Compliance Plan (CCR Title 8, § 1532.1, the "Lead in Construction" standard) to minimize 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 lead-impacted soil. A 2010 lead and asbestos survey of the bridge structures found no asbestos materials present. Petroleum hydrocarbon contamination[11] is not expected within the project study limits and the area is not on the Hazardous Waste and Substances Site List (Cortese List) (Werner, 2012). The project would not create a hazard to the public or environment through transport or use of hazardous material or through reasonably foreseeable accidents releasing hazardous materials. The project would not affect a school, airport use plan, or private airstrip. Further, the project would not impair an emergency response plan or expose people to loss involving wildfires. Therefore, neither the Build nor No-Build alternative would affect hazardous waste.

Water Quality and Stormwater Runoff – A water quality analysis was conducted to assess potential affects to water quality and stormwater runoff (Area West, 2016). A Stormwater Data Report (SWDR) was also prepared and is available for review. The project would not substantially alter stormwater runoff rates and volumes or cause increases in suspended particulates[12] and turbidity in receiving waters under long-term operations. In addition, the project would not alter existing flow patterns, rates, or volumes. Finally, the project would not alter channel stability in receiving waters or change erosion and depositional patterns in downstream channels. Neither the Build nor No-Build alternative would affect water quality and stormwater runoff.

Hydrology and Floodplain – Based on the Drainage Report, Floodplain Evaluation, and Floodplain Hydraulic Study (FHS), the proposed project area is located within a floodplain. The analysis indicates the project would not impede or redirect flood flows, nor expose people to an increase risk in loss from flooding, tsunami, seiche[13] or mudflow. Furthermore, no adverse effects to the floodplain are expected because of this project. This project complies with all the policies outlined in 23 Code of Federal Regulations 650, Subpart A. Neither the Build nor No-Build alternative would affect the hydrology and floodplain in the area (Manzanera, 2016).

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[11] Petroleum hydrocarbons are the primary constituents of oil, gasoline, diesel, and a variety of solvents that can contaminate soil and water.

[12] Suspended particulates refer to fine solids that are dispersed through the water and do not easily settle out. They contribute to turbidity, which is the cloudiness or amount of light that transmits through water.

[13] A seiche is a temporary disturbance in the water level of a body of water caused by earthquakes or wind.

Land Use and Planning – The project limits are located entirely within the existing State right of way. The project would be consistent with the 2016 Del Norte Draft Regional Transportation Plan, Del Norte County 2003 General Plan and 2011 General Plan Update, Federal Transportation Improvement Program, Yurok Constitution, Yurok Tribe Hazard Mitigation Plan and Yurok Tribe Transportation Plan. The project would not physically divide an established community or conflict with any habitat conservation plans. The proposed project would not affect Land Use or Planning. By maintaining the existing condition, the No-Build Alternative would be inconsistent with some state, regional, and local plans and policies regarding multi-modal transportation, pedestrian access, and safety (Mintier & Associates, 2003).

Coastal Zone –The project is not located within the Coastal Zone; however, Caltrans held a meeting with the California Coastal Commission (CCC) on March 18, 2016 to discuss whether the project had the potential to affect coastal resources. Caltrans provided project information to the CCC, including a list of standard measures that would ensure the preservation of coastal resources. On March 24, 2016, the CCC provided Caltrans a Coastal Zone Management Act No Effects Determination (Appendix F).

Wild and Scenic Rivers – The project is not in or adjacent to a designated Wild and Scenic River. Neither the Build nor No-Build alternative would affect Wild and Scenic Rivers.

Mineral Resources – The project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. It would not result in the loss of availability of a locally important mineral resource recovery site as delineated on a general plan. Neither the Build nor No-Build alternative would affect mineral resources (F&F GeoResources Associates, 2016) (Barnes, 2013) (Mintier & Associates, 2003).

Noise -A Noise Analysis was prepared in April 2016. The project meets the criteria for a Type III project as defined in 23 CFR 772 because it would not substantially move or expand the existing highway. The project would not alter the vertical alignment of the highway or topography in such a way that areas sensitive to noise would be affected. Traffic volumes, composition, and speeds would remain the same in the Build and No-Build condition. The project would not cause an increase in ambient noise levels, expose persons to excessive noise levels, nor generate excessive ground-born vibration. The project is not located near an airstrip or airport. Neither the Build nor No-Build alternative would result in a change to the baseline noise levels of the project area.

Population and Housing – This project would replace the structures in-kind (e.g., the new bridges would have two lanes like the existing bridges). Since highway and bridge capacity would not be increased, the project is not expected to result in increased traffic volumes. In

addition, the project would not create new access to previously inaccessible parcels, and would not result in any land development or growth within the project vicinity.

Given the bridges would be replaced in-kind and there are no communities located immediately adjacent to the project limits, the project is not expected to affect community character or cohesion. In fact, the project may have a beneficial effect on the surrounding communities due to improved safety because of the separated non-motorized paths. Since all work would be located within the existing state right of way, the project would not displace people or cause the relocation of houses, and would not result in isolation or separation of existing residences from businesses and community facilities.

This project is in a rural area. All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have been incorporated throughout the development of the project (Appendix B). No minority or low-income populations exist within the project area; therefore, the project would not cause disproportionately high and adverse effects on any minority or low-income populations per Executive Order 12898 regarding environmental justice.

Neither the Build nor No-Build alternative would affect population and housing.

Public Services – The project would not result in physical impacts associated with the provision of new or altered governmental facilities and would not require the alteration of public facilities to maintain the service ratios and response times of any public service including fire protection, police, schools, parks and other public facilities. Neither the Build nor No-Build alternative would affect population and housing.

Recreational Facilities – The project is not near or within any recreational facilities. There are no section 4(f) resources within the project vicinity. Neither the Build nor No-Build alternative would affect recreation facilities.

Transportation or Traffic - The project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. It would also not conflict with an applicable congestion management program or result in a change in air traffic patterns. It would not result in hazards due to design features nor result in inadequate emergency access or conflict with adopted policies, plans or programs regarding public transit. The proposed project would not affect transportation or traffic. By maintaining the existing condition, the No-Build Alternative would be inconsistent with some state, regional, and local plans and policies regarding pedestrian and bicycle facilities.

Utilities and Service Systems – The project would not exceed wastewater treatment requirements of the Regional Water Quality Control Board (RWQCB) or require the construction of new water or wastewater treatment facilities. Further, the project would not require construction of new stormwater drainage facilities that would cause significant environmental effects. The project would not affect water entitlements, wastewater treatment, or landfills. Finally, the project complies with statues and regulations related to solid waste. Neither the Build nor No-Build alternative would affect utilities or service systems.

2.2 Biological Environment

This section presents the methods used to evaluate the potential presence of natural communities of special concern and special status plants and animals within the Biological Study Area (BSA). The BSA includes the areas of potential direct and indirect impact. The areas of potential impact include the construction area, the US 101 roadway (and shoulders) from Post Mile 8.2 to Post Mile 8.7, and Hunter and Panther creeks and their adjacent wetland and riparian[14] zones within the vicinity of the bridges. The BSA also includes areas that could be affected by the noise of construction, which includes a 0.25-mile buffer around the construction area for airborne noise and the extent of potential underwater noise affecting areas upstream and downstream from the bridges (Figure 2–1).

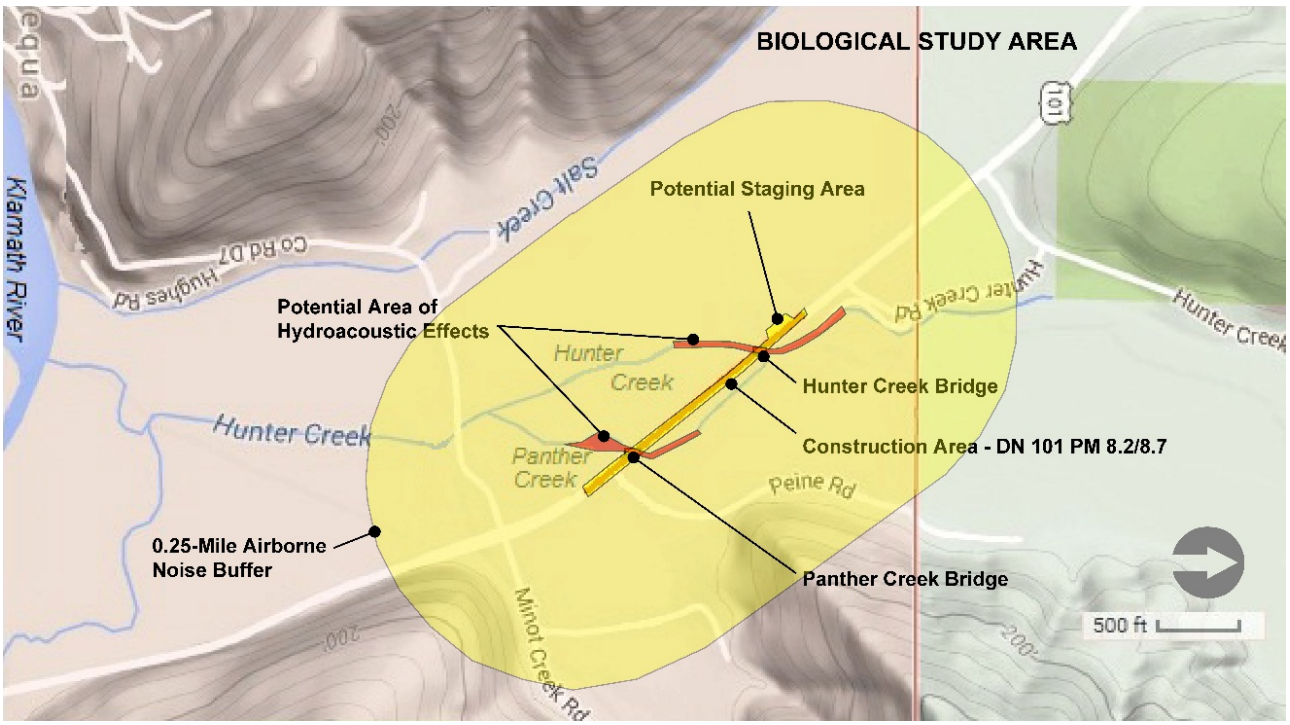

Figure 2—1. Map of Biological Study Area

In order to comply with the provisions of various state and federal environmental statutes and executive orders, potential impacts to natural resources of the project area were investigated and documented. Field reviews were conducted to identify existing habitat types and natural communities, waters and wetlands, rare species and/or factors indicating the potential for rare species (i.e., presence of suitable habitat), sensitive water quality receptors, and existing noise levels. Hydroacoustic (waterborne noise), airborne noise, and water quality assessments were

[14] *Riparian areas are the interface between land and a body of water (generally rivers and streams).*

prepared to evaluate potential impacts to terrestrial (living on land) and aquatic (living in water) species from proposed construction activities.

Studies conducted for this project, and those prepared for the KGR Project that remain relevant to the current study, are described below and summarized in Table 2–1. Caltrans coordinated with fisheries biologists and water quality specialists from the Yurok Tribe as well as agency personnel from the CDFW, USFWS, NMFS, and USACE. A summary of these coordination efforts and professional contacts can be found in Table 2–2.

If animal species were known to be present in the vicinity and habitat for that species was present in the BSA, then the species was assumed present. Other sensitive resources in the BSA were identified using the best available scientific methods.

Protocol-level bird and fish surveys were conducted to identify species present. Additional breeding bird surveys would be required prior to construction to update existing information. Yurok Tribal Fisheries Program (YTFP) has calculated fish abundance estimates for salmonids in Panther Creek; however, YTFP considers the data provisional.

Caltrans performed floristic surveys according to CDFW protocol. Floristic surveys were not conducted beyond the area of potential soil disturbance.

A hydroacoustic analysis was conducted to assess the potential effects of impact pile driving to fish and marine mammals. However, estimating the hydroacoustic levels involves numerous assumptions, all of which can vary depending on site-specific conditions and construction methodology.

Each resource is described by regulatory setting, affected environment, environmental consequences, and proposed avoidance and minimization measures. Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. An assessment of cumulative effect examines the collective impacts posed by individual projects. Cumulative impacts can result from individually minor but collectively substantial impacts that take place over time, and are discussed for each resource under environmental consequences.

Table 2—1. Studies Conducted for the Proposed Project, Project Personnel, and Qualifications

Survey	Date	Personnel	Qualifications
Jurisdictional Wetland Delineation	May 27, 2015 (survey)	Tamara (Camper) Dart (Caltrans)	B.S. Env. Sci., 1999; M.S., Biology, 2007; 2002 Richard Chinn Wetland Delineation 40 hour course; 12 years of experience performing wetland delineations and botanical surveys in California.
		Gail Popham (Caltrans)	B.S. Fisheries Science, Wildlife Science, 1996; M.S., Nat. Resources, Wildlife, 2000. 15 years of experience performing wetland delineations in California.
Floristic Surveys	March- May 2015 (survey)	Tamara (Camper) Dart (Caltrans)	See above
	June 2016 (survey)	Stephanie Frederickson (Caltrans)	B.S. Botany, 1995. Humboldt State University. 23 years of experience conducting botanical surveys in northern California and Oregon. 19 years of experience performing wetland delineations.
Fish Surveys	June-October 2009 (survey)	YTFP: Scott Silloway and support staff	Fisheries Biologist 1 with YTFP
Marbled Murrelet Surveys	2007 (survey)	Frank Galea Galea Wildlife Consulting, Inc.	M.S. Natural Resources, Wildlife Management, 1989; B.S. Zoology, 1981. Certified Wildlife Biologist through the Wildlife Society.
Willow Flycatcher Surveys	2007 (survey)	Frank Galea Galea Wildlife Consulting, Inc.	See Above
	2009 (survey)	Jack Miller (Caltrans)	Caltrans Associate Environmental Planner. Extensive experience conducting willow flycatcher surveys in the Timber Harvest Review Program with CDFW between 1995 and 2000.
Bat Surveys	2010, 2015 (survey)	James McIntosh (Caltrans)	B.S. Botany, 1998; Caltrans Bat Training, 2010; 7 years of experience conducting bat surveys and bat habitat assessments in northern California.

Survey	Date	Personnel	Qualifications
Airborne Noise and Air Quality Analysis	Updated April 21, 2016 (Report)	Ryan Pommerenck (Caltrans)	B. S., Civil Engineering; 3 years of professional experience in preparing technical air quality and noise reports.
Underwater Noise Analysis	Revised March 22, 2016 (Report)	Keith Pommerenck (Illingworth & Rodkin, Inc.)	Civil Engineer, C.T. B.S. Environmental Resources; 27 years of professional experience in preparing technical air, noise, energy, and vibration reports for inclusion in CEQA and NEPA environmental documents for transportation projects. Expertise in acoustics, hydro-acoustics, and bioacoustics.
Water Quality Assessment	May 2016 (Report)	Becky Rozumowicz (Area West Environmental, Inc.)	B.S., Soil and Water Science; 12 years of experience; Qualified SWPPP Practitioner/Developer (#2099); Certified Professional in Erosion and Sediment Control (#6472).

Table 2—2. Agency Coordination and Professional Contacts Since 2014

Coordination Effort	Date	Personnel
Site visit, technical assistance.	April 8, 2015	Gail Popham, Caltrans Biologist Tami Dart, Caltrans Coordinator Rocco Fiori, Engineering Geologist (Yurok) Rebecca Bernard, NMFS Fish Biologist Micah Gibson, YT/Environmental Suzanne Fluharty, YT/Environmental Joe James, Transportation Manager (YT) Clarence Hostler, NMFS Jamie Hostler, Caltrans Native American Liaison Dennis Wardlaw, Caltrans Archaeologist
Telephone conversation discussing coho mitigation options.	June 24, 2015	Gail Popham, Caltrans Biologist Sarah Beesley, YT Biologist
Monthly Agency Meeting. Discuss coho mitigation options and potential effects to northern spotted owl and marbled murrelet.	Aug. 20, 2015	Dana York, Caltrans Environmental Rebecca Bernard, NMFS Fish Biologist Carol Heidsiek, USACE Clarence Hostler, NMFS Susan Leroy, Caltrans Environmental Greg Schmidt, USFWS JoAnn Dunn, CDFW Sarah Beesley, YT Biologist Gail Popham, Caltrans Biologist Tamara Dart, Caltrans Coordinator

Coordination Effort	Date	Personnel
Monthly Agency Meeting. Discuss coho mitigation options.	Sept. 17, 2015	Dana York, Caltrans Environmental Rebecca Bernard, NMFS Fish Biologist Carol Heidsiek, USACE Clarence Hostler, NMFS Susan Leroy, Caltrans Environmental Greg Schmidt, USFWS JoAnn Dunn, CDFW Sarah Beesley, YT Biologist Gail Popham, Caltrans Biologist Tamara Dart, Caltrans Coordinator
Meeting with California Coastal Commission to present proposed project and discuss potential impacts to coastal resources.	March 18, 2016	Bob Merrill, California Coastal Commission Sandra Rosas, Caltrans Env. Office Chief Steven Croteau, Caltrans Senior Tamara Dart, Caltrans Coordinator Stephanie Frederickson, Caltrans Biologist
Monthly Agency Meeting. Discuss coho mitigation options and potential effects to northern spotted owl, marbled murrelet, willow flycatcher, yellow-billed cuckoo, Pacific lamprey, and marine mammals.	March 23, 2016	Dana York, Caltrans Environmental Rebecca Bernard, NMFS Fish Biologist Clarence Hostler, NMFS Susan Leroy, Caltrans Environmental Greg Schmidt, USFWS Stephanie Frederickson, Caltrans Biologist Tamara Dart, Caltrans Coordinator Steven Croteau, Caltrans Senior
Meeting to discuss project impacts and mitigation options for coho salmon.	May 13, 2016	Sarah Beesely, YTFP Biologist Scott Silloway, YTFP Biologist Tamara Dart, Caltrans Coordinator Stephanie Frederickson, Caltrans Biologist
Meeting to discuss project impacts and need for consistency determination with CDFW.	March 22, 2016	Gordon Leppig, CDFW Supervisor Sandra Rosas, Caltrans Env. Office Chief Steven Croteau, Caltrans Senior Tamara Dart, Caltrans Coordinator Stephanie Frederickson, Caltrans Biologist
Telephone correspondence to discuss potential impacts to Pacific lamprey	March 24, 2016	Damon Goodman, USFWS Biologist Stephanie Frederickson, Caltrans Biologist
Consultation with USFWS Caltrans Liaison, Greg Schmidt via email regarding use of the USFWS Programmatic Letter of Concurrence for evaluating effects to northern spotted owl and marbled murrelet.	May 3, 2016	Greg Schmidt, USFWS
Technical assistance with NMFS regarding southern DPS North American green sturgeon critical habitat. Received updated official species list.	May 5, 2016	Rebecca Bernard, NMFS Stephanie Frederickson, Caltrans Biologist

2.2.1 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[15] and habitat fragmentation[16]. Habitat areas that have been designated as critical habitat under Federal Endangered Species Act (FESA) or Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act are discussed below in the Threatened and Endangered Species section 2.2.3. Wetlands and other waters are also discussed in section 2.2.2.

Regulatory Setting

Riparian woodlands are natural communities that consist of trees and other vegetation and physical features normally found on the stream banks and floodplains associated with streams, lakes, or other bodies of water. Riparian woodland habitat can range from a dense thicket of shrubs to a closed canopy of large mature trees covered by vines. Activities within riparian habitat are regulated under sections 1600-1616 of the California Fish and Game Code. The areas regulated by sections 1600-1616 include the bed, channel, and bank of any river, stream, or lake in which there is at any time an existing fish or wildlife resource, or from which these resources derive benefit. The limits of this jurisdiction typically extend to the outer edge of riparian vegetation, or to the top of the bank for areas with little or no riparian habitat.

Affected Environment

Vegetation communities are groups of plants that occur in repeatable patterns across the landscape. Several vegetation communities were found in the project area. Vegetation communities were identified based on the vegetation classification by the dominant plant species. Ruderal (disturbed) areas and areas of non-native grasslands (pastures) are also present in the project area.

A number of natural communities occur within the BSA, all of which are associated with freshwater wetland or riparian habitats. Panther Creek represents a Palustrine (freshwater), Unconsolidated Bottom, Permanently Flooded wetland (PUBH) that supports areas of open water intermixed with mats of floating, emergent vegetation—namely pondweed and yellow pond lily associated with the *Potamogeton* ssp. Herbaceous Alliance and *Nuphar lutea* Provisional Herbaceous Alliance, respectively. The permanently flooded waters of Panther Creek

[15] *Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration.*

[16] *Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.*

Pond are surrounded by seasonally flooded Palustrine Emergent, Persistent wetlands (PEM1C). These wetlands typically support a mix of obligate[17] wetland species that fail to comprise a distinct vegetation grouping or "alliance". Common species include cattail (*Typha latifolia*), slough sedge (*Carex obnupta*), rush (*Juncus sp*.), small-flowered bulrush (*Scirpus microcarpus*), and the highly invasive reed canary grass (*Phalaris arundinacea*). The floodplain adjacent to Panther Creek and Hunter Creek supports a mosaic of seasonally flooded Palustrine Scrub-shrub and Forested wetlands (PFO/SS1C). The wetlands are dominated by willow and/or red alder that fall into the *Salix lasiolepis* (arroyo willow thickets) Shrubland Alliance or *Alnus rubra* (red alder) Forest Alliance depending on dominance of relative cover. The red alder/willow community also occurs along the road prism fill slopes within the BSA in upland[18] riparian positions. Agricultural fields extend beyond the forest/scrub-shrub riparian corridor, dominated by a mix of wetland and upland species of mostly non-native pasture grasses and forbs.

Natural Communities of Special Concern (NCSC) are those natural communities that are of limited distribution statewide or within a county or region, and are often vulnerable to environmental effects of projects. These communities may or may not contain special status taxa or their habitat. High priority NCSC are globally (G) and state (S) ranked 1 to 3, where 1 is critically imperiled, 2 is imperiled, and 3 is vulnerable. Global and state ranks of 4 and 5 are considered apparently secure and demonstrably secure, respectively (California Department of Fish and Game, 2014).

Most vegetation types within the BSA are demonstrably secure (G5 S5) or apparently secure (G4 S4) globally and statewide (Table 2-3). Only the yellow pond lily and pondweed mats in Panther Creek Pond are questionably[19] vulnerable in the state. Throughout much of the BSA, the natural communities are associated with jurisdictional waters afforded protection under federal and state law and are high priority for conservation, as identified in section 2.2.2.

[17] *Obligate wetlands species almost always occur in wetland under natural conditions.*

[18] *An area (generally higher in elevation than surrounding areas) that does not classify as a wetland.*

[19] *State ranks with a "?" are not yet ranked or their assigned rank is uncertain.*

Table 2—3. Vegetation Communities Known to Occur in the Project Area

Scientific Name Common Name	Status[1]	Rationale
Alnus rubra Forest Alliance (Red alder forest) Palustrine Forested wetland In part, upland	G5 S4	Predominant forest community within the floodplain and lower hill slopes of the BSA. Demonstrably secure globally and apparently secure in the State; however, within the BSA it is often found in association with arroyo willow thickets that delineate as jurisdictional wetland.
Salix lasiolepis Shrubland Alliance (Arroyo willow thickets) Palustrine Scrub-shrub wetland	G4 S4	Predominant shrub community along on the foot of the road bank and along streams and ditches. *North coast populations suggest intergradations with S. hookeriana.* Apparently secure globally and within the State; however, in the BSA this community delineates as jurisdictional wetland.
Potamogeton ssp. Herbaceous Alliance (Pondweed mats) Palustrine Emergent wetland Freshwater marsh	G4G5 S3?	Pondweed mats occur in the slow moving, open water habitats of Panther Creek Pond, typically in association with or adjacent to mats of yellow pond lily.
Nuphar lutea Provisional Herbaceous Alliance (Yellow pond-lily mats) Palustrine Emergent Wetland Freshwater marsh	G5 S3?	Patches of yellow pond lily (occur in the slow moving, open water habitats of Panther Creek Pond, typically in association with or adjacent to mats of pondweed.

[1]Status: Natural Community Conservation Ranks:

G3 S3: Vulnerable, 21-100 viable occurrences worldwide/statewide and/or more than 2,590-12,950 hectares

G4 S4: Apparently secure, greater than 100 viable occurrences worldwide/statewide and/or more than 12,950 hectares

G5 S5: Demonstrably secure because of its worldwide/statewide abundance

Environmental Consequences

No-Build Alternative:
The existing condition would remain; therefore, no impact would occur.

Build Alternative:

Direct and Indirect Impacts

Pondweed mats (*Potamogeton* ssp. Herbaceous Alliance) occur in the slow moving, open water habitats of Panther Creek Pond, typically in association with or adjacent to mats of yellow pond lily (*Nuphar lutea* Provisional Herbaceous Alliance). There is potential for some of this vegetation to be shaded during construction from the temporary bridge alignment and debris containment system. The new, wider bridge could permanently shade up to 0.03 acre (1,307 ft^2) of Panther Creek that is capable of supporting these community types. These communities could also be temporarily subjected to minor turbidity generated during removal of the old bridge piles.

Approximately 0.43 acre of red alder/arroyo willow thicket would be temporarily or permanently impacted by construction. Approximately 0.31 acre of this habitat represents waters of the U.S./State, as discussed in section 2.2.2. Most of this habitat (approximately 0.41 acre) would be restored to pre-existing conditions post construction; however, approximately 0.02 acre would be permanently shaded by the wider bridges (Figure 2-2).

The small amount of wetland and riparian vegetation potentially impacted by the proposed project does not provide important habitat for sensitive flora or fauna. It occurs in close proximity to the existing bridges where it is subject to periodic disturbance from bridge maintenance and recreational activities (e.g. fishing) and ongoing noise and visual impacts from the highway. Much of it is substantially degraded by encroachment of invasive plants. Removal of this vegetation would not have a substantial effect on the quality or function of the wetland system, affect wildlife corridors, or result in fragmentation of essential fish habitat. Short-term and localized increases in turbidity would not be substantial enough to hinder growth of emergent vegetation in Panther Creek or on the banks of either watercourse.

Cumulative Impacts

Given the scope and scale of the potential effects and the inclusion of standard revegetation measures, the proposed project would not be expected to have a cumulative impact on natural communities.

CEQA Considerations

Based on the following, a "less than significant impact" determination for the build alternative was made with respect to natural communities.

1) The small amount of habitat potentially affected relative to the overall acreage of these habitat types in the Lower Klamath area.
2) The habitat is located adjacent to the highway and bridges (where it is subject to periodic disturbance from maintenance and recreational activities [e.g., fishing]).
3) The habitat is substantially degraded by invasive species. This habitat will be replanted with native species.
4) There is existing ongoing noise and visual impacts from the highway.
5) Vegetation disturbance would not have a substantial effect on the quality or function of the wetland system, affect wildlife corridors, or result in fragmentation of essential fish habitat.

Given the No-Build alternative would not alter the environment, a "no impact" determination was made for this alternative.

Mitigation Measures

Mitigation measures would not be anticipated to be required; however, per CEQA (14 CCR § 15126.4(a)(3)), mitigation measures may be adopted, but are not required, for environmental impacts that are not found to be significant.

As discussed in the Standard Measures section (Section 1.7), all disturbed soil areas would be restored through invasive weed removal and by replanting with native vegetation. While these measures may adequately offset any potential effects, Caltrans anticipates pursuing off-site restoration (mitigation). If off-site restoration were implemented, the appropriate measures would be identified and coordinated through the Yurok Tribe, CDFW, and any other administering agencies. If it is determined through this coordination that off-site restoration would not be necessary, then these efforts would not be pursued. Initial coordination with the Yurok Tribe indicated that, as a mitigation measure, they would support removal of invasive reed canary grass (*Phalaris arundinaceae*) which is continuing to encroach on Panther Creek Pond.

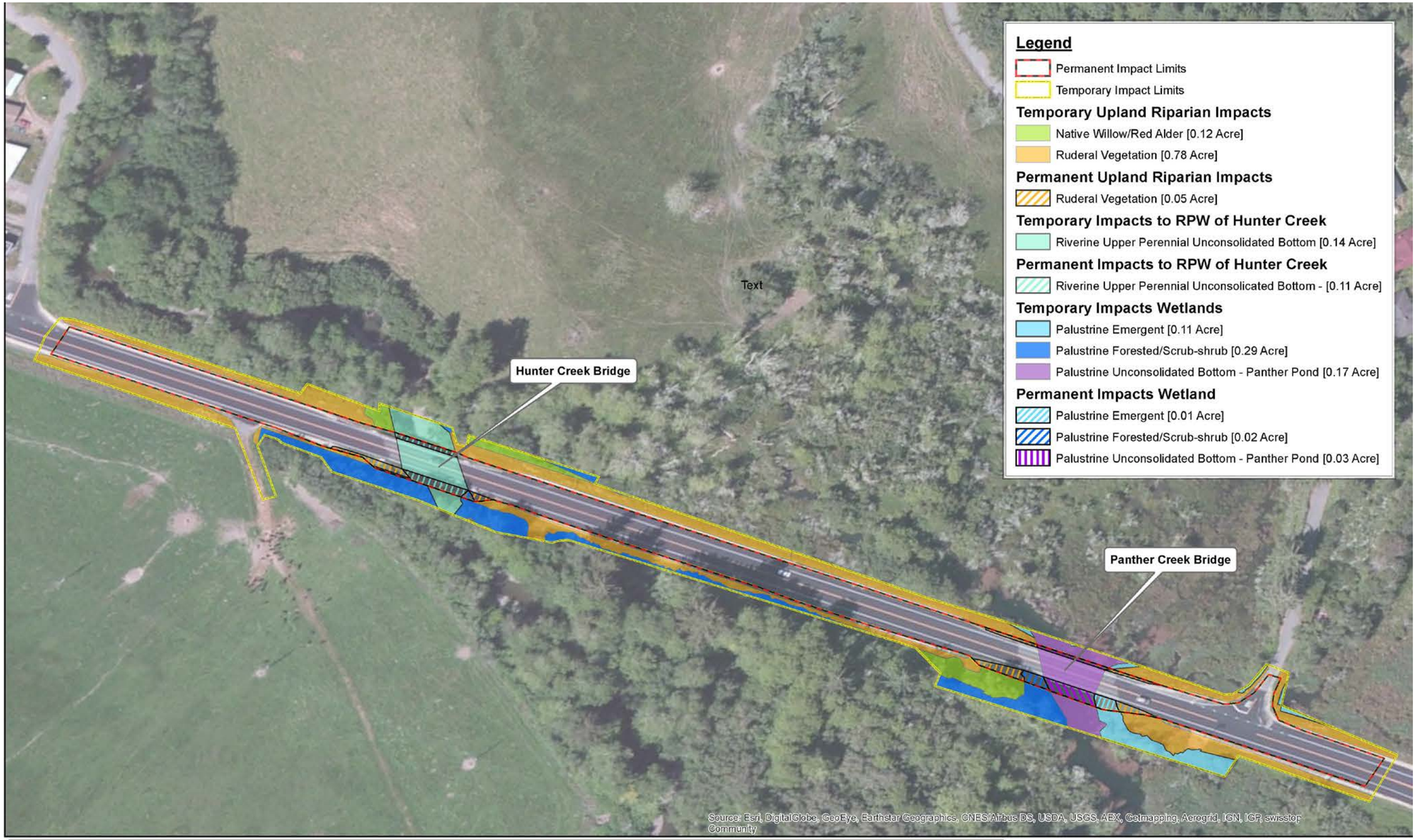

Figure 2 -2 Wetland and Riparian Impacts - Hunter and Panther Creek Bridges Seismic Restoration Project

0 37.5 75 150 225 300 Feet

Figure 2—2. Wetland and Riparian Impacts – Hunter and Panther Creek Bridges Seismic Restoration Project

2.2.2 Wetland and Other Waters

Regulatory Setting

Federal and State Laws and Requirements

Clean Water Act

The federal Clean Water Act (CWA) of 1972 is the basic federal law that addresses surface water quality control and protection of beneficial uses of water. The purpose of the CWA is to provide guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters through prevention and elimination of pollution. The CWA applies to discharges of pollutants into waters of the U.S. The CWA establishes a framework for regulating stormwater discharges from municipal, industrial, and construction activities under National Pollution Discharge Elimination System (NPDES) regulations. In California, the State Water Resource Control Board (SWRCB) administers the NPDES program.

CWA Section 402(p) establishes performance standards for discharges from municipal separate storm sewer systems (MS4s). CWA Section 402(p)(3)(B) requires that NPDES permit holders implement controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system design and engineering methods. The SWRCB implements the Caltrans NPDES permit and other water quality programs of the State by regulating point-source discharges to land and surface waters in order to protect beneficial uses. To comply with the CWA water quality regulations, the SWRCB and nine Regional Water Quality Control Board (RWQCBs) in California administer the NPDES permit program and require permits for discharges that have the potential to impact water quality. Caltrans MS4 NPDES permit (Order No. 2012-011-DWQ) was adopted in July 2013 by the SWRCB and regulates stormwater discharges, and permitted non-stormwater discharges, from all Caltrans highways, facilities, and right of way.

The Water Quality Control Plan for the North Coast Region (Basin Plan) sets forth water quality standards and water quality objectives for surface water and groundwater of the Klamath River and North Coastal basins (North Coast RWQCB 2011). The plan designates beneficial uses for water bodies and establishes water quality objectives (WQOs), waste discharge prohibitions, and other implementation measures to protect those beneficial uses. State water quality standards also include an Anti-degradation Policy for the protection of beneficial uses. Water quality control measures include total maximum daily loads (TMDLs), which are often, but not always, adopted as Basin Plan amendments. Stormwater discharges from Caltrans Right of Way are

required to meet water quality criteria established in the North Coast RWQCB Basin Plan, in accordance with Caltrans MS4 NPDES Permit.

Every applicant for a federal permit or license for any activity that may result in a discharge of dredge or fill material to waters of the U.S. must obtain a CWA Section 401 Water Quality Certification 401. The proposed project is within North Coast RWQCB jurisdiction. The proposed project would be required to obtain a 401 Certification from the North Coast RWQCB.

CWA Section 404

Under CWA Section 404, a permit program administered by USACE regulates discharge of dredged or fill materials into waters of the U.S., including traditional navigable waters, interstate waters, and impoundments of jurisdictional waters that are jurisdictional by rule. There are two additional types, 'tributaries' and 'adjacent' waters, that are also jurisdictional by rule. 'Adjacent' waters are defined as (EPA 2015):

1. Waters located in whole or part within 100 feet of the OHWM of a traditional navigable water, interstate water, territorial sea, an impoundment of a jurisdictional water, or a tributary, as defined by rule.

2. Waters located in whole or in part in the 100-year floodplain and that are within 1,500 feet of the OHWM of a traditional navigable water.

All four types of waters are present within the project area and subject to CWA Section 404 regulations and permitting. The proposed project is within the USACE San Francisco District regulatory consultation boundary.

Statewide Construction General Permit

Caltrans MS4 NPDES Permit (Order 2012-0011-DWQ) does not regulate discharges from Caltrans construction activities, including construction dewatering effluent discharges. Caltrans construction projects that disturb one or more acres of soil, or less than one acre but are part of a larger common plan of development that disturbs one or more acres, must obtain coverage under the SWRCB's Order 2009-0009-DWQ (as amended by Orders 2010-0014-DWQ and 2012-0006-DWQ), the Construction General Permit (SWRCB 2009). Construction demolition activities are also subject to this permit and include clearing, grading, grubbing, excavation, or any other activity that results in a land disturbance equal to or greater than one acre.

Permit applicants are required to submit a Notice of Intent (NOI) to the SWRCB and prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify construction BMPs to be implemented as measures to reduce construction impacts on receiving water quality based on potential pollutants and pollutant sources. The SWPPP also must describe post construction BMPs to reduce pollutants in stormwater discharges after all construction phases are completed at a work site (post construction BMPs). The project must demonstrate that all areas disturbed by construction are stabilized prior to requesting that coverage under the Construction General Permit (CGP) be terminated. Caltrans would request a Notice of Termination (NOT) of coverage under the CGP once the project has attained at least 70 percent stabilization of all disturbed areas.

The Construction General Permit (CGP) includes a risk-level assessment for construction sites, a stormwater effluent monitoring and reporting program, rain event action plans, and numeric action levels for pH and turbidity. The CGP requires all dischargers to conduct visual monitoring of non-storm, pre-storm, and post-storm conditions during construction.

Dewatering and Other Low-Threat Discharges

Caltrans MS4 NPDES Permit, Section B (Non-Stormwater Discharge Prohibitions), provision B.1 prohibits non-stormwater discharges unless the following conditions are met:

1. Discharges are authorized by a separate NPDES permit, or
2. Discharges are conditionally exempt in accordance with Section B.2 of the Caltrans NPDES Permit.

Section B.2 describes conditionally exempt non-stormwater discharges, including but not limited to diverted stream flows, rising groundwaters, uncontaminated groundwater infiltration, springs, and flows from riparian habitats and wetlands. However, Section B.3 acknowledges that the Regional Water Quality Control Boards (RWQCBs) may issue separate dewatering and/or de minimis permits for some or all of the non-stormwater discharges described in Section B.2 of Caltrans MS4 Permit. Caltrans is required to comply with separate NPDES discharge permits adopted by the RWQCBs for non-stormwater discharges that are not authorized by Caltrans' MS4 NPDES Permit. The North Coast Region Basin Plan (North Coast RWQCB 2011) describes an Implementation Plan intended to meet WQOs and protect beneficial uses, including an Action Plan for low threat discharges and stormwater discharges.

Low-threat discharges are defined as a planned discharge that is short term and/or of reduced volume from a definable project that results in a point source discharge to surface waters that would pose a low threat to water quality and beneficial uses without dilution when conducted

and managed properly. Low-threat point source discharges may be permitted to surface waters and may be exempted from the Basin Plan seasonal and year-round point source discharge prohibition, provided they are approved by the North Coast RWQCB and that the following conditions are met:

1. The discharge does not adversely affect the beneficial uses of the receiving water or cause a condition of nuisance.

2. The discharge complies with all applicable WQOs.

3. Best practicable treatment or control of the discharge is implemented to ensure pollution and nuisance would not occur, and the highest water quality consistent with maximum benefit to the people of the State would be maintained.

4. The discharge is necessary because no feasible alternative to the discharge (e.g., reclamation, evaporation, infiltration, and discharge to a sanitary sewer system) is available.

5. The discharge is limited to that increment of wastewater that remains after implementation of all reasonable alternatives for reclamation or disposal.

The project would be required to implement a North Coast RWQCB-approved Construction Dewatering BMP Plan to manage construction dewatering operations and groundwater from excavations. The BMP Construction Dewatering Plan would document and describe existing and proposed non-stormwater discharges and the types of BMPs that would be implemented to eliminate and/or reduce potential water quality impacts to receiving waters. Caltrans' contract specifications would require the preparation and approval of a dewatering discharge plan by Caltrans and the North Coast RWQCB. This plan would also be in conformance with the Caltrans Field Guide to Construction Site Dewatering (CTSW-OT-14-314.08.1).

Affected Environment

Two previous wetland delineations were performed in the project area in conjunction with the KGR Project. The first was conducted in October and November 2005 by Jack Miller, Kelly Garrett and Linda Evans of Caltrans. The second was conducted in March 2009 by ICF Jones & Stokes biologists Robert Preston Ph.D., Margaret Widdowson, Ph.D., and John Holson, and regulatory specialists Jonathan Foster and Bill Patterson of the Yurok Tribe. The data from these studies was field reviewed and confirmed in May of 2015 by Gail Popham and Tamara (Camper) Dart of Caltrans, with a final wetland report completed in June 2016. A preliminary jurisdictional determination is pending review by USACE.

The delineations were performed in accordance with methods described in *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987), and updated using *The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (J. S. Wakeley, 2010). This methodology relies on a three-parameter approach in which criteria for hydrophytic vegetation, hydric soils, and wetland hydrology must each be met to conclude that an area qualifies as a wetland. The boundaries of other waters of the U.S. were delineated at the OHWM in accordance with 33 CFR 328.3 and USACE Regulatory Guidance Letter 05-05 (U.S. Army Corps of Engineers, 2005) .

Potential jurisdictional waters of the U. S. documented within the study area include seasonally flooded Palustrine Forested and/or Scrub-shrub Broad-leaved Deciduous Wetland, seasonally flooded Palustrine Emergent Persistent Wetland, permanently flooded Palustrine Unconsolidated Bottom Wetland (i.e., Panther Creek Pond), and permanently flooded Riverine Upper Perennial Unconsolidated Bottom (i.e., relatively permanent waters of Hunter Creek). All adjacent vegetated uplands within the BSA are considered riparian, regardless of species composition or origin, owing to their connectivity to the project area waters and relative functional values for improving water quality and habitat for aquatic species. The distribution of jurisdictional habitat within the study limits for the proposed project is depicted in the NES. Wetland and/or riparian habitat extend beyond the study boundaries.

Environmental Consequences

No-Build Alternative:

The existing condition would remain; therefore, no impact would occur.

Build Alternative:

Direct and Indirect Impacts

Permanent impacts refer to impacts that permanently remove a resource (e.g., paving a wetland). Temporary impacts refer to those areas that would be restored on-site and in-kind upon completion of construction (e.g., a temporary road that is created through a riparian area for construction access). If a temporary impact continues for an extended period of time (e.g., two years or more), then the temporary impact might be considered a permanent impact by the administering agencies. In these cases, the administering agencies may require mitigation ratios that exceed one to one (1:1). These ratios are determined by the administering agencies during the permitting phase of the project (e.g., after finalization of this document).

The proposed project would have temporary and permanent impacts to jurisdictional waters of the U.S. and State. It is unknown at this time whether any of the temporary impacts would be considered permanent. The following paragraphs describe potential impacts associated with Wetlands, Relatively Permanent Waters (RPW), and Upland Riparian Vegetation. The potential acreage impacts are also identified in Tables 2–4 and 2–5.

Wetlands

Permanent and temporary wetland impacts would occur at Hunter Creek where 0.22 acre of wetland soil and vegetation (willow/alder habitat) would be disturbed on the banks of the channel (above OHWM) for construction of the bridge abutments. Most of this habitat (0.21 acre) would be restored to pre-existing conditions once the abutments are constructed[20]. Similarly, construction of the bridge abutments at Panther Creek would affect 0.21 acre of wetland soils and vegetation, comprising willow/alder habitat and herbaceous emergent vegetation, on the banks of the channel above OHWM. Approximately 0.19 acre of this habitat would be restored to pre-existing conditions once the abutments are constructed (Figure 2–2).

In addition, an estimated 0.17 acre of perennial flooded wetland and open water habitat in Panther Creek may be affected by temporary shading from the debris containment system and new bridge structure (prior to full replacement), and minor turbidity associated with removal of the existing bridge piles (Figure 2-2).

Removing the “Raymond can” concrete piles in Panther Creek would likely result in additional channel substrate (assuming piles were broken off below the soil level in the creek). The new Panther Creek Bridge would permanently shade an additional 0.05 acre of wetland and open water habitat in Panther Creek as compared to the existing bridge.

Relatively Permanent Waters

There would be temporary impacts to 0.14 acre of dry stream channel (RPW classified as Riverine Upper Perennial Unconsolidated Bottom) at Hunter Creek attributed to the disturbed soil area (DSA) associated with access and construction for the bridge pier and possible temporary stream diversion. All stream channel work within Hunter Creek would be completed within one construction season (June 15 to October 15). If a second year of construction were needed, stream diversion, if used, would be removed between project seasons (Figure 2–2).

[20] *The bridge abutments are expected to take one construction season to complete, but could take longer depending on the approach used.*

The only anticipated permanent impact to RPW and adjacent wetlands at Hunter Creek would be associated with a small increase in channel shading from the wider bridge configuration, estimated at 0.03 acre (Figure 2-3). Habitat would likely be created due to the removal of the two existing piers within Hunter Creek (only one pier would be installed for the new bridge).

Upland Riparian Vegetation

The proposed project would have both temporary and permanent effects to 0.95 acre of upland riparian vegetation located adjacent to project area waters. Most of this vegetation (0.83 acre) represents ruderal roadside vegetation that serves mainly to filter stormwater runoff and stabilize soil. The remaining 0.12 acre represents the native forest/shrub community that offers relatively higher riparian functional value owing to its greater structural complexity and proximity to project watercourses (section 2.2.1, Natural Communities and Figure 2-2).

Table 2—4. Summary of Impacts to Waters of the U.S. and State and Associated Riparian Vegetation

Location	Upland Riparian Impacts		Wetland Impacts		RPW Impacts	
	Temporary[1] acre (ft^2)	Permanent[2] acre (ft^2)	Temporary[1] acre (ft^2)	Permanent[3] acre (ft^2)	Temporary[4] acre (ft^2)	Permanent[5] acre (ft^2)
Hunter Creek	0.49 (21,344)	0.02 (871)	0.21 (9,148)	0.01 (436)	0.14 (6,098)	0.03 (1,307)
Panther Creek	0.41 (17,860)	0.03 (1,307)	0.36 (15,682)	0.05 (2,178)	N/A	N/A
Total	**0.90 (39,204)**	**0.05 (2,178)**	**0.57 (24,829)**	**0.06 (2,614)**	**0.14 (6,098)**	**0.03 (1,307)**

[1]Refers to those areas that would be restored on-site upon completion of construction; may or may not require additional compensatory mitigation depending on temporal loss of function. Also includes temporary impacts to PUB wetlands in Panther Creek from short-term and localized increases in turbidity during pile removal.

[2]Refers to ruderal roadside vegetation permanently displaced by proposed construction.

[3] Refers to wetland areas permanently displaced by proposed construction that, in part, may require compensatory (off-site) mitigation. Also may include minor, permanent increase in channel shading due to new bridges.

[4]Associated with short-term ground disturbance, turbidity, and possible stream diversion at Hunter Creek.

[5]Associated with permanent increase in channel shading due to wider bridge configurations at Hunter Creek.

Table 2—5. Approximate Impacts to Waters of the U.S. and State and Associated Riparian Vegetation by Type and Community

Wetland[1] / Community[2]	Approximate Impact acre (ft^2)				
	Hunter Creek (Temp)	**Hunter Creek (Perm)**	**Panther Creek (Temp)**	**Panther Creek (Perm)**	**Total by Type**
PEM1C (mixed composition)	0	0	0.11 (4,792)	0.01 (436)	**0.12 (5,228)**
PFO/SS1C (red alder forest/ arroyo willow thicket)	0.21 (9,148)	0.01 (436)	0.08 (3,485)	0.01 (436)	**0.31 (13,504)**
PUBH (pondweed/yellow pond lily and open water of Panther Creek)	0	0	0.17 (7,405)	0.03 (1,307)	**0.20 (8,712)**
R2UBH Relatively Permanent Water (Hunter Creek)	0.14 (6,098)	0.03 (1,307)	N/A	N/A	**0.17 (7,405)**
Total Wetland Impacts by Location	**0.35 (15,246)**	**0.04 (1,742)**	**0.36 (15,682)**	**0.05 (2,178)**	**0.80 (34,848)**
Upland Riparian (red alder forest/ arroyo willow thicket)	0.07 (3,049)	0	0.05 (2,178)	0	**0.12 (5,227)**
Upland Riparian (ruderal roadside vegetation)	0.44 (19,166)	0.02 (871)	0.34 (14,810)	0.03 (1,307)	**0.83 (36,155)**
Total Riparian Impacts by Location	**0.51 (22,216)**	**0.02 (871)**	**0.39 (16,988)**	**0.03 (1,307)**	**0.95 (41,382)**

[1]Cowardin Codes:

PEM1C = Palustrine Emergent Persistent Seasonally Flooded Wetland

PFO/SS1C = Palustrine Forested and/or Scrub-shrub Broad-leaved Deciduous Seasonally Flooded Wetland

PUBH = Palustrine Unconsolidated Bottom Permanently Flooded

R2UBH = Riverine Upper Perennial Unconsolidated Bottom Permanently Flooded

[2]A Manual of California Vegetation Community Alliance (Sawyer et al. 2009)

As described in section 2.2.1, the small amount of wetland and riparian vegetation potentially impacted by the proposed project does not provide important habitat for sensitive flora or fauna. It occurs in close proximity to the existing bridges where it is subject to periodic disturbance from bridge maintenance and recreational activities (e.g., fishing) and ongoing noise and visual impacts from the highway. Much of it is substantially degraded by encroachment of invasive plants. Removal of this vegetation would not have a significant impact on the quality or function of the wetland system, affect wildlife corridors, or result in fragmentation of essential fish habitat. Short-term and localized increases in turbidity would not be substantial enough to hinder growth of emergent vegetation in Panther Creek or on the banks of either watercourse.

Cumulative Impacts

Given the scale of potential effects and the proposed measures to offset these effects, the proposed project would not be expected to have a cumulative impact on jurisdictional waters or riparian habitat.

CEQA Considerations

Based on the following, a "less than significant impact" determination for the build alternative was made with respect to wetlands, relatively permanent waters, and riparian habitat.

1) The small amount of wetland, relatively permanent waters, and riparian habitat potentially affected.
2) The habitat is located adjacent to the highway and bridges (where it is subject to periodic disturbance from maintenance and recreational activities [e.g., fishing]).
3) The habitat is substantially degraded by invasive species.
4) Any increase in turbidity would be short-term.
5) Vegetation disturbance would not have a substantial effect on the quality or function of the wetland system, affect wildlife corridors, or result in fragmentation of essential fish habitat.
6) Permanent fill would be removed from Hunter Creek (e.g., the existing bridge has two piers and the new bridge would have one).
7) Permanent fill would be removed from Panther Creek (the existing bridge has two piers rows and the new bridge would have none).

Given the No-Build alternative would not alter the environment, a "no impact" determination was made for this alternative.

Mitigation Measures

Mitigation measures would not be anticipated to be required; however, per CEQA (14 CCR § 15126.4(a)(3)), mitigation measures may be adopted, but are not required, for environmental impacts that are not found to be significant.

As discussed in the Standard Measures section (Section 1.7), all disturbed soil areas would be restored through invasive weed removal and by replanting with native vegetation. While these measures may adequately offset any potential effects, Caltrans anticipates pursuing off-site restoration (mitigation). If off-site restoration were implemented, the appropriate measures would be identified and coordinated through the Yurok Tribe, CDFW, and any other administering agencies. If it is determined through this coordination that off-site restoration would not be necessary, then these efforts would not be pursued. Initial coordination with the Yurok Tribe indicated that, as a mitigation measure, they would support removal of invasive reed canary grass (*Phalaris arundinaceae*) which is continuing to encroach on Panther Creek Pond.

2.2.3 Threatened and Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the FESA: 16 USC Section 1531, et seq. See also 50 CFR Part 402. This act, and later amendments, provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under section 7 of this act, federal agencies, such as the FHWA, are required to consult with the USFWS and NMFS to ensure they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, 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, a Letter of Concurrence, and/or documentation of a No Effect finding. 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 2081 of the 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 Fish and Game Code as "hunt, pursue, catch, capture, 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 the CDFW. For species listed under both the FESA and CESA requiring a Biological Opinion under section 7 of the FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

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

Affected Environment

Several species that are either federally or state listed, or proposed for listing, are present or occupy habitat located in the BSA (Table 2-6). The project area watercourses provide habitat for the state-threatened longfin smelt (*Spirinchus thaleichthys*), the federally-threatened Southern DPS of eulachon (*Thaleichthys pacificus*), and the federally/state-threatened SONCC ESU of coho salmon (*Oncorhynchus kisutch*). They also represent essential fish habitat (EFH) for Pacific salmon, namely SONCC coho salmon and Chinook salmon. While not specifically documented within the project area to date, the willow-dominated forested wetlands provide suitable habitat for the state-threatened willow flycatcher (*Empidonax traillii brewsteri*).

The project area does not support suitable habitat for the federally threatened marbled murrelet (*Brachyramphus marmoratus*), northern spotted owl (*Strix occidentalis caurina*), western snowy plover (*Charadrius nivosus ssp. nivosus*), yellow-billed cuckoo (*Coccyzus americanus*), or North American green sturgeon *(Acipenser medirostris)*; the federally endangered tidewater goby *(Eucyclogobius newberryi*); state endangered bald eagle (*Haliaeetus leucocephalus*); state candidate endangered Humboldt marten *(Martes caurina humboldtensis)*; or the federally proposed threatened fisher (*Martes pennanti*). The project is not within range of potential noise disturbance to the closest suitable habitat for any of these species. While the watercourses provide suitable breeding habitat for longfin smelt and eulachon, these species would not be present during the in-stream work period. No federal/state-listed or otherwise special status plants have been documented within the project area; however potentially suitable habitat is present for western lily *(Lilium occidentale*), which is both state and federally endangered.

Table 2—6. Threatened or Endangered Species Potentially Occurring or Known to Occur in the Project Area

Scientific Name Common Name	Status[1]	Rationale
Empidonax traillii little willow flycatcher	ST	Known from the project region (CNDDB), and suitable habitat is present; however, protocol-level surveys have not documented this species within or adjacent to the BSA to date.
Oncorhynchus kisutch coho salmon (Southern Oregon/Northern California ESU)	FT/ST CH/EFH	In Klamath River and adjoining tributaries. Documented within Hunter Creek and Panther Creek by YTFP. Watercourses within BSA provide EFH, but critical habitat does not occur since the BSA is on tribal land.
Oncorhynchus tshawytscha Chinook salmon (Upper Klamath/Trinity River ESU) (Southern Oregon/ Northern California ESU)	EFH	In Klamath River and adjoining tributaries. Documented within Hunter Creek and Panther Creek by YTFP. Watercourses within BSA provide EFH.
Spirinchus thaleichthys longfin smelt	FC/ST SSC	Inhabit open waters of bays and spawn in estuaries in fresh or slightly brackish water where they deposit their eggs on sand, gravel, cobble, or plant substrates at the bottom of deep channel habitats. Most spawning occurs between January and March. During summer months, longfin smelt migrate to nearshore marine habitats.
Thaleichthys pacificus eulachon (Southern DPS)	FT CH	Spawn from mid-winter through late spring in the lower reaches of coastal rivers with moderate water velocities and substrates with pea-sized gravel, sand and woody debris. Eggs hatch in 20 to 40 days and the larvae are carried downstream to be dispersed by estuarine and ocean currents shortly after hatching. Prior to spawning, they spend their adult lives in saltwater. There is no designated critical habitat on tribal lands.
Lilium occidentale western lily	FE/SE	Suitable habitat is present but species was not found during focused botanical surveys.

[1]Status: Federal Endangered [FE]; Federal Threatened [FT]; Federal Candidate [FC]; Critical Habitat [CH]; Essential Fish Habitat [EFH]; State Endangered [SE]; State Threatened [ST]; California Species of Special Concern [SSC]

Discussion of Little Willow Flycatcher (*Empidonax traillii brewsteri*)

Little willow flycatcher (WIFL) is state endangered and a USFWS Bird of Conservation Concern due to population decline. Willow flycatchers were once considered abundant in the inland valleys and coastal regions of central and northern California, occupying willow dominated riparian/meadow communities. However, in the past five or six decades, breeding populations have been lost from lower elevation riparian areas in the state. Willow flycatchers (*E. t. brewsteri* and *E. t. adastus*)[21] are currently known to occupy less than 100 sites in riparian areas throughout central and northern California, and the breeding population is estimated at only 400 individuals.

The little willow flycatcher occurs annually both as a spring and fall migrant and casual summer resident and breeder in northwestern California. They are late spring migrants, appearing along the coast in May-June and in August-September. They are locally rare to uncommon in June-July. Breeding habitat is typically moist meadows with perennial streams; lowland riparian woodlands dominated by willow (primarily in tree form) and cottonwoods; or smaller spring-fed or boggy areas with willow or alder. In lowland riverine habitats, such as those found within the project area, it is thought that contiguous willow thickets are used because the linear nature of these areas provide sufficient edge habitat and/or the tree-like willows typically found in these areas provide sufficient openings within the canopy.

Many apparent migrants have been banded along the Klamath River in June and August/September. Apparent or proven breeders occur widely in the region, with at least one confirmed and several probable/possible records in Humboldt County. Breeding of WIFL in Del Norte County has not been confirmed, but on June 20 and June 23, 2009, Caltrans biologists observed a single male WIFL singing during the breeding season at the Resighini Rancheria campground southeast of the US 101 Klamath River Bridge, about two miles south of the Hunter/Panther Creek bridges. These detections were documented as territorial behavior on site during the survey year, verifying the presence of suitable breeding habitat and probable breeding.

Potential breeding habitat for WIFL occurs on both sides of the highway throughout the Hunter Creek and Panther Creek Bridge Replacement Project area. Protocol surveys were performed under the direction of Caltrans and in consultation with CDFW for the Klamath Grade Raise Project in 2007 and 2009. All potential breeding habitat that might have been affected by the

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[21] Empidonax traillii adastus is an eastern nominate subspecies of the willow flycatcher that breeds east of the Sierra/Cascade axis, from the Oregon border into Modoc County and possibly Inyo County. A third subspecies, southwestern willow flycatcher (E. t. extimus), occurs in southern California and is both state and federally endangered. Only E. t. brewsteri (little willow flycatcher) is within range of the Hunter/Panther Bridge Replacement Project.

former proposed grade raise project was surveyed, including habitat within and adjacent to the Hunter and Panther Creek bridges. No willow flycatchers were observed.

Given the presence of suitable habitat and potential for future site utilization, additional protocol willow flycatcher surveys would be conducted each year prior to construction to document habitat usage and nesting status.

Discussion of Coho Salmon (*Oncorhynchus kisutch*), Southern Oregon/Northern California Coast ESU

The SONCC coho salmon ESU includes all naturally spawned populations of coho in coastal streams between Cape Blanco, Oregon, and Punta Gorda, California, as well as salmon produced by three artificial propagation programs: the Cole River Hatchery near the Rogue River in Oregon, and the Trinity River and Iron Gate (Klamath River) hatcheries in California.

NMFS published its final decision to list the SONCC ESU of coho salmon as threatened under the ESA on May 6, 1997 (62 FR 24588); a status that was reaffirmed on August 15, 2011 (76 FR 50447). The listing initiated the development of a recovery plan for the ESU that includes delisting goals. The final recovery plan for the SONCC coho was published by NMFS in 2014. Caltrans anticipates formal section 7 consultation with NMFS to address potential impacts to SONCC coho from the proposed project. SONCC coho salmon are also listed as Threatened in the State of California; therefore, a consistency determination or incidental take permit with CDFW would also be required.

Critical habitat for the SONCC coho salmon was designated in 1999 (64 FR 24049) as encompassing accessible reaches of all rivers (including estuarine areas and tributaries) between the Mattole River in California and the Elk River in Oregon. It includes all waterways, substrate, and adjacent riparian zones below longstanding, naturally impassable barriers, but excludes 1) areas above specific dams, 2) areas above longstanding, naturally impassible barriers, and 3) tribal lands. The proposed Hunter Creek and Panther Creek Bridge Replacement Project is within the Yurok Tribe Reservation; therefore, the waterways and adjacent riparian habitat are not designated critical habitat for SONCC coho. The waters within the project area are, however, Essential Fish Habitat (EFH) for coho salmon, as designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). EFH refers to those waters and substrates necessary for the spawning, breeding, feeding, or growth to maturity.

Coho salmon have a wide distribution throughout the Lower Klamath, but occur mostly in low abundance. Hunter Creek supports anadromous populations of coho, and lower Hunter Creek and Panther Creek provide critical rearing and staging habitat for non-natal coho migrating through

the estuary. Panther Creek likely does not support spawning populations of anadromous salmon or trout given the lack of spawning gravels. Both tributaries are considered to have high intrinsic potential for supporting coho, which are expected to occur year-round.

Fish surveys, habitat typing, and water quality monitoring were conducted within tributary and wetland habitats potentially impacted by the former KGR Project, including Hunter Creek and Panther Creek. The studies were performed during the summer and fall of 2009, and the summer of 2010 through winter of 2011 by the YTFP to assess fish abundance and use of these habitats during the typical construction season. Monthly mark-recapture surveys were performed in Spruce Creek, Salt Creek Marsh, and Panther Creek Pond to generate population estimates for juvenile coho salmon and trout species. Additional fish surveys (snorkel surveys) were conducted in lower Hunter Creek, the Hunter Road wetland, and the Arbor Glen wetland to assess fish presence and document temporal trends of target species. Even though this is the coho section, in order to provide a clear and concise description of the fish that might be present within Hunter and Panther creeks, the fish discussion presented below includes SONCC coho salmon, Chinook Salmon, and trout. Where relevant, this section will be referenced in other sections that discuss fish (e.g., Chinook salmon and trout).

Hunter Creek

Repeat snorkel inventories conducted in a 387-meter (1,270-foot) reach of lower Hunter Creek during summer 2009 revealed the presence of juvenile coho and Chinook salmon, coastal cutthroat, and steelhead. Survey results are summarized in Table 2–7.

Table 2—7. Summary of 2009 Hunter Creek Snorkel Surveys

Species	5/13/09	6/24/09	7/29/09	8/25/09	9/30/09
Coho Salmon (1+)	2	1	0	0	0
Coho Salmon (0+)	1	2	2	1	2
Steelhead	105	135	178	141	144
Coastal Cutthroat Trout	2	1	2	1	0
Chinook Salmon	0	2	0	0	0

Based on the 2009 data and discussions with Caltrans and resource agencies, the 2010 Hunter Creek Inventory reach was confined to a 49-meter (160-foot) long reach of habitat located from just downstream and upstream of the Hunter Creek Bridge. For each survey, the diver employed a three-pass snorkel methodology[1] and population estimates by species and age class were made for each habitat unit using general bounded count methods. The 2010 population estimates are summarized in Table 2–8.

Table 2—8. Summary of 2010 Hunter Creek Snorkel Surveys

Species	8/5/10	9/21/10	10/22/10
Coho Salmon (0+)	**1**	**0**	**0**
Steelhead Trout (1+)	**14**	**9**	**8**
Coastal Cutthroat (1+)	**12**	**6**	**3**
Coastal Cutthroat (2+)	**9**	**6**	**2**
Unknown Trout (0+)	**13**	**10**	**8**

Reducing the length of the Hunter Creek inventory reach in 2010 made comparing the two years difficult. The major difference between the two years was reduced observations of both salmon and trout near the bridge and a general loss of habitat complexity in 2010. A sediment wave or "slug" appeared to have migrated into the study reach during the winter of 2009/2010, which resulted in the filling of pools and loss of undercut banks. Both surveys indicate this area of lower Hunter Creek provides valuable juvenile rearing habitat to variable numbers of native salmon and trout during summer to early fall. Many of the Lower Klamath tributaries experience prolonged periods of subsurface flows during this period which makes summer rearing habitat in the sub-basin critically valuable to both natal and non-natal salmonids (as cited in Silloway and Beesley, 2011).

[1] In 2009, when flows allowed, habitat units were snorkeled by two divers (one pass each) and a consensus was made on observed fish numbers and species. During low flow periods, shallow pools were snorkeled by one diver.

Panther Creek

Mark-recapture fish surveys were performed throughout the available habitat in Panther Creek. Population estimates in 2009 during June and July were relatively constant for coho, with estimates around 100 fish. By August, coho populations dropped significantly with no recaptures. Trout populations dropped significantly from 123 fish in June to 40 fish in July.

By September 1, all salmonid numbers dropped to zero. In 2010, coho population estimates from Panther Creek were 16 fish during the month of July and 5 fish during September. These estimates were low compared to estimates generated during the summers of 2009 and 2011. In June 2011, YTFP estimated a population of 329 yearling coho salmon residing in Panther Creek. Too few young-of-year (YOY) coho salmon were captured during the June 2011 survey to generate a population estimate. Trout population estimates in 2010 were 49 fish during the month of July and 94 fish in the month of September. Data collected since 2009 indicates a majority of the juvenile coho captured in Panther Creek during summer–early fall are age 1+ fish. The dominant trout species captured in Panther Creek were 1+ coastal cutthroat trout. Winter trapping events in 2011 in Panther Creek yielded juvenile population estimates of 651 coho salmon and 240 trout (mostly cutthroat). The survey results are summarized in Table 2–9.

Table 2—8. Fish Population Estimates in Panther Creek (2009-2010)

Species	2009					2010		2011	
	June	July	Aug	Sept	Oct	July	Sept	Jan	June
Coho salmon[1]	102	101	24	0	0	16	5	651	329
Trout[2]	123	40	34	0	0	49	94	240	290

[1]Majority were juvenile 1+ fish

[2]Cutthroat and steelhead data were lumped together to better facilitate population estimation. Majority of fish captured were 1+ coastal cutthroat trout.

The YTFP has continued to conduct mark-recapture surveys in Panther Creek annually since 2011 to assess population abundance of juvenile salmonids. This data is considered provisional but has been made available for use to Caltrans and NMFS. It is provided in Table 2–10.

Table 2—9. Provisional Abundance Estimates for Panther Creek Coho Salmon

Date	Population Estimate	95% Confidence Interval
Jan-09	415	534
Mar-09	890	659
May-09	102	46
Jul-09	100	28
Aug-09	26	29
Sep-09	0	(was not indicated)
Mar-10	360	246
Jul-10	17	17
Sep-10	17	19
Jan-11	653	120
Jun-11	335	24
Feb-12	1120	413
Jul-12	265	46
Mar-13	637	274
Jul-13	90	43
Mar-14	262	141
Aug-14	112	43
Mar-15	568	(was not indicated)
Jul-15	681	60

Survey data indicates juvenile coho appear to use a majority of the available habitat during both summer and winter, with most use occurring during the winter months. Coho population estimates during the summer months varied widely from year to year, from a low of 17 individuals in July 2010 to as many as 681 individuals in July 2015. These differences, in part, may be attributed to the relative strength or weakness of a given brood year and/or annual variation in springtime precipitation and stream flows experienced in the Lower Klamath region, which are thought to influence migration timing, and possibly the detectability of tagged fish (during normal or wet years) by station antennas.

While more information is needed, YTFP suggests that data collected during summer months in Panther Creek indicates juvenile salmonids migrate into lower Panther Creek from Hunter Creek for short periods before heading back downstream (YTFP in progress). Fish access into and out of the wetland complex of Panther Creek during summer is questionable due to low flow levels, extensive

colonization of the outlet channels by aquatic and invasive vegetation, and the presence of a beaver dam.

Discussion of Chinook Salmon *(Oncorhynchus tshawytscha)*

Within the project limits, Chinook salmon is not a Federally listed ESU (this is discussed in more detail in the next paragraph); however, the Klamath River and its adjoining tributaries support EFH for species regulated under the Federal Pacific Coast Salmon Fishery Management Plan. This includes Chinook salmon and coho salmon. Elements of EFH for Chinook salmon are the same as those identified for coho salmon. Given this, Chinook salmon is included in the Threatened and Endangered Species section of the document.

The Klamath Basin supports two populations of Chinook salmon. Chinook that spawn upstream of the Klamath-Trinity confluence are composed of the Upper Klamath and Trinity River (UKTR) ESU. Populations downstream of the confluence are a component of the Southern Oregon and Northern California Coastal (SONCC) ESU. Neither of the ESUs are listed under the Federal or State Endangered Species Acts. The Klamath River Basin includes both fall-run and spring-runs of Chinook salmon, which continues to be the most abundant salmonids species present in the Klamath Basin and supports important commercial, recreational, and tribal fisheries.

YTFP documented few Chinook in Hunter Creek in 2009 (see the previous section on SONCC coho salmon for further details). In 2009, none were documented in Panther Creek but more recent survey data from 2012 through 2014 show that some non-natal juvenile Chinook rear in Panther Creek (pers. Comm. Jimmy Faulkner, YTFP).

Discussion of Longfin Smelt (*Spirinchus thaleichthys*)

The San Francisco Bay-Delta population of longfin smelt was petitioned for federal listing in 2008. On April 9, 2009, the USFWS announced a 12-month finding that the San Francisco Bay-Delta population of the longfin smelt does not meet the definition of a distinct population segment (DPS), as identified in their DPS policy (61FR 4721). As a result, listing the species as a DPS is not warranted. However, the USFWS is initiating a status assessment of the longfin smelt and soliciting information on the status of the species range-wide. In April 2009, longfin smelt was listed as threatened in the State of California.

Longfin smelt inhabit open waters of bays and spawn in estuaries in fresh or slightly brackish water where they deposit their eggs on sandy, gravel, cobble, or plant substrates at the bottom of deep channel habitats. Most spawning occurs between January and March and the eggs hatch in around 40

days. Larvae spend little time residing in the estuary and off-channel habitats before initiating migration to the ocean.

Focused surveys for longfin smelt have not been conducted for the proposed project. Salmonid surveys conducted by Yurok Tribal Fisheries in conjunction with the former KGR Project, and ongoing mark-recapture surveys conducted in Panther Creek since 2009 have not documented this species within the project area. Panther Creek does not likely provide suitable spawning habitat given the lack of gravel substrate. Hunter Creek may provide suitable spawning habitat.

Discussion of Pacific Eulachon (*Thaleichthys pacificus*), Southern Distinct Population Segment

The Southern DPS of Pacific eulachon is listed as federally threatened (75 FR 13012) with designated critical habitat (76 FR 65324). Eulachon is endemic to the eastern Pacific Ocean, ranging from northern California to southwest Alaska and into the southeastern Bering Sea. In California, eulachon have been documented in the Sacramento River, Russian River, Humboldt Bay and several nearby smaller coastal rivers (e.g., Mad River), and the Klamath River. In the Klamath River watershed, critical habitat extends from the mouth of the river upstream to the confluence with Omogar Creek. The project area is excluded from critical habitat designation because it occurs on tribal lands. Essential Fish Habitat (EFH) is not defined for this species because it is not a commercially managed fish.

Eulachon were, and still are, culturally and nutritionally important to many Native American tribes in northern California and the Pacific Northwest, including the Yurok (NMFS, 2010). In many areas, eulachon returned in the late winter and early spring when other food supplies were scarce and, for this reason, were known as savior or salvation fish (Boyd and Hajda 1987, Byram and Lewis 2001 as cited in NMFS 2010).

Eulachon spawn in fresh water from mid-winter through late spring. In northern California, spawning typically begins in late January and may continue as late as May (NMFS, 2010). Prior to spawning, they spend their adult lives (3 to 5 years) in saltwater. Most eulachon adults die after spawning. After eggs are fertilized in the water column, they sink to the river bottom and adhere to gravel and coarse sand. The eggs hatch in 20 to 40 days, and the larvae are carried downstream to be dispersed by estuarine and ocean currents shortly after hatching.

Focused surveys for Pacific eulachon have not been conducted for the proposed project. Salmonid surveys conducted by Yurok Tribal Fisheries in conjunction with the former KGR Project, and ongoing mark-recapture surveys conducted in Panther Creek since 2009, have not documented this species. Panther Creek does not likely provide suitable spawning habitat given the lack of gravel

substrate. There is potential spawning habitat within Hunter Creek. Hunter Creek may provide suitable spawning habitat.

Discussion of Western Lily *(Lilium occidentale)*

Western lily is federally and state listed as endangered. It is a perennial herb that grows from a bulb and produces crimson red flowers with yellow centers between June and July. It occurs in coastal areas between Coos Bay, Oregon and Eureka, California where it is associated with freshwater marshes, swamps, bogs, and fens in coastal scrub, coastal bluff scrub, coastal prairie, or North Coast coniferous forest habitats. It is typically found on well-drained, old beach washes overlain with wind-blown alluvium and organic topsoil; usually near margins of Sitka spruce at elevations ranging from 2-185 meters (CNDDB 2016). Threats to the species are primarily from development, hydrological modification from land use changes, and encroachment by trees and shrubs due to a lack of ecological disturbance such as fire and grazing (CDFW). The closest, and largest remaining population of western lily occurs at the Crescent City Marsh, approximately 15 miles north of the project site.

Seasonally appropriate floristic surveys were completed within the project area in 2015 and 2016 for western lily and other regionally occurring special status plants. While the project site may support suitable habitat for western lily, the species has not been found within the project area.

Environmental Consequences

No-Build Alternative:
The existing condition would remain; therefore, no impact would occur.

Build Alternative:

Little Willow Fly Catcher

Direct and Indirect Impacts

Direct effects to WIFL are not anticipated, as vegetation removal would occur outside the breeding/nesting season. Indirect effects may include the temporal loss of suitable habitat. Approximately 0.41 acre of forested/scrub-shrub wetland and upland riparian habitat potentially suitable for WIFL may be impacted by construction (Figure 2–2). However, this habitat is not highly suitable for nesting due to the close proximity of US 101 and associated disturbances.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, approximately 0.01 miles west of Highway 101), could also affect WIFL or WIFL habitat. However, impacts from the Requa Bridge Replacement Project would likely be similarly avoided through the inclusion of the standard nesting bird measures that are generally required by permitting agencies. Therefore, concurrent construction of both projects would not result in a cumulative impact to the species or its habitat. There are no other known projects located within the project vicinity that would have the potential to affect WIFL or WIFL habitat.

SONCC Coho Salmon

Direct and Indirect Impacts

Stream Diversion and Electrofishing

The temporary stream diversion at Hunter Creek may require fish capture and relocation using electrofishing. Electrofishing can harm individual fish, resulting in up to 3% mortality. The diversion itself would temporarily restrict the movement of rearing juvenile coho, potentially making them more vulnerable to stress and predation, but avoids the late fall-winter migration period for adult salmon that may pass through the project area to spawn and the majority of the spring-early summer smolt out-migration.

There would be no in-water work, stream diversion or fish relocation at Panther Creek.

Noise and Visual Disturbance

Construction and demolition activities at both bridge locations may cause behavioral responses to stress associated with noise and visual disturbance of juvenile coho present during the in-stream work period of June 15 to October 15. Physical changes to the water column caused by shading, use of artificial light at night, vibration from construction equipment and/or workers walking in or near the channels could disrupt feeding, delay migration, or flush fish from suitable habitat, potentially making them more vulnerable to predation.

Caltrans evaluated potential underwater noise levels generated by planned construction activities and determined the oscillation method for pile installation and use of a concrete saw for abutment removal for Panther Creek Bridge would not likely exceed currently adopted hydroacoustic noise thresholds known to cause injury to fish[22]. At Hunter Creek, given the creek would be diverted and fish would be relocated, pile driving and use of a hoe-ram or jackhammer would not be expected to result in exceedance of noise thresholds during pile installation and bridge demolition.

Removal of the bridge deck at Panther Creek may incorporate the use of a small hoe-ram and/or jackhammer. With this equipment, peak sound pressure levels are not expected to exceed the 206 dB noise threshold, but without abatement cumulative sound exposure levels (SEL) known to be injurious to fish could be reached, extending into the channel as far as 115 feet (35 meters) from the source. Noise levels would be monitored by a trained hydroacoustic specialist during all operations that have the potential to produce impulsive sound waves to identify when abatement is necessary. In order to stay below the cumulative SEL limit, a daily construction time limit (as determined by monitoring) may be required. The 150 dB threshold for eliciting behavioral responses in fish could extend across the entire pond, and up to 262 feet (80 meters) upstream and 328 feet (100 meters) downstream from the construction site. Construction activities that exceed the behavior noise threshold would not be abated given it would be infeasible to construct the project.

Potential effects to coho from noise and visual disturbance would likely be minor and short-term, and would not be expected to result in injury or mortality of fish. Exposure to individual fish is expected to be low, and those fish that are exposed would likely relocate to nearby suitable habitat upstream or downstream of the project sites. Upon cessation of work, it is anticipated that fish movement and access would return to pre-construction conditions.

Water Quality Impacts

Pollutants in highway runoff, or from construction operations, can result in the mobilization of sediment both during and after construction. Wetland fill encroachment, new impervious surface, and the removal of wetland and riparian vegetation all have the potential to impact water quality within the project area. However, as described below, the project is not anticipated to cause or contribute to the permanent violation of water quality standards or water quality objectives, nor would it affect the beneficial uses of downstream receiving waters.

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[22] The agreed upon FHWG criteria for injury to fish from impulsive sound waves, such as that caused by impact pile driving or hoe-ramming, occurs at sound pressure levels of 206 dB peak, and 187 dB SEL for salmonids weighing more than two grams. For juvenile fish weighing less than two grams, the criterion for the accumulated SEL is 183 dB. The 187 dB threshold was used to evaluate project impacts since fish weighing less than two grams are not expected to occur within the project area watercourses (pers. comm. Scott Silloway, YTFP).

- **Turbidity and Sedimentation**

  Construction of the bridge pier (and associated stream diversion) in Hunter Creek, abutments at both bridges, as well as widening of the roadway, would disturb soils[23] that could potentially be transported to the wetted channels during storm events. Bridge demolition could produce fugitive dust emissions that could reach the project area watercourses or fall to the ground and later be discharged to waterways. In addition, removal of the old bridge piles in Panther Creek via crane is likely to generate short-term and localized turbidity within the creek. There is also potential for increases in sediment delivery post construction if areas of soil disturbance are not stabilized and remain susceptible to erosion.

  However, the proposed project is not likely to result in significant excursions of suspended sediment and turbidity relative to baseline conditions that would result in acute physical or behavioral effects on individual coho with implementation of the standard measures identified in section 1.7. Additionally, through project design, existing drainage patterns over vegetated fill slopes and swales would be maintained for bio-filtration treatment. These measures also include scheduling BMPs that avoid the most vulnerable periods of adult and smolt migration, and coincide with the period when juvenile salmonid populations are lowest.

- **Pollutants Associated with Stormwater Runoff and Accidental Spills**

  During construction, a risk would exist for accidental release of oil, grease, wash water, solvents, oil, cement, or other construction materials into Hunter or Panther Creeks, and downstream to the Klamath River. However, with implementation of the standard water quality measures (which include provisions for the proper handling, storage and disposal of contaminants), localized degradation of water quality from construction related spills is unlikely. The standard measures are expected to sufficiently restrict any discharged pollutants to the immediate area; therefore, chemical contamination of the project watercourses as a result of construction operations is unlikely to occur and the potential effects to salmonids are discountable.

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[23] The total disturbed soil area (DSA) within the project limits is currently estimated to be 1.13 acres, represented by areas within the BSA where construction activities (including staging and storage) would take place and ground disturbance and/or vegetation would be cleared.

- **Wetland Fill Encroachment and New Impervious Surface**

  While there would be an estimated 0.43-acre increase in impervious surface, changes in peak stormwater runoff rates would be offset through permanent design measures such as directing flows through vegetated swales and/or increasing riparian vegetation. There would be no detectable change in peak flow or runoff volumes, no decrease in capacity of existing drainage systems, and no substantial change in existing drainage patterns or encroachment of channel flow. The new bridges would have fewer support piers encroaching into the flow cross-sectional area of the channels without lowering the soffit elevation of the decks; therefore, the potential for backwater and obstruction from debris caught on piers would be reduced compared to the existing condition. Any potential effects to salmonids as a result of wetland fill and new impervious surface would be discountable.

- **Wetland and Riparian Habitat Removal**

  Wetland impacts would be incurred at Hunter Creek and Panther Creek where 0.43 acre of wetland soil and vegetation (willow/alder habitat) would be disturbed on the banks of the channel (above OHWM) for construction of the bridge abutments. Most of this habitat (0.40 acre) would be restored to pre-existing conditions post construction. In addition, 0.95 acre of upland riparian vegetation would be removed, most of which (0.83 acre) represents ruderal roadside vegetation that serves mainly to filter stormwater runoff and stabilize soil. The remaining 0.12 acre represents the native forest/shrub community that offers relatively higher riparian functional value owing to its greater structural complexity and proximity to project watercourses. Last, the wider bridge configurations would permanently shade 0.03 acre of Hunter Creek and 0.05 acre of Panther Creek.

  The bridge work is expected to have minimal impact on the functional values of existing riparian and wetland habitat for coho. Given the scale of the impact and measures to mitigate[24] for the temporal loss of wetland and riparian function, no measurable increase in water temperature or reduction in the amount of terrestrial food input into the project area watercourses is anticipated. In addition, there would be ample vegetative cover immediately adjacent to the project site for fish to take refuge.

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[24] Compensatory (off-site) mitigation may be performed for impacts to waters of the US and riparian habitat as stipulated in the Section 404 Nationwide Permit and/or Section 401 water quality certification obtained for the proposed project.

The project would not result in long-term changes to the water chemistry or physical characteristics (e.g., substrate and flow) of the watercourses after construction is complete, disturbed areas have been stabilized, and vegetation is re-established. Therefore, no long-term impacts on salmonids or other aquatic organisms would be anticipated.

- **Impacts to Essential Fish Habitat for SONCC coho salmon**

  Essential Fish Habitat for coho (and Chinook) salmon is present in the project area and would likely be temporarily affected during construction. Water quality may be temporarily impaired due to short-term, localized increases in turbidity from activities that involve ground disturbance or by contaminants in roadway stormwater runoff or accidental spills during construction that could potentially compromise safe passage conditions for fish migration and reduce the quality of localized rearing habitat. However, the standard water quality measures identified in section 1.7 would limit the magnitude and duration of any turbidity increases, provide for site stabilization post construction, and ensure proper handling and storage of contaminants to avoid accidental spills.

  Cover/shelter, foraging potential and safe passage conditions may also be temporarily compromised due to noise (i.e., vibration from construction equipment, hoe-ramming) and visual stressors (i.e., artificial light, sudden movements) during construction near or over the project watercourses. With incorporation of the measures designed to limit disturbance (i.e., use of ESA fencing, limited operation period, hydroacoustic monitoring/abatement) and given available cover/shelter, foraging potential, and safe passage conditions would be restored to baseline levels once construction is complete, it is expected there would only be minor, localized, and/or short term effects to these EFH elements.

  The slightly wider bridge configurations would result in a small incremental increase of permanent shading of Hunter Creek and Panther Creek (0.08 acre combined) which may result in a minor reduction of primary production and/or emergent vegetation. There would also be a small temporal loss of vegetation that provides riparian function. The scale of these impacts is considered small, resulting in no measurable decrease in the quality of the rearing habitat or migration corridors for EFH species. No measurable, long term adverse changes to waters, substrates, food production and availability, and cover conditions from increased shading or vegetation removal is expected.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, located downstream approximately 0.01 miles west of Highway 101), would likely have similar construction impacts as the Hunter Creek and Panther Creek Bridge Replacement Project and may be constructed during the same period. As discussed, the potential impacts to coho and EFH associated with dewatering and fish relocation, noise and visual disturbance, and water quality impacts would be avoided or minimized through the inclusion of standard measures. The Requa Bridge Replacement Project would likely have similar standard measures, as these measures are generally required by permitting agencies. Impacts to coho from both projects would not be expected to result in population-level effects to SONCC coho salmon or EFH given the scale of the combined projects and the standard measures. There are no other known projects located within the project vicinity that have the potential to negatively affect coho salmon.

Chinook Salmon

Direct and Indirect Impacts

The potential impacts to individual Chinook salmon and their EFH are similar as those described in the previous SONCC coho salmon section. Please see the previous section for details.

Cumulative Impacts

As described in the SONCC coho salmon cumulative impacts section, the project would not be expected to result in cumulative impacts to Chinook salmon or EFH.

Discussion of Longfin Smelt

Direct and Indirect Impacts

Panther Creek does not likely provide suitable spawning habitat given the lack of gravel substrate. There is potential spawning habitat within Hunter Creek. The stream diversion at Hunter Creek would take place during summer months when longfin smelt are unlikely to be present; therefore, the proposed project would not likely impact individual fish. Impacts to potential longfin smelt spawning habitat in Hunter Creek includes disturbance of channel substrate, minor and short-term increases in turbidity, and minor, temporal loss of riparian and wetland vegetation.

Cumulative Impacts

Given the in-stream work window restriction, the proposed project would have no anticipated cumulative effect on the longfin smelt.

Pacific Eulachon

Direct and Indirect Impacts

Panther Creek does not likely provide suitable spawning habitat given the lack of gravel substrate. There is potential spawning habitat within Hunter Creek. The stream diversion at Hunter Creek would take place during summer months when eulachon are unlikely to be present; therefore, the proposed project would not likely impact individual fish. Impacts to potential eulachon spawning habitat in Hunter Creek includes disturbance of channel substrate, minor and short-term increases in turbidity, and minor, temporal loss of riparian and wetland vegetation.

Cumulative Impacts

Given the in-stream work window restriction, the proposed project would have no anticipated cumulative impact on Pacific eulachon.

Western Lily

Direct and Indirect Impacts

Western lily has not been documented within or adjacent to the project area; therefore, proposed construction would not be expected to directly or indirectly impact this species.

Cumulative Impacts

Given the project would not be expected to affect western lily or permanently affect potentially suitable habitat for the species, cumulative impacts would not be anticipated.

CEQA Considerations

Based on the following, a “less than significant” determination for the build alternative was made with respect to the little willow flycatcher.

1) The species would not be present, as vegetation removal would occur outside the breeding/nesting season.
2) If WIFL were identified occupying adjacent habitat during construction, standard measures for potential noise disturbance would be implemented, as discussed in section 1.7.
3) Habitat within range of potential noise disturbance is not likely suitable due to the close proximity of US 101 and associated disturbances.

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to SONCC coho and Chinook salmon (and their EFH).

1) Stream diversion for the Hunter Creek bridge replacement would require electrofishing and fish relocation.
2) SONCC coho and Chinook Salmon EFH would be temporarily affected.
3) Habitat would be created at both Hunter and Panther creeks. For Panther Creek, the existing piers within the creek would be removed and no new new piers would be placed within the creek. At Hunter Creek, the two existing piers within the creek would be removed and only one new pier would be installed within the creek.

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to longfin smelt and the Pacific eulachon.

1) Panther Creek does not likely provide suitable spawning habitat for either species given the lack of gravel substrate.
2) Stream diversion at Hunter Creek would take place during summer months when both species would unlikely be present.
3) Habitat would be created at Hunter Creek (e.g., the two existing piers within the creek would be removed and only one new pier would be installed within the creek).

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to the western lily.

1) Suitable habitat may exist within the project limits; however, the western lily has not been documented within or adjacent to the project area.

Given the No-Build alternative would not alter the environment, a “no impact” determination was made for this alternative.

Mitigation Measures

Little Willow Flycatcher

As the project would not be expected to result in any direct or indirect permanent impacts to the WIFL, no specific mitigation measures are proposed; however, as described in the Natural Communities section, as a standard measure the habitat areas affected would be revegetated. Further, as a standard measure, protocol-level surveys would be conducted prior to construction to document nesting status. If WIFL were occupying adjacent habitat, standard avoidance measures for potential noise disturbance would be implemented, as discussed in section 1.7.

Coho Salmon

With incorporation of the standard measures for water quality, noise, fish relocation, visual disturbance, and revegetation efforts, potential impacts to coho would likely be minor, and would not likely result in population-level effects to the species. However, due to the project’s potential to have a small amount of incidental take associated with fish relocation, mitigation measures would be implemented. Caltrans would request ESA Section 7 Formal Consultation with NMFS. Caltrans would also consult with CDFW by either requesting a California Endangered Species Act (CESA) 2080.1 Consistency Determination or CESA 2081 Incidental Take Permit.

Through consultation with YTFP, various mitigation options have been identified and are listed below. Mitigation may include one of these options, or another option yet to be identified. The decision regarding suitable and adequate mitigation would be made through coordination with NMFS, CDFW, and the Yurok Tribe.

- Restoration of Panther Creek to remove invasive reed canary grass (*Phalaris arundinaceae*) that is continuing to encroach on the creek. Removal of the invasive grass would be followed by planting of native riparian trees since reed canary grass is best controlled through shading.

- Removal of a portion of the material from the beaver dam at Panther Creek that is filling with sediment, impeding movement of water, and creating a barrier to fish.
- Improving fish passage on an adjacent tributary within the watershed in need of improvements for fish passage—such as Waukell Creek, Saugep Creek, or Spruce Creek.

Chinook Salmon

The measures proposed for SONCC coho salmon above would be the same for Chinook salmon and their EFH.

Longfin Smelt

As the project would not be expected to result in any direct or indirect permanent impacts to longfin smelt, no specific mitigation measures are proposed. However, it is anticipated fish mitigation for coho salmon (section 2.2.3) may also benefit longfin smelt.

Pacific Eulachon

As the project would not be expected to result in any direct or indirect permanent impacts to Pacific eulachon, no specific mitigation measures are proposed. However, it is anticipated fish mitigation for coho salmon (section 2.2.3) may also benefit Pacific eulachon.

Western Lily

As the project would not be expected to result in any direct or indirect impacts to suitable western lily habitat, no mitigation measures are proposed; however, as described in the Natural Communities section, as a standard measure the potential habitat areas affected would be restored.

2.2.4 Plant Species

Regulatory Setting

The USFWS and the 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 species are formally listed or proposed for listing as endangered or threatened under the FESA and/or the CESA. Please see the Threatened and Endangered Species section 2.2.3 in this document for detailed information about these species.

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

The regulatory requirements for FESA can be found at USC, Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Sections 1900-1913, and CEQA, CA Public Resources Code, Sections 2100-21177.

Affected Environment

Botanical surveys were conducted for the KGR Project in 2010 by ICF Jones & Stokes botanists Margaret Widdowson and John Holson. This survey effort was updated in March, April, and May of 2015 by Tamara Dart of Caltrans and again in June 2016 by Stephanie Frederickson of Caltrans for the Hunter and Panther Creek Bridges Seismic Restoration Project.

Existing occurrence records of special status plant species and sensitive natural communities were consulted prior to conducting field surveys to assist in determining which species have the potential to occur in the BSA. The following resources were utilized:

- U.S. Fish and Wildlife Service official species list for the proposed project. Consultation code 08EACT00-2015-SLI-0150, July 2, 2015.
- California Department of Fish and Wildlife California Natural Diversity Database (CNDDB). Occurrence records for Requa and six adjacent coastal USGS quadrangles: Fern Canyon, Cant Hook Mountain, Klamath Glen, Ah Pah Ridge, Childs Hill, and Sister Rocks [accessed 2016].

- California Native Plant Society (CNPS) Electronic Inventory of Rare, Threatened, and Endangered Plants of California. Occurrence records for Requa and six adjacent coastal USGS quadrangles: Fern Canyon, Cant Hook Mountain, Klamath Glen, Ah Pah Ridge, Childs Hill, and Sister Rocks [accessed 2015 and 2016].

Seasonally-appropriate floristic surveys were conducted according to Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG, 2009). Natural communities in the BSA were identified based on the vegetation classification used in A Manual of California Vegetation, 2nd edition (Sawyer J. O.-W., 2009).

Although the CNPS inventory and CNDDB show a number of rare plants in the project region, no rare plants have been detected in the BSA. The botanical survey report, which documents the results of floristic surveys carried out for the proposed project, is provided as an attachment to the Natural Environmental Study for this project.

Environmental Consequences

No-Build Alternative:
The existing condition would remain; therefore, no impact would occur.

Build Alternative:
Direct and Indirect Impacts

Based on field surveys and database searches, impacts to special status plant species would not be expected.

Cumulative Impacts

Given the project would not be expected to directly or indirectly affect any special status plant species, cumulative impacts to any of these species would not be expected.

CEQA Considerations

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to special status plant species.

1) Suitable habitat may exist within the project limits; however, field surveys and database searches have indicated that no special status plant species occur within the project limits.

Given the No-Build alternative would not alter the environment, a “no impact” determination was made for this alternative.

Mitigation Measures

Given the project would not be expected to directly or indirectly affect special status plant species, no mitigation measures are proposed.

2.2.5 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife, and the USFWS, NMFS, and the CDFW are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state ESA.

Federal laws and regulations relevant to wildlife include the following:

- NEPA
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- State laws and regulations relevant to wildlife include the following:
    - CEQA
    - Sections 1600 – 1603 of the California Fish and Game Code
    - Sections 4150 and 4152 of the California Fish and Game Code

Affected Environment

Animals 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 animals occurring on-site. Several special status animal species have the potential to be present within the BSA. Special status species occurrences within the project region are included on the California Natural Diversity Database (CNDDB) query and the USFWS and NMFS species lists. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.2.3. All other special status animal species are discussed in this section— including CDFW fully protected species and species of special concern, and the USFWS or NMFS candidate species (Table 2–11).

Table 2—11. Special Status Animals Potentially Occurring or Known to Occur in the Project Area

Scientific Name Common Name	Status[1]	Rationale
Corynorhinus townsendii Townsend's big-eared bat	FSC/SCT SSC USFS-S BLM-S WBWG-H	Occasionally found on bridges. Evidence of night-roosting of unknown bat species on both bridges. No maternity or day-roost habitat present. Foraging habitat present.
Myotis lucifugus little brown bat	WBWG-M	Occasionally found on bridges. Evidence of night-roosting of unknown bat species on both bridges. No maternity or day-roost habitat present. Foraging habitat present.
Myotis thysanodes fringed myotis	USFS-S BLM-S WBWG-H	Occasionally found on bridges. Evidence of night-roosting of unknown bat species on both bridges. No maternity or day-roost habitat present. Foraging habitat present.
Myotis yumanensis Yuma myotis	BLM-S WBWG-L	Commonly found on bridges. Evidence of night-roosting of unknown bat species on both bridges. No maternity or day-roost habitat present. Foraging habitat present.
Migratory Birds	MBTA	Barn swallows have been observed nesting on the bridges, and other passerines are expected to nest in adjacent riparian vegetation.
Bonasa umbellus ruffed grouse	WL	Rare resident of the humid coastal strip of Del Norte, Humboldt and Siskiyou counties where they inhabit dense canyon-bottom or stream side growths, usually of mixed deciduous and coniferous trees. Closest occurrence record is over five miles south of the BSA near McGarvey Creek. Ruffed grouse have not been documented within the BSA to date, but the riparian forest community may provide suitable nesting and foraging habitat.
Pandion haliaetus osprey	WL	Nests in riparian forests. Closest CNDDB occurrence records for osprey are over 0.30 mile from the project site. No osprey nesting within BSA, although suitable habitat does occur.
Phalacrocorax auritus double-crested cormorant	WL	Occurs in riparian scrub, riparian forest, and riparian woodland. Panther Creek may provide suitable foraging and perching (resting) habitat, but nesting is unlikely.

Scientific Name Common Name	Status[1]	Rationale
Rana aurora northern red-legged frog	SSC USFS-S	Associated with humid forests, woodlands, grasslands, and streamsides in NW California, usually near dense riparian cover. Known to occur in wetland and riparian areas within the BSA.
Rana boylii foothill yellow-legged frog	SSC BLM-S USFS-S	Associated with partly shaded, shallow streams and riffles with rocky substrate in a variety of habitats, but mostly higher than 200 m elevation in areas not occupied by bullfrogs. Hunter Creek provides marginally suitable habitat, but is lower in elevation than known occurrences.
Entosphenus tridentatus Pacific lamprey	FSC/SSC	Ammocoetes have been documented within Panther Creek and Hunter Creek by YTFP. There is potential for occurrence within both project area watercourses; however, spawning is not likely in Panther Creek due to lack of suitable spawning gravel.
Lampetra richardsoni western brook lamprey	SSC	Ammocoetes have been documented within Hunter Creek by YTFP. There is potential for occurrence within both project area watercourses; however, spawning is not likely in Panther Creek due to lack of suitable spawning gravel.
Oncorhynchus clarkii clarkii coast cutthroat trout	SSC USFS-S	In Klamath River and adjoining tributaries. Documented within Hunter Creek and Panther Creek by YTFP.
*Oncorhynchus mykiss irideu*s steelhead trout (summer run)	SSC USFS-S	Hunter and Panther creeks do not likely support spawning runs of summer steelhead, but these waters likely provide important rearing habitat to summer steelhead juveniles from throughout the Klamath River basin.

[1]Status: Federal Species of Concern [FSC]; State Candidate Endangered [SCE]; State Candidate Threatened [SCT]; California Department of Fish and Game (CDFW) Species of Special Concern [SSC]; CDFW Fully Protected [FP]; CDFW Watch List [WL]; California Department of Forestry Sensitive Species [CDF-S]; Protected under the Migratory Bird Treaty Act [MBTA]; U.S. Forest Service Sensitive [USFS-S]; Bureau of Land Management Sensitive [BLM-S]; U.S. Fish and Wildlife Service Bird of Conservation Consideration [USFW-BCC]; Western Bat Working Group [WBWG] – Medium Priority [M] and High Priority [H]

Discussion of Townsend's Big-eared Bat (*Corynorhinus townsendii*) and other bats (Chiropterans)

The project area is within range of Yuma myotis (*Myotis yumanensis*), silver-haired bat (*Lasionycteris noctivagans*), fringed myotis (*Myotis thysanodes*), Townsend's big-eared bat (*Corynorhinus townsendii*, CDFW Species of Special Concern), and little brown bat (*Myotis lucifugus)*. Of these, Yuma myositis is commonly found on bridges, and fringed myotis, Townsend's big-eared bat and little brown bat are occasionally found on bridges (Erickson, 2002). All of these species are known to use bridge structures for day roost, maternity roost, and/or night roost where habitat is suitable (Erickson, 2002).

A qualified biologist assessed the Hunter Creek Bridge and Panther Creek Bridge for suitable bat habitat in 2010 and 2015, respectively. No maternity or day roost habitat was identified on either structure, but night roosting was evident. Bats could also utilize adjacent riparian forest habitat for night roosting, but none of the vegetation planned for removal provides maternity or day roost habitat due to the absence of suitable hollows or cavities.

Discussion of Migratory Birds

Migratory birds are present in and near the project area. Birds may be nesting in trees and shrubs from March through September. On June 10, 2015, a Caltrans biologist found eleven occupied and four unoccupied barn swallow (*Hirundo rustica*) nests on Panther Creek Bridge. Habitat is also available on Hunter Creek Bridge for bird nesting, particularly barn swallow and cliff swallow (*Petrochelidon pyrrhonota*).

Discussion of Osprey *(Pandion haliaetus), Ruffed Grouse (Bonasa umbellus)* and Double-crested Cormorant *(Phalacrocorax auritus)*

Riparian forests such as those found within the project area may provide habitat for osprey, ruffed grouse, and double-crested cormorant. These species are treated as "taxa to watch" by CDFW due to their former inclusion on special concern lists. While they have demonstrated population declines, they are still fairly common and widespread in the state and are currently at low risk for extinction. The current population trends for osprey and double-crested cormorant are increasing, but the population trend for ruffed grouse is decreasing (IUCN, 2016).

Osprey feed almost exclusively on fish, and inhabit areas near shallow waters, either fresh or salt, that offer a steady source of food. Nests are usually built on snags, treetops, or crotches between large branches and trunks; on cliffs or human-built platforms. They are placed in open surroundings for easy approach, and elevated for safety from ground predators. Nesting habitat

must include an adequate supply of accessible fish within a maximum of about 12 miles of the nest. Ospreys have been observed breeding near the project area. At least three active nests in snags alongside US 101 have been documented in the CNDDB and observed by Caltrans project biologists. The closest nests are approximately 0.24 mile from the project site. No nests have been observed within the project limits, but the watercourses provide suitable foraging habitat. They are a common summer resident and breeder but are rare in winter.

Ruffed grouse is a rare resident of the humid coastal strip of Del Norte, Humboldt and Siskiyou counties where they inhabit dense canyon-bottom or stream side growths, usually of mixed deciduous and coniferous trees. They build their nests on the ground, forming a deep hollow often concealed under fallen branches at the base of a tree or next to a log. Ruffed grouse have not been documented within the BSA to date, but the riparian forest community may provide suitable nesting and foraging habitat. The closest occurrence record for ruffed grouse is over five miles south of the BSA in the vicinity of McGarvey Creek.

Double-crested cormorant are colonial nesters that seek aquatic bodies big enough to support their mostly fish diet. However, they may roost and form breeding colonies on smaller lagoons or ponds that are within 5 to 10 miles of a dependable food supply. They require undisturbed nest sites with wide rock ledges on cliffs, rugged slopes, or live or dead trees (especially tall ones) for nesting. Suitable perching areas are also important for the considerable amount of time they spend resting each day. No cormorant nest colonies have been identified within or adjacent to the project site, but Panther Creek may provide suitable foraging and perching habitat year-round.

Discussion of Northern Red-legged Frog (*Rana aurora*) and Foothill Yellow-legged Frog (*Rana boylii*)

The northern red-legged frog and foothill yellow-legged frog are Species of Special Concern in California. The northern red-legged frog is listed as Least Concern by IUCN in view of its wide distribution, numerous subpopulations, ability to use altered habitats, and presumed large population (IUCN 2016). However, it has experienced population declines attributed to wetland loss, degradation and fill, urbanization, residential development, stream channelization, livestock grazing of riparian vegetation, off-road vehicle activity, drought, and predation by exotic species. Foothill yellow-legged frog has disappeared from much of its range in California (possibly up to 45%) and is listed as Near Threatened by IUCN. Threats to this species include stream scouring (which may negatively impact frogs in stream bed hibernation sites), introduced aquatic species, non-selective logging practices, and stabilization of historically fluctuating stream flows (IUCN 2016).

The northern red-legged frog is found in humid forests, woodlands, grasslands, and stream sides in northwestern California, usually near dense riparian cover. They are typically found in or near water, but can be wide-ranging and highly terrestrial in damp woods and meadows during the non-breeding season. They require permanent water sources such as ponds and lakes for breeding, which occurs from late November through March. Egg masses are usually attached to herbaceous vegetation in areas with little or no flow. Eggs hatch in 4-6 weeks, and tadpoles transform to adults in 11-14 weeks.

Little is known about the life history of foothill yellow-legged frog, but they are associated with partly shaded, shallow streams and riffles with rocky substrate in a variety of habitats, mostly at elevations higher than 200 m (656 feet) not occupied by bullfrogs. As with northern red-legged frogs, reproduction is aquatic, but mating and egg-laying occurs exclusively in streams and rivers (not in ponds or lakes) from April until early July, after streams have slowed from winter runoff. Eggs hatch within 5 to 37 days, depending on temperature. Tadpoles transform in 3 to 4 months, typically from July to October.

Most of the project area supports suitable habitat for northern red-legged frog. Vegetated shallows of Panther Creek provide suitable breeding habitat, and Hunter Creek and the adjacent riparian forest and scrub communities provide forage and refuge habitat. Adult frogs may be present in the project area at any time of year. Egg masses may be found November through March and tadpoles may be present as late as August. YTFP documented northern red-legged frog in Panther Creek Pond in 2009-2011.

While no yellow-legged frog have been documented within the project site to date (Silloway and Beesley 2011, CNDDB 2016), Hunter Creek may provide suitable breeding habitat. The adjacent forest/scrub wetland communities may also provide suitable forage and refuge habitat.

Discussion of Pacific Lamprey (*Entosphenus tridentatus*) and Western Brook Lamprey (*Lampetra richardsoni*)

Pacific lamprey are considered Species of Concern by the USFWS, Species of Special Concern by the CDFW, and classified as Sensitive by the U.S. Forest Service and Bureau of Land Management. Data from 1997 to 2004 for the Klamath River basin suggested a declining trend for all life stages. Native American fishermen in the Klamath basin have also observed that runs are much smaller than they once were in this system. They are culturally important throughout their range and are of great significance to the Yurok People of Northern California. As a tribal trust species, they are important both culturally and as part of the Tribe's subsistence fishery (McCovey,

2006). The USFWS coordinates with tribes on a government to government basis in efforts to protect tribal trust resources and their associated habitats.

Two other species of lamprey known from the Klamath River watershed include western brook lamprey (*Lampetra richardsoni*) and Klamath River lamprey (*Entosphenus similis*), both of which are thought to be declining in numbers and therefore considered Species of Special (moderate) Concern by CDFW. The Klamath River lamprey is only known from the upper Klamath River and Upper Klamath Lake. The western brook lamprey are thought to still be present in the least disturbed portions of many watersheds but all populations are likely small, isolated and declining.

Focused surveys for Pacific or western brook lamprey have not been conducted for the proposed project; however, YTFP identified ammocoetes of both species in Panther Creek and western brook lamprey ammocoetes in Hunter Creek while conducting salmonid surveys between 2009 and 2011. There is potential for occurrence of both species within the project area.

Discussion of Coastal Cutthroat Trout (*Oncorhynchus clarkii clarkii*) and Steelhead Trout (*Oncorhynchus mykiss irideus*)

Coastal cutthroat is a Species of Special Concern in California. Of the 13 subspecies of cutthroat trout native to North America, only the coastal cutthroat is anadromous. Coastal cutthroat have complex life histories, and not all fish are anadromous. In any given body of water, some may migrate to sea, while others become resident fish. Sea-run cutthroat spawn over a long period, from winter through May. They seek smaller streams where the flow is minimal and the substrate is small, almost sand. They prefer the uppermost portions of these streams; areas that are too shallow for other salmonids.

Two distinct reproductive ecotypes of steelhead are recognized based upon their reproductive biology and freshwater spawning strategy. The stream-maturing type, or summer-run steelhead, enter the river sexually immature and seek out deep pools for refugia during maturation through the summer months. In the Klamath River, summer-run steelhead typically migrate upstream between April and October with a peak in spawning behavior during January. The second type, ocean-maturing or fall/winter-run steelhead, enter the Klamath River between September and March with a peak in spawning in March. These fish enter the river sexually mature and spawn shortly after reaching spawning grounds. The majority of steelhead in the Klamath Basin are fall/winter-run ecotypes, which have no listing status. Summer-run steelhead are State Species of Special Concern that are considered imperiled because of rarity due to restricted range and few populations.

Fish surveys conducted by YTFP between 2009 and 2011 found coastal cutthroat trout present in both Hunter Creek and Panther Creek Pond. Few coastal cutthroat were observed in Hunter Creek in 2009. Steelhead numbers were considerably higher, with 105 individuals in May, reaching a high of 178 individuals in July, then 144 individuals by the end of September. Reducing the length of the Hunter Creek inventory reach in 2010 made comparing the two years difficult, but in 2010, 21 coastal cutthroat were observed in August, 12 in September, and 5 in October, represented by 1+ and 2+ age classes. Steelhead numbers fluctuated from 14 in August, 9 in September, and 8 in October (see survey results in the SONCC coho salmon discussion in section 2.2.3 and in Table 2-8).

Population estimates for cutthroat and steelhead in Panther Creek were lumped together to better facilitate population estimation; however, the majority of the fish captured were 1+ coastal cutthroat trout. In June 2009, trout populations dropped significantly from 123 fish in June to 40 fish in July. By September 1 all salmonid numbers dropped to zero. Trout population estimates in 2010 were 49 fish during the month of July and 94 fish in the month of September. Winter trapping events in 2011 in Panther Creek yielded a juvenile population estimate of 240 trout (mostly cutthroat).

Panther Creek does not likely provide suitable spawning habitat for trout given the lack of gravel substrate. Hunter Creek supports spawning habitat for coastal cutthroat and steelhead, although it is unlikely to support runs of summer steelhead. Both watercourses, however, likely provide important rearing habitat to summer steelhead juveniles from throughout the Klamath River Basin (pers. comm. Sarah Beesley YTFP) and coastal cuttthroat trout.

Environmental Consequences

No-Build Alternative:
The existing condition would remain; therefore, no impact would occur.

Build Alternative:

Chiropterans (Bats)

Direct and Indirect Impacts

The proposed project could temporarily displace suitable night roosting habitat for bats and inhibit foraging during active construction. Given the standard Bird and Bat Protection Measures and Provisions for Use of Artificial Light at Night that are included as part of the project description (identified in section 1.7), the proposed project would be expected to have minimal impact on bats due to temporary loss of roosting and foraging habitat.

If disturbed, night roosting bats could readily relocate given the availability of suitable roosting and foraging habitat within close proximity to the project site. The new bridges would provide comparable night roosting habitat to the existing bridges post construction.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, located downstream approximately 0.01 miles west of Highway 101), could also affect bats or bat habitat. However, impacts from the Requa Bridge Replacement Project would likely be similarly avoided through the inclusion of the standard measures that are generally required by permitting agencies. Therefore, concurrent construction of both projects would not result in a cumulative impact to bats. There are no other known projects located within the project vicinity that would have the potential to affect bats.

Migratory Birds

Direct and Indirect Impacts

Tree/shrub removal and ground disturbance associated with bridge construction, as well as work in close proximity to an active nest, could affect nesting birds; however, much of this habitat is not highly suitable for nesting due to the close proximity of US 101 and associated disturbances. Given the minimal amount of vegetation to be removed, impacts to migratory birds would not be substantial.

Swallows are numerous and widespread throughout the project region. Impacts to the swallow population in the area due to temporary loss of the nesting areas on the bridges would be negligible. Additional suitable swallow nesting habitat is available in the area.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, located downstream approximately 0.01 miles west of Highway 101), could also affect migratory birds. However, impacts from the Requa Bridge Replacement Project would likely be similarly avoided through the inclusion of the standard measures that are generally required by permitting agencies. Therefore, concurrent construction of both projects would not result in a cumulative impact to migratory birds. There are no other known projects located within the project vicinity that would have the potential to affect migratory birds.

Osprey, Ruffed Grouse, and Double-crested Cormorant (Watch-List Species)

Direct and Indirect Impacts

The proposed project would not remove any suitable nest trees for osprey, and nesting osprey are not likely to be affected by elevated noise levels from construction given the distance to known nesting sites. The standard protection measures for nesting raptors described in section 1.7 would ensure avoidance of construction-related impacts to osprey.

Ruffed grouse are not likely to utilize the project site for nesting given its proximity to US 101 and discontinuity of habitat due to the presence of surrounding agricultural lands. Impacts to potentially nesting grouse would be avoided by clearing vegetation outside of breeding/nesting season and through biological monitoring during construction, as described in section 1.7.

The riparian forest habitat slated for removal near the bridges is not well-suited for perching/resting by double-crested cormorant given its close proximity to the highway, and thus does not constitute habitat removal for this species. Given that no cormorants have been documented within the project area to date, it is unlikely that construction would result in the displacement of individuals. Higher quality perching/resting habitat occurs elsewhere in the watershed along the Klamath River should they be flushed from the project site due to elevated noise levels during construction.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, located downstream approximately 0.01 miles west of Highway 101), could also affect osprey, ruffed grouse and double-crested cormorant. However, impacts from the Requa Bridge Replacement Project would likely be similarly avoided through the inclusion of standard measures that are generally required by permitting agencies. Therefore, concurrent construction of both projects would not result in a cumulative impact to these species or their habitat. There are no other known projects located within the project vicinity that would have the potential to affect osprey, ruffed grouse, or double-crested cormorant.

Frog Species

Direct and Indirect Impacts

Riparian and wetland vegetation removal would not likely affect adult frogs because of their ability to relocate. A qualified biologist would be present at the start of all in-stream construction operations to survey and relocate frogs to suitable habitat downstream and outside of the construction zone. Egg and tadpole stages of northern red-legged frog in Panther Creek could be affected by minor increases in turbidity during pile removal; however, the effects would be localized and short term and not likely to result in the destruction of egg masses or take of individuals. Stream diversion at Hunter Creek could also affect breeding of foothill yellow-legged frogs; however, a qualified biologist would conduct a survey for this species prior to dewatering and relocate any yellow-legged frogs or egg masses to suitable habitat downstream and outside of the construction area to avoid impacts to this species. Impacts to frog populations in the area due to the temporary loss of habitat would be negligible given the availability of suitable habitat both upstream and downstream of the project site.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, located downstream approximately 0.01 miles west of Highway 101), could also affect frog species. However, potential impacts from the Requa Bridge Replacement Project would likely be similarly avoided through the inclusion of standard measures that are generally required by permitting agencies. Therefore, concurrent construction of both projects would not result in a cumulative impact to frogs. There are no other known projects located within the project vicinity that would have the potential to affect these species.

Lamprey Species

Direct and Indirect Impacts

Lamprey (ammocoetes) spend most of their time burrowed in stream substrates, making them particularly susceptible to activities that involve excavation, stranding (due to dewatering), or accidental contaminant spills, potentially affecting many different age classes that tend to concentrate in the same areas due to habitat preference (USFWS, 2010). Dewatering and stream flow management for work in Hunter Creek could cause a rapid fluctuation in the water level and strand ammocoetes in the substrate. Stream diversion could also block upstream migrations by adult lamprey and downstream movement of ammocoetes and macropthalmia. Excavation of the substrate within the dewatered creek channel for construction of the bridge pier could affect all age classes of ammocoetes, if present. Contaminants from accidental spills could also harm or kill ammocoetes, which are thought to store toxins given they spend three to seven years filter feeding.

The methods employed for dewatering and fish relocation would be outlined in a Caltrans-approved Construction Site Dewatering, Diversion, and Fish Relocation Plan prepared by the contractor prior to construction.

Adult, ammocoete, and macropthalmia life stages[25] may be present in Panther Creek during construction, and could potentially be impacted by sound waves produced during bridge demolition. There have been no studies to determine responses of lamprey to sound, but lamprey do not have the typical hearing structures of other fish. The USACE (2005) recognized that lamprey, as with other vertebrates, may use their auditory sense to learn about their environment, but their behavior is generally limited, and it may be possible that sound is not relevant. Ammocoetes are partially buried in the substrate, which dampens vibration and noise. As a result, at least some life stages of lamprey may be less susceptible to injury from impulsive sound waves than other fish species. Potential hydroacoustic impacts to lamprey in Panther Creek would be avoided or minimized by limiting the use of hoe-ramming. Relocation efforts in response to dewatering activities in Hunter Creek are expected to prevent potential noise affects to lamprey from any pile driving activities performed in that system, but electrofishing in conjunction with relocation efforts would have the potential to harm individual fish.

Given the small amount of habitat affected, the short duration/intermittent nature of the work, and implementation of standard measures to reduce project impacts, the proposed project is not likely to result in substantial population-level effects to Pacific or western brook lamprey.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, located downstream approximately 0.01 miles west of Highway 101), would likely have similar construction impacts as this project and may be constructed during the same period. Potential impacts to lamprey associated with dewatering and fish relocation, noise disturbance, and water quality impacts would be avoided or minimized through the inclusion of standard measures. The Requa Bridge Replacement Project would likely have similar standard measures, as these measures are generally required by permitting agencies. Impacts to lamprey from both projects would not be expected to result in population-level effects to the species given the scale of the combined projects and the standard measures. There are no other known projects located within the project vicinity that have the potential to negatively affect lamprey.

[25] *Adult lamprey are least likely to occur in Panther Creek given the lack of suitable, gravel bottom spawning habitat.*

Trout Species

Direct and Indirect Impacts

Bridge construction and demolition would take place during the summer months when fish abundance is at its lowest; however, several activities associated with the proposed project could negatively affect coastal cutthroat trout and steelhead occupying Hunter Creek and Panther Creek. These include stream diversion and associated fish relocation, noise and visual disturbance, and water quality impacts—the effects of which would be similar to those for coho salmon.

Cumulative Impacts

A Del Norte County project, the Requa Bridge Replacement Project (over Hunter Creek, located downstream approximately 0.01 miles west of Highway 101), would likely have similar construction impacts as this project and may be constructed during the same period. Potential impacts to trout associated with dewatering and fish relocation, noise disturbance, and water quality impacts would be avoided or minimized through the inclusion of standard measures. The Requa Bridge Replacement Project would likely have similar standard measures, as these measures are generally required by permitting agencies. Impacts to trout from both projects would not be expected to result in population-level effects to these species given the scale of the combined projects and the standard measures. There are no other known projects located within the project vicinity that have the potential to negatively affect trout.

CEQA Considerations

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to bat species.

1) The proposed project could temporarily displace suitable night roosting habitat for bats and inhibit foraging during active construction.
2) Suitable roosting and foraging habitat exists within close proximity to the project site.
3) The new bridges would provide comparable night roosting habitat to the existing bridges post construction.

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to migratory bird species.

1) Tree/shrub removal and ground disturbance associated with bridge construction, as well as work in close proximity to an active nest, could affect nesting birds.
2) Minimal amount of vegetation would be removed outside of the nesting season.
3) Suitable swallow nesting habitat is available elsewhere in the area.
4) Habitat removed is not highly suitable for nesting due to the close proximity of US 101 and associated disturbances.

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to osprey, ruffed grouse, and the double-crested cormorant.

1) There would be no removal of suitable nest trees for osprey
2) Nesting osprey would not likely be affected by elevated noise levels from construction given the distance to known nesting sites.
3) Ruffed grouse would not likely utilize the project site for nesting given its proximity to US 101 and discontinuity of habitat due to the presence of surrounding agricultural lands.
4) The vegetation adjacent to the bridges is not well suited for perching/resting by double-crested cormorant given its close proximity to the highway. Given that no cormorants have been documented within the project area to date, it is unlikely that construction would result in the displacement of individuals.

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to frog species.

1) Riparian and wetland vegetation removal would not likely affect adult frogs because of their ability to relocate.
2) Prior to the start of construction, frogs would be relocated to suitable habitat downstream and outside of the construction zone.
3) Potential effects would be localized and short term and would not likely result in the destruction of egg masses or harm of individuals.

4) Habitat would be created at both Hunter and Panther creeks. For Panther Creek, the existing piers within the creek would be removed and no new new piers would be placed within the creek. At Hunter Creek, the two existing piers within the creek would be removed and only one new pier would be installed within the creek.

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to lamprey.

1) Prior to the start of construction, lamprey would be relocated to suitable habitat downstream and outside of the construction zone.
2) Due to lamprey generally being partially buried within substrate, potential effects associated with vibration and noise would not be expected to be substantial.
3) Potential hydroacoustic impacts to lamprey in Panther Creek would be avoided or minimized by limiting the use of hoe-ramming.
4) Potential habitat effects would be temporary and short-term.
5) Habitat would be created at both Hunter and Panther creeks. For Panther Creek, the existing piers within the creek would be removed and no new new piers would be placed within the creek. At Hunter Creek, the two existing piers within the creek would be removed and only one new pier would be installed within the creek.

Based on the following, a “less than significant impact” determination for the build alternative was made with respect to trout species.

1) Bridge construction and demolition would take place during the summer months when trout abundance is at its lowest.
2) Stream diversion would require electrofishing and fish relocation.
3) Habitat would be created at both Hunter and Panther creeks. For Panther Creek, the existing piers within the creek would be removed and no new new piers would be placed within the creek. At Hunter Creek, the two existing piers within the creek would be removed and only one new pier would be installed within the creek.

As the No-Build alternative would not alter the environment, a “no impact” determination was made for this alternative.

Mitigation Measures

As the project would not be expected to result in any direct or indirect permanent impacts to the species discussed in this section, no specific mitigation measures are proposed for any of these species; however, standard measures (section 1.7) would be included as part of the project.

It is anticipated that the proposed fish mitigation for coho salmon (section 2.2.3) would also benefit lamprey and trout.

2.2.6 Invasive Species

Regulatory Setting

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

Affected Environment

A number of invasive and/or exotic plant species dominate the highway shoulders and pullouts throughout the project limits. An infestation of white stonecrop (*Sedum album)*, an escaped ornamental, blankets the highway shoulder and adjacent trail on the southwest side of Panther Creek Bridge. The highly invasive reed canarygrass (*Phalaris arundinacea*) is abundant in Panther Creek, and discrete patches of moderately to highly invasive shrubs such as cotoneaster (*Cotoneaster pannosus*), English ivy (*Hedera helix*), and Himalayan blackberry (*Rubus armeniacus*) were found encroaching on native wetland and riparian communities in several locations..

Environmental Consequences

No-Build Alternative:
The existing condition would remain; therefore, no impact would occur.

Build Alternative:

Direct and Indirect Impacts

The project would temporarily impact vegetation, which may temporarily remove invasive species. Many invasive species are disturbance related and could colonize or increase populations through construction activities; however, standard invasive species measures would be implemented to ensure that invasive species would not proliferate.

Cumulative Impacts

Given the scope of the project and the inclusion of standard measures to prevent the spread of invasive species, cumulative impacts are not expected to occur as a result of the proposed project.

CEQA Considerations

Based on the following, a "less than significant impact" determination for the build alternative was made with respect to invasive species.

1) Standard measures would be implemented to ensure that invasive species would not proliferate.

Given the No-Build alternative would not alter the environment, a "no impact" determination was made for this alternative.

Mitigation Measures

As the project would not be expected to affect invasive species, no mitigation measures are proposed; however, as described in section 1.7, standard measures would be implemented to ensure invasive species would not proliferate.

2.3 Climate Change

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

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: "Greenhouse Gas Mitigation" and "Adaptation." " Greenhouse Gas Mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. "Adaptation" refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).[26]

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower GHG-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively. [27]

[26] http://climatechange.transportation.org/ghg_mitigation/

[27] http://www.fhwa.dot.gov/environment/climate_change/mitigation/

Regulatory Setting

State

With the passage of several pieces of legislation, including State Senate and Assembly bills and Executive Orders (EO), California launched an innovative and proactive approach to dealing with GHG emissions and climate change.

Assembly Bill 1493 (AB 1493), Pavley, Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

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

Assembly Bill 32 (AB 32), Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that CARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard for California. Under this Executive Order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill 97 (SB 97) Chapter 185, 2007, Greenhouse Gas Emissions: This bill required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities, and Climate Protection: This bill requires the California Air Resources Board (CARB) to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land use, and housing policies to plan for the achievement of the emissions target for their region.

Senate Bill 391 (SB 391) Chapter 585, 2009 California Transportation Plan: This bill requires the state's long-range transportation plan to meet California's climate change goals under AB 32.

Federal

Although climate change and GHG reduction are a concern at the federal level, currently no regulations or legislation have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Neither the U.S. EPA nor the FHWA has issued explicit guidance or methods to conduct project-level GHG analysis[28]. FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process would assist in decision-making and improve efficiency at the program level, and would inform the analysis and stewardship needs of project-level decision making. Climate change considerations can be integrated into many planning factors such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts the State of California is undertaking to deal with transportation and climate change. These strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514 - Federal Leadership in Environmental, Energy and Economic Performance.

[28] *To date, no national standards have been established regarding mobile source GHGs, nor has U.S. EPA established any ambient standards, criteria or thresholds for GHGs resulting from mobile sources.*

Executive Order 13514 (October 5, 2009): This order is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

U.S. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in Massachusetts v. EPA (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence, it found that six greenhouse gases constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act, and EPA's assessment of the scientific evidence, that form the basis for EPA's regulatory actions. U.S. EPA, in conjunction with the National Highway Traffic Safety Administration (NHTSA), issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010.[29]

The U.S. EPA and the National Highway Traffic Safety Administration are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations.

The final combined standards that made up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles—covering model years 2012 through 2016. The standards implemented by this program are expected to reduce GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On August 28, 2012, U.S. EPA and NHTSA issued a joint Final Rulemaking to extend the National Program for fuel economy standards to model years 2017 through 2025 passenger vehicles. Over the lifetime of model years 2017-2025 standards, this program is projected to save four billion barrels of oil and two billion metric tons of GHG emissions.

The complementary U.S. EPA and NHTSA standards that make up the Heavy-Duty National Program apply to combination tractors (semi-trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards would cut greenhouse gas emissions and domestic oil use. This program responds to President

[29] *http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq*

Barack Obama's 2010 request to establish greenhouse gas emissions and fuel efficiency standards for the medium- and heavy-duty highway vehicle sector. The agencies estimate the combined standards would reduce CO2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model years 2014 to 2018 heavy-duty vehicles.

Project Analysis

An individual project does not generate enough GHG emissions to influence global climate change. Rather, global climate change is a cumulative impact. This means a project may contribute to a potential impact through its incremental change in emissions when combined with the contributions of all other sources of GHG[30]. 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. Gathering sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

The AB 32 Scoping Plan mandated by AB 32 includes the main strategies California would use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, the ARB released the GHG inventory for California (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008. (Figure 2–3)

[30] *This approach is supported by the AEP: Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the U.S. Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).*

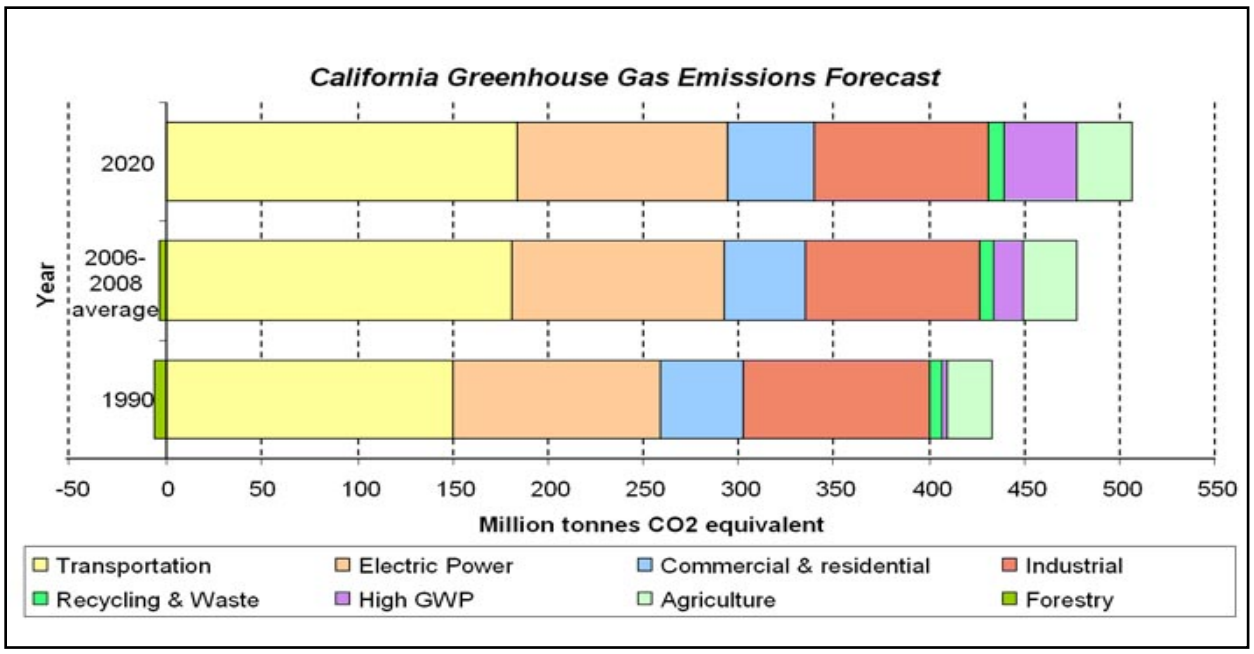


Figure 2—3. California Greenhouse Gas Forecast[31]

Caltrans and its parent agency, the Transportation Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels, and 40 percent of all human made GHG emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans published in December 2006[32].

The proposed project is not a congestion relief project and would not add capacity (including operational improvement projects that are expected to address future demand volumes), and a quantitative analysis is not required.

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced because of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions would

[31] *(Source: http://www.arb.ca.gov/cc/inventory/data/forecast.html)*

[32] *Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf*

be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

Sea Level Rise

Developed by Caltrans, The Guidance on Incorporating Sea Level Rise: For Use in the Planning and Development of Project Initiation Documents (2013) (State of California, 2013) is the primary guidance used to assess the potential effects of sea level rise (SLR) on transportation projects using a three-level screening criteria. This project is located along the coast and has a design life beyond 2030; however, there is no anticipated impact from SLR. Using Caltrans' internal mapping of SLR as a high-level screening tool, it has been determined the two project locations were not within the zone affected by future sea level rise scenarios. This information was corroborated with the technical judgment of the District 1 Hydraulics unit. This project does not require further analysis of sea level rise.

CEQA Conclusion

There will likely be an increase in GHG emissions over the existing levels in the future, with or without the project. Therefore, it is Caltrans' determination the proposed project would not have a direct, indirect or cumulative impact to GHG and climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

Greenhouse Gas Reduction Strategies

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from then-Governor Arnold Schwarzenegger's Strategic Growth Plan for California. The Strategic Growth Plan targeted a decrease in traffic congestion below 2008 levels and a corresponding reduction in GHG emissions, while accommodating growth in population and the economy. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as shown in Figures 2-4, the Mobility Pyramid.

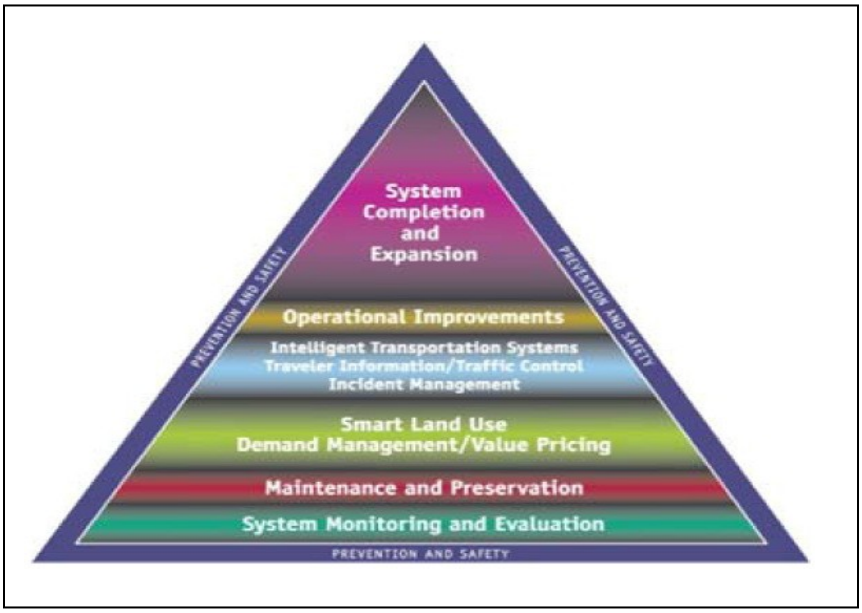


Figure 2—4. Mobility Pyramid

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities, but does not have local land use planning authority. Caltrans assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light and heavy-duty trucks. Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by participating on the Climate Action Team. It is important to note, however, control of fuel economy standards is held by the U.S. Environmental Protection Agency and the California Air Resources Board.

Caltrans is also working towards enhancing the state's transportation planning process to respond to future challenges. Similar to requirements for regional transportation plans under Senate Bill (SB) 375 (Steinberg 2008), SB 391(Liu 2009) requires the state's long-range transportation plan to meet California's climate change goals under Assembly Bill (AB) 32. The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce greenhouse gas (GHG) emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future statewide, integrated, multimodal transportation system. The purpose of the CTP is to provide a

common policy framework that would guide transportation investments and decisions by all levels of government, the private sector, and other transportation stakeholders. Through this policy framework, the CTP 2040 would identify the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs.

Table 2–12 summarizes statewide efforts that Caltrans is implementing to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Table 2—12: Climate Change/CO2 Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review	Department	Local governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Department	Local and regional agencies and other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional agencies	Department	Regional plans and application process	0.975	7.8
Operational Improvements and Intelligent Transportation Systems Deployment	Strategic Growth Plan	Department	Regions	State ITS; Congestion Management Plan	0.007	2.17
Mainstream Energy and GHG Consideration in Plans and Projects	Office of Policy Analysis and Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines and technical assistance	Not Estimated	Not Estimated
Educational and Informational Program	Office of Policy Analysis and Research	Interdepartmental, Cal/EPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening and Fuel Diversification	Division of Equipment	Department of General Services		Fleet replacement B20 B100	0.0045	0.0065 0.45 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy conservation opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	3.6
Goods Movement	Office of Goods Movement	Cal/EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.67

Note: MMT = million metric tons; Cal/EPA = California Environmental Protection Agency
Source: Climate Action Program, Climate Change Report, 2006a

Caltrans Director's Policy 30 (DP-30) Climate Change (approved June 22, 2012) is intended to establish a Department policy that would ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. Caltrans Activities to Address Climate Change (April 2013)[33] provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce greenhouse gas emissions resulting from agency operations.

Adaptation Strategies

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects would vary by location and may, in extreme cases, require a facility be relocated or redesigned. There may also be economic and strategic ramifications because of these types of impacts to the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and NMFS, released its interagency task force progress report on October 28, 2011[34], outlining the federal government's progress in expanding and strengthening the Nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provides an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as freshwater, and providing accessible climate information and tools to help decision-makers manage climate risks. Climate change adaptation must also involve the natural environment. Efforts are underway on a statewide level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts would help California agencies plan and implement mitigation strategies for programs and projects.

[33] *http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/projects_and_studies.shtml*

[34] *http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation*

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08 which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

In addition to addressing projected sea level rise, the California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state and federal public and private entities to develop The California Climate Adaptation Strategy (Dec 2009)[35], which summarizes the best-known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other state agencies were involved in the creation of the Adaptation Strategy document, including the California Environmental Protection Agency; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings.

The National Academy of Science was directed to prepare a Sea Level Rise Assessment Report[36] to recommend how California should plan for future sea level rise. The report was released in June 2012 and included:

- Relative sea level rise projections for California, Oregon and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates
- The range of uncertainty in selected sea level rise projections
- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems
- A discussion of future research needs regarding sea level rise

[35] *http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF*

[36] *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future (2012) is available at http://www.nap.edu/catalog.php?record_id=13389.*

In 2010, interim guidance was released by The Coastal Ocean Climate Action Team (CO-CAT), as well as Caltrans, as a method to initiate action and discussion of potential risks to the infrastructure of the state due to projected sea level rise. Subsequently, CO-CAT updated the Sea Level Rise guidance to include information presented in the National Academies Study.

All state agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for years 2050 and 2100 to assess project vulnerability, and to the extent feasible reduce expected risks, and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data.

All projects that have filed a Notice of Preparation as of the date of EO S-13-08, and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. The proposed project is outside the coastal zone and direct impacts to transportation facilities due to projected sea level rise are not expected.

Executive Order S-13-08 also directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system, and economy of the state. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change effects, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be needed to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is an active participant in the efforts conducted in response to EO S-13-08 and is mobilizing to respond to the National Academy of Science Sea Level Rise Assessment Report.

2.4 Temporary Construction Effects

The project would have the potential to cause temporary and short-term effects during construction. Standard measures would be implemented (Section 1.7) in order to comply with Tribal, State and Federal regulations. The potential effects are described below:

- Existing vegetation would be removed adjacent to both bridges to allow for construction. Removed vegetation would be mostly grass and small shrubs, however, a few small trees might need to be removed. At the conclusion of the project, all temporarily disturbed areas would be revegetated.

- Artificial lighting may be required. This activity would be visible to passing vehicles and local residents.

- The bridge replacement would require excavation, fill, existing pier removal, and grading. These activities, especially placement and removal of cofferdams or clear water diversions, could cause a temporary turbidity increase above background levels that could exceed thresholds set by the Yurok Tribe.

- Fugitive dust, because of bridge demolition and other construction activities, would have the potential to immediately reach the creeks or fall to the ground and later be discharged to waterways. Removal of riparian vegetation along the shoulders and access areas for construction would have the potential to increase water temperatures, which would result in a decrease in dissolved oxygen.

- Dewatering and channel diversion at Hunter Creek could have localized effects to groundwater and base flow.

- An estimated 0.17 acre of perennial flooded wetland and open water habitat in Panther Creek may be affected by temporary shading from the new bridge structure (prior to full replacement) and minor turbidity associated with removal of the existing bridge piles.

- The “Raymond can” concrete piles in Panther Creek would be pulled out of the channel with a crane operating from outside of the channel, resulting in minimal disturbance to the channel substrate. The removed piles would leave a shallow depression (less than a foot deep) within the channel bed that is expected to fill by natural deposition.

- There would be temporary impacts to approximately 0.14 acre of dry stream channel at Hunter Creek attributed to the disturbed soil area (DSA) associated with access and bridge pier construction.

- The temporary stream diversion at Hunter Creek may affect frogs, fish and other aquatic species because of electrofishing, relocation of fish, temporary turbidity and hydrologic changes. If stream diversion and fish relocation were performed, there could be a short-term impact on habitat connectivity and juvenile fish migration. All stream channel work within Hunter Creek would be completed within one construction season (June 15 to October 15). If a second year of construction were needed, stream diversion, if used, would be removed between project seasons.

- Suitable habitat and behavior of bird and bat species would have the potential to be affected during active construction.

- The proposed project may result in the generation of short-term construction-related air emissions, including fugitive dust and exhaust emissions from construction equipment. Fugitive dust, or "windblown dust", would be the primary short-term construction impact and may be generated during excavation, grading and hauling activities. The fugitive dust and construction equipment exhaust would be temporary and transitory in nature.

- Travelers may experience delays during periods of active construction that would require temporary lane closures. These delays could discourage some travelers from utilizing these access routes, but lane closures would be temporary and implementation of the proposed project's traffic management plan (TMP) would ensure access to adjacent properties would be provided during construction, and that delays would be 10 minutes or less.

- Noise generated by construction activities would depend on the noise levels generated by individual pieces of construction equipment, the type and amount of equipment operating at any given time, the timing and duration of construction activities, and the proximity of nearby sensitive receptors. Construction noise would primarily result from the operation of heavy construction equipment and arrival and departure of heavy-duty trucks. Construction noise levels would vary on a day-to-day basis during each phase of construction depending on the specific task being completed.

Chapter 3 Comments and Coordination

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization and/or mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including Project Development Team (PDT) meetings, courtesy coordination meetings, and informational meetings. This chapter summarizes the results of Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

The PDT is an internal project team, formed with project staff from many different disciplines to help the project manager direct the course of studies, make recommendations, and carry out the project work plan. They participate in major meetings, public hearings, and community involvement. They also serve as the nucleus for value analysis and are responsible for conducting studies and accumulating data throughout project development.

At a minimum, a PDT is composed of the project manager, a representative of the regional transportation planning agency (if involved), and representatives from district design, environmental, traffic, safety, surveys, construction and maintenance units, and the right of way branch. An environmental representative is a required member. The selection of additional team members depends on the scope and complexity of the proposed project. The interdisciplinary skills of the district, Headquarters, FHWA, local and regional agencies, and other sources are requested as needed to ensure engineering, social, economic, and environmental aspects are adequately assessed and reasonable evaluations and decisions are made. Representatives of resource and regulatory agencies are encouraged to participate. The PDT may include individuals from local or regional agencies and/or representatives of community groups.

3.1 Scoping Process

This project is a portion of the KGR Project, which was first initiated in 2002. Caltrans conducted a Value Analysis (VA) for the project in 2009 that involved the CCC, Yurok Tribe, CDFW, and various Caltrans staff. Because of the VA and several other meetings with non-Caltrans associations, several alternatives were considered. Due to environmental constraints, the project was shelved in 2011, and a No-Build Categorical Exemption was signed. When the project was re-initiated in 2013, the bridge alternatives that were developed as part of the KGR Project were included as part of this bridge replacement project. These alternatives are discussed

in Section 1.5. After the circulation of this Draft IS/EA (which would include a Public Meeting) and review and response to any received public comments, the PDT, using a stakeholder-based, context-sensitive alternative screening process, would decide whether to move forward with the proposed alternative.

3.2 Agency Consultation and Coordination

During preparation of the technical studies for the project, contacts were made with public agencies and local organizations with interest in the project. The consultation process would continue throughout the life of the project (Table 3–1).

3.2.1 Interagency Coordination and Professional Contacts

Table 3—1. Agency Coordination for Biological Resources

Coordination Effort	Date	Personnel
Site visit, technical assistance.	April 8, 2015	Gail Popham, Caltrans Biologist Tamara Dart, Caltrans Coordinator Rocco Fiori, Engineering Geologist (Yurok) Rebecca Bernard, NMFS Fish Biologist Micah Gibson, Yurok Environmental Suzanne Fluharty, Yurok Environmental Joe James, Yurok Transportation Clarence Hostler, NMFS Jamie Hostler, Caltrans Native American Liaison Dennis Wardlaw, Caltrans Archaeologist
Telephone conversation discussing coho mitigation options.	June 24, 2015	Gail Popham, Caltrans Biologist Sarah Beesley, Yurok Fisheries
Monthly Agency Meeting. Discuss coho mitigation options and potential effects to northern spotted owl and marbled murrelet.	Aug. 20, 2015	Dana York, Caltrans Environmental Rebecca Bernard, NMFS Fish Biologist Carol Heidsiek, USACE Clarence Hostler, NMFS Susan Leroy, Caltrans Environmental Greg Schmidt, USFWS JoAnn Dunn, CDFW Sarah Beesley, Yurok Fisheries Gail Popham, Caltrans Biologist Tamara Dart, Caltrans Coordinator
Monthly Agency Meeting. Discuss coho mitigation options.	Sept. 17, 2015	Dana York, Caltrans Environmental Rebecca Bernard, NMFS Fish Biologist Carol Heidsiek, USACE Clarence Hostler, NMFS Susan Leroy, Caltrans Environmental Greg Schmidt, USFWS JoAnn Dunn, CDFW Sarah Beesley, Yurok Fisheries Gail Popham, Caltrans Biologist Tamara Dart, Caltrans Coordinator
Meeting with California Coastal Commission to present proposed project and discuss potential impacts to coastal resources.	March 18, 2016	Bob Merrill, California Coastal Commission Sandra Rosas, Caltrans Env. Office Chief Stephanie Frederickson, Caltrans Biologist Steven Croteau, Caltrans Senior Tamara Dart, Caltrans Coordinator

Coordination Effort	Date	Personnel
Monthly Agency Meeting. Discuss coho mitigation options and potential effects to northern spotted owl, marbled murrelet, willow flycatcher, yellow-billed cuckoo, Pacific lamprey, and marine mammals.	March 23, 2016	Clarence Hostler, NMFS Dana York, Caltrans Environmental Greg Schmidt, USFWS Rebecca Bernard, NMFS Fish Biologist Stephanie Frederickson, Caltrans Biologist Steven Croteau, Caltrans Senior Susan Leroy, Caltrans Environmental Tamara Dart, Caltrans Coordinator
Meeting to discuss project impacts and need for consistency determination with CDFW.	March 22, 2016	Gordon Leppig, CDFW Supervisor Sandra Rosas, Caltrans Env. Office Chief Stephanie Frederickson, Caltrans Biologist Steven Croteau, Caltrans Senior Tamara Dart, Caltrans Coordinator
Telephone correspondence to discuss potential impacts to Pacific lamprey.	March 24, 2016	Damon Goodman, USFWS Biologist Stephanie Frederickson, Caltrans Biologist
Consultation with USFWS Caltrans Liaison, Greg Schmidt via email regarding use of the USFWS Programmatic Letter of Concurrence for evaluating effects to northern spotted owl and marbled murrelet.	May 3, 2016	Greg Schmidt, USFWS Stephanie Frederickson, Caltrans Biologist
Technical assistance with NMFS regarding southern DPS North American green sturgeon critical habitat. Received updated official species list.	May 5, 2016	Rebecca Bernard, NMFS Stephanie Frederickson, Caltrans Biologist
Site visit and meeting at Yurok headquarters to discuss project impacts and mitigation options.	May 13, 2016	Andrew Antonetti, Yurok Fisheries Sarah Beesely, Yurok Fisheries Scott Silloway, Yurok Fisheries Stephanie Frederickson, Caltrans Biologist Tamara Dart, Caltrans Coordinator

3.2.2 Native American Coordination

Caltrans initially began consultation with the Yurok Tribal Council and Robert McConnell in 2003 for the proposed Klamath Grade Raise Project. A record of past consultation can be found in the 2004 Historic Resources Evaluation Report (HRER) for the proposed Klamath Grade Raise Project, and the 2007 Supplemental HRER for the proposed Klamath Grade Raise Project.

For the purposes of the current project, Native American consultation resumed on March 18, 2015, with an initial notification letter addressed to Robert McConnell, Tribal Heritage Preservation Officer (THPO), for the Yurok Tribe.

From March 18, 2015 to May 31, 2016, through several emails, Caltrans and the Yurok THPO reviewed the project location, description of work, and concerns voiced by Yurok Tribe representatives. On April 18, 2016, the Yurok THPO provided Caltrans a signed letter of concurrence for the proposed project (Appendix E). Table 3–2 describes relevant coordination efforts with the Yurok Tribe.

Table 3—2. Agency Coordination with Yurok Tribe

Coordination Effort	Date	Personnel
Initial notification letter to Yurok Tribe	March 18, 2015	Bob McConnell, Yurok Tribal Heritage Preservation Officer Dennis Wardlaw, Caltrans Archaeologist
Field visit to discuss project	April 8, 2015	Dennis Wardlaw, Caltrans Archaeologist Gail Popham, Caltrans Biologist Jamie Hostler, Caltrans Native American Liaison Joe James, Yurok Transportation Micah Gibson, Yurok Environmental Rocco Fiori, Consultant Tribal Geologist Suzanne Fluharty, Yurok Environmental
U.S. mail, to Mr. Thomas P. O'Rourke, Honorable Chairperson for the Yurok Indian Tribe	May 27, 2015	Dennis Wardlaw, Caltrans Archaeologist
Caltrans presented the project to the Yurok Tribal Council at the Yurok Tribal Headquarters	Sept. 9, 2015	Steven Croteau, Caltrans Senior
Tina Fulton called Bob McConnell by phone to discuss any outstanding concerns	March 16, 2016	Bob McConnell, Yurok Tribal Heritage Preservation Officer Tina Fulton, Caltrans Archaeologist
ASR and HPSR sent to Bob McConnell	April 12, 2016	Bob McConnell, Yurok Tribal Heritage Preservation Officer Tina Fulton, Caltrans Archaeologist
THPO concurrence signed by Bob McConnell	April 18, 2016	Bob McConnell, Yurok Tribal Heritage Preservation Officer Steven Croteau, Caltrans Senior Tina Fulton, Caltrans Archaeologist
Site visit and meeting at Yurok headquarters to discuss project impacts and mitigation options	May 13, 2016	Andrew Antonetti ,Yurok Fisheries Sarah Beesley, Yurok Fisheries Scott Silloway, Yurok Fisheries Stephanie Frederickson, Caltrans biologist Tamara Dart, Caltrans Coordinator

Chapter 4 List of Preparers

Troy Arseneau, Transportation Engineer (Project Management). Contribution: Project Manager

Steve Croteau, Senior Environmental Planner. Contribution: Document Preparation Oversight

Tamara Dart, Associate Environmental Planner. Contribution: Environmental Coordinator and Document Writer

Jason Frederickson, Associate Environmental Planner. Contribution: Peer Review

Stephanie Frederickson, Associate Environmental Planner (Natural Sciences). Contribution: Project Biologist, Natural Environmental Study (NES)

Tina Fulton, Associate Environmental Planner (Archaeology). Contribution: Historic Property Survey Report (HPSR)

Jamie Lusk, Traffic Safety. Contribution: Traffic Management Plan

Fernando Manzanera, Transportation Engineer (Design). Contribution: Hydraulics and Floodplain Analysis

Danette Matcham, Associate Right of Way Agent. Contribution: Right of Way Data Sheet

Jason Meyer, Associate Environmental Planner. Contribution: NEPA Quality Control/Quality Assurance Review

Logan Moore, Landscape Architect. Contribution: Visual Impact Assessment (VIA)

Tom Phillips, Transportation Engineer (Design). Contribution: Project Design and Construction Scenario

Ryan Pommerenck, Environmental Planner. Contribution: Air Quality and Noise Studies

Karen Radford, Office Support. Contribution: Technical Review

Steve Werner, Engineering Geologist (Hazardous Waste). Contribution: Hazardous Waste Initial Site Assessment (ISA)

APPENDIX A

California Environmental Quality Checklist

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 indicate no impacts. A “No Impact” answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion either is included following the applicable section of the checklist or is within the body of the environmental document itself. 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.

A discussion of the “No Impact” determinations identified below is in Section 2.1.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE AND FOREST RESOURCES: **In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forestland or conversion of forestland to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY: **Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) 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 (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate,	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
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?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
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?	☐	☐	☐	☒
V. CULTURAL RESOURCES: **Would the project:**				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
I) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist, for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
VII. GREENHOUSE GAS EMISSIONS:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans			
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
reducing the emissions of greenhouse gases?	determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document. Would the project			
VIII. HAZARDS AND HAZARDOUS MATERIALS: **Would the project:**				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
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?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒
IX. HYDROLOGY AND WATER QUALITY: **Would the project:**				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Map or other flood hazard delineation map?				
h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding because of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒
X. LAND USE AND PLANNING: **Would the project:**				
a) Physically divide an established community?	☐	☐	☐	☒
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
XI. MINERAL RESOURCES: **Would the project:**				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒
XII. NOISE: **Would the project result in:**				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
XIII. POPULATION AND HOUSING: **Would the project:**				
a) Induce substantial 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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios,	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
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?	☐	☐	☐	☒
XVI. TRANSPORTATION/TRAFFIC: **Would the project:**				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
XVII. UTILITIES AND SERVICE SYSTEMS: **Would the project:**				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to 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?	☐	☐	☐	☒
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)?	☐	☐	☐	☒
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

APPENDIX B

Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
P.O. BOX 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY 711
www.dot.ca.gov

Flex your power!
Be energy efficient!

March 2013

NON-DISCRIMINATION
POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact the California Department of Transportation, Office of Business and Economic Opportunity, 1823 14th Street, MS-79, Sacramento, CA 95811. Telephone: (916) 324-0449, TTY: 711, or via Fax: (916) 324-1949.

MALCOLM DOUGHERTY
Director

"Caltrans improves mobility across California"

APPENDIX C

Mitigation Measures Summary

Mitigation Measures Summary

Natural Communities, Wetlands, Relatively Permanent Waters, and Riparian Habitat

As discussed in the Standard Measures section (Section 1.7), all disturbed soil areas would be restored through invasive weed removal and by replanting with native vegetation. While these measures may adequately offset any potential effects, Caltrans anticipates pursuing off-site restoration (mitigation). If off-site restoration were implemented, the appropriate measures would be identified and coordinated through the Yurok Tribe, CDFW, and any other administering agencies. If it is determined through this coordination that off-site restoration would not be necessary, then these efforts would not be pursued. Initial coordination with the Yurok Tribe indicated that, as a mitigation measure, they would support removal of invasive reed canary grass (*Phalaris arundinaceae*) which is continuing to encroach on Panther Creek Pond.

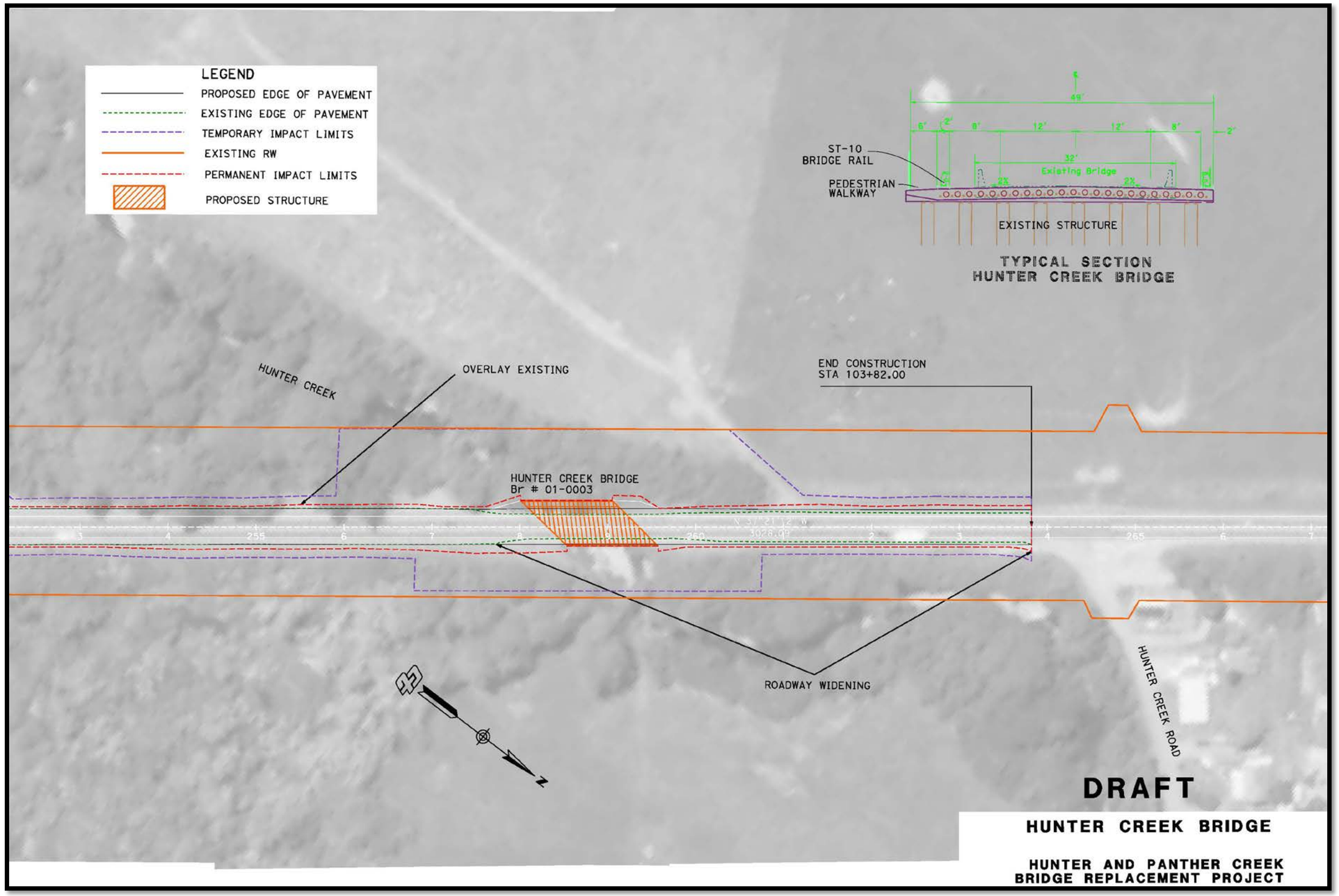
Fish

Through consultation with YTFP, various mitigation options have been identified. Mitigation may include one of them or options that have not yet been identified. The decision regarding suitable and adequate mitigation would be made through coordination with NMFS, CDFW, and the Yurok Tribe during the permitting phase:

- Restoration of Panther Creek to remove invasive reed canary grass (*Phalaris arundinacae*) that is continuing to encroach on the creek. Removal of the invasive grass would be followed by planting of native riparian trees since reed canary grass is best controlled through shading.
- Removal of a portion of the material from the beaver dam at Panther Creek that is filling with sediment, impeding movement of water, and creating a barrier to fish.
- Improving fish passage on an adjacent tributary within the watershed in need of improvements for fish passage, such as Waukell Creek, Saugep Creek, or Spruce Creek.

APPENDIX D

Layout Sheets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EXISTING RW
PERMANENT IMPACT LIMITS
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HUNTER CREEK BRIDGE
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HUNTER CREEK BRIDGE
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ROADWAY WIDENING
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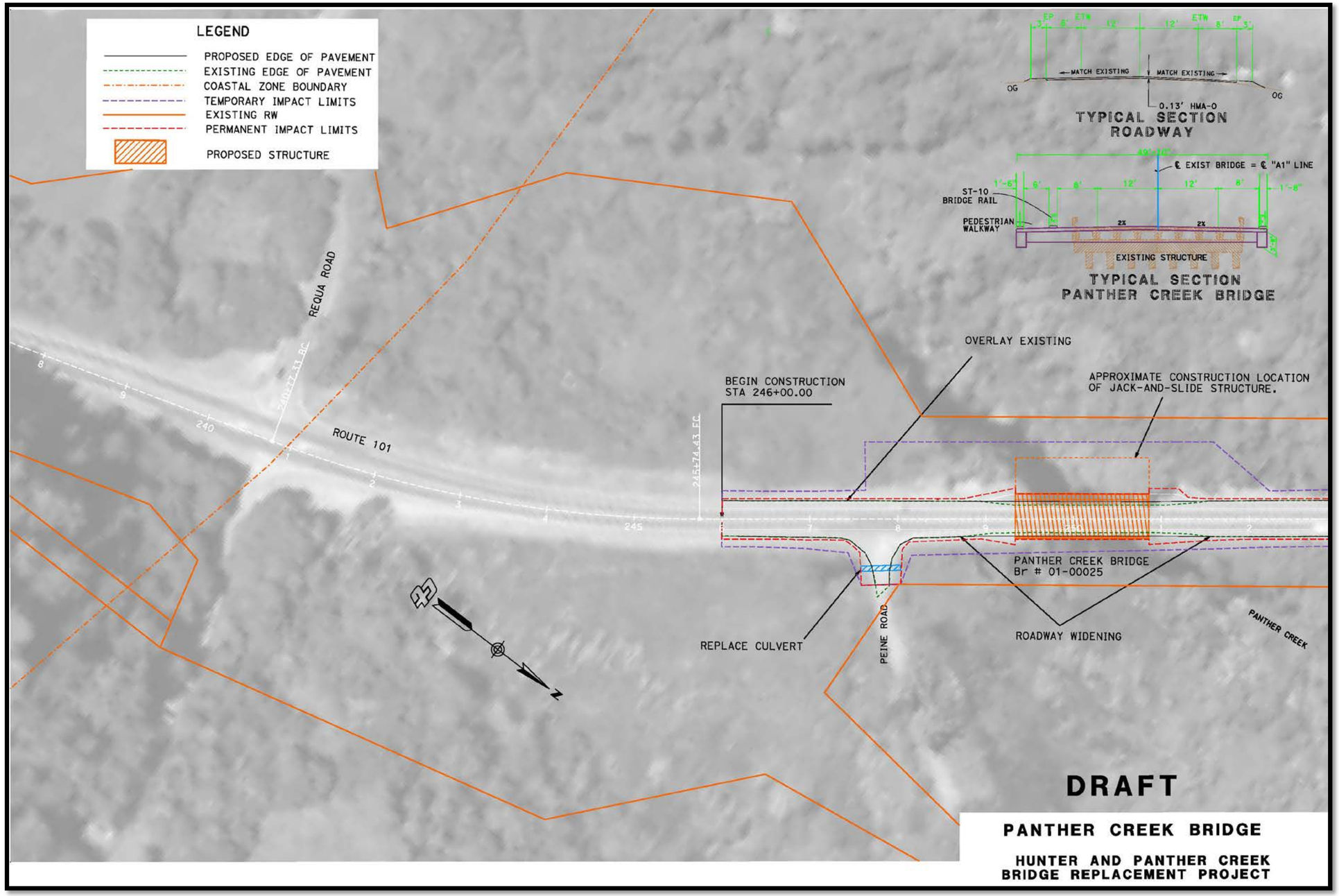
HUNTER CREEK BRIDGE
HUNTER AND PANTHER CREEK
BRIDGE REPLACEMENT PROJECT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OF JACK-AND-SLIDE STRUCTURE.
PANTHER CREEK BRIDGE
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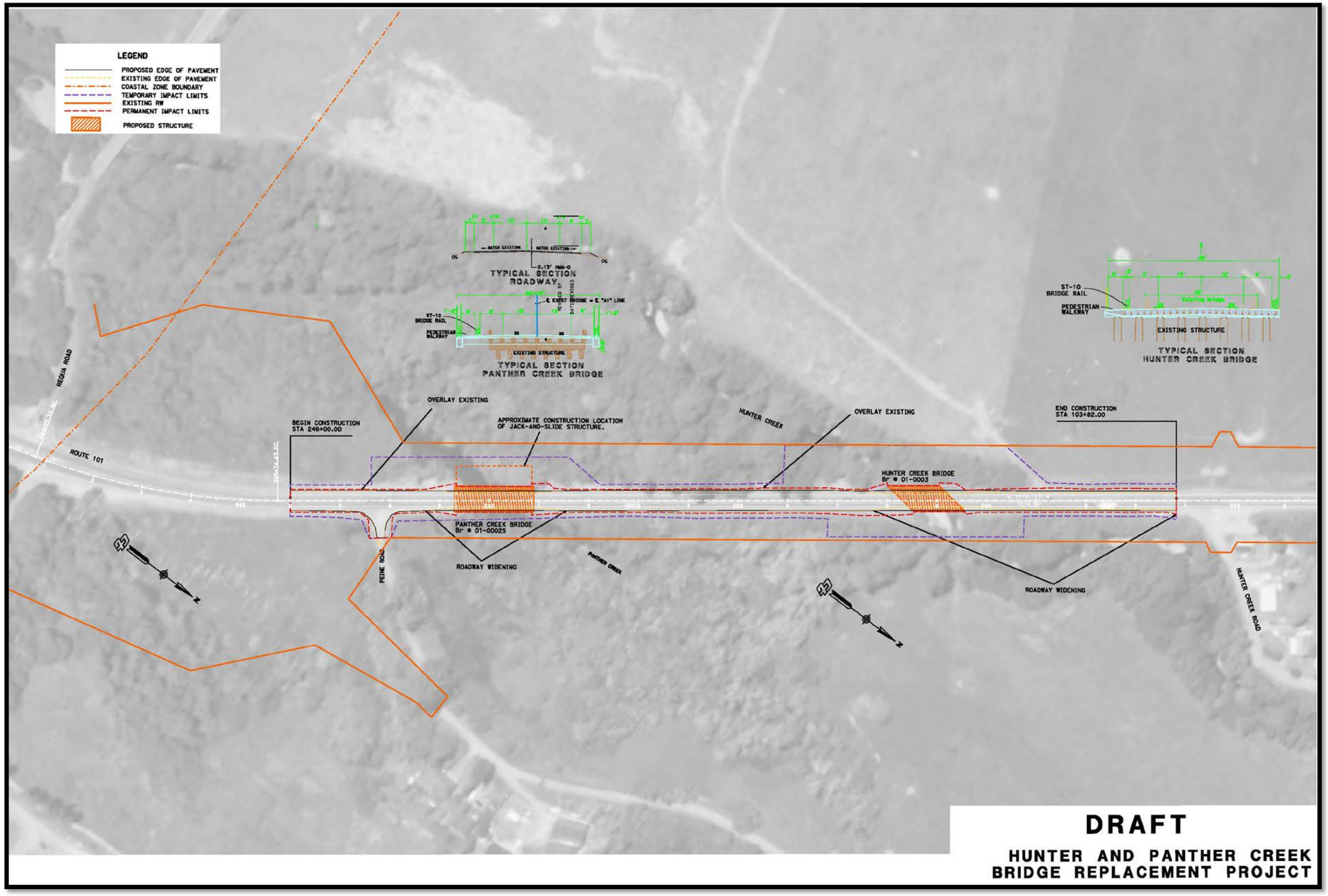
PEINE ROAD
ROADWAY WIDENING
PANTHER CREEK
DRAFT
PANTHER CREEK BRIDGE
HUNTER AND PANTHER CREEK
BRIDGE REPLACEMENT PROJECT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COASTAL ZONE BOUNDARY
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TYPICAL SECTION
ROADWAY
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BRIDGE RAIL
PEDESTRIAN
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OF JACK-AND-SLIDE STRUCTURE.
HUNTER CREEK
OVERLAY EXISTING
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Br # 01-0003
PANTHER CREEK BRIDGE
Br # 01-00025
ROADWAY WIDENING
PEINE ROAD
PANTHER CREEK
ROADWAY WIDENING
HUNTER CREEK ROAD
DRAFT
HUNTER AND PANTHER CREEK
BRIDGE REPLACEMENT PROJECT

APPENDIX E

Signed THPO Concurrence Letter

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 1, P.O. BOX 3700
EUREKA, CA 95502-3700
PHONE (707) 445-4567
FAX (707) 441-5775
TTY 711

Serious drought!
Conserve water!

April 12, 2016

Mr. Robert McConnell
Tribal Heritage Preservation Officer
P.O. Box 196 (HC 67)
Hoopa, CA 95546

File: 01-DN -101
PMs 8.2 / 8.7
01-0B090
Hunter/Panther Creek
Bridge Replacement

Dear Mr. McConnell:

Please find enclosed the HPSR, ASR and attachments for the proposed Hunter Creek, Panther Creek Bridge Replacement Project. The California Department of Transportation (Caltrans) proposes to concurrently replace two bridges (Panther Creek Bridge [Bridge #01- 0025] at PM 8.34, and the Hunter Creek Bridge [Bridge #01- 0003] at PM 8.51) on the Yurok Tribe Reservation in Del Norte County, on US 101, roughly one mile east of the mouth of the Klamath River. Caltrans requests your concurrence that:

1) The Area of Potential Effects map is adequate, pursuant to 36 CFR 800.4(a)(1);
2) The Finding of No Historic Properties, according to 36 CFR 800.4(d)(1), is appropriate;
3) The proposed cultural resource studies are adequate pursuant to 36 CFR 800.4; and
4) The responsibilities pursuant to 36 CFR 800.4 implementing Section 106 of the National Historic Preservation Act have been met.

Caltrans has determined that a finding of no impact, pursuant to CEQA Guidelines §15064.5(b)(3), is appropriate because there are no historical resources within the Project Area limits.

If you have any questions, please contact Tina Fulton at Tina.Fulton@dot.ca.gov or (707) 441-4567.

Sincerely, Steve Croteau

Steve Croteau, Senior Environmental Planner
North Region Environmental Services Branch E1

Attachments
1. HPSR
2. ASR
3. Hunter Creek / Panther Creek Bridge Replacement Data

Robert McConnell
Mr. Robert McConnell, THPO
Concurs with this finding

4-18-16
Date

"Caltrans improves mobility across California"

APPENDIX F

California Coastal Commission Coastal Zone Management Act

"No Effects" Determination

STATE OF CALIFORNIA -- NATURAL RESOURCES AGENCY EDMUND G. BROWN, *Governor*

CALIFORNIA COASTAL COMMISSION

45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

April 26, 2016

Tamara Dart
Caltrans, District 1
P.O. Box 3700
Eureka, CA 95502-3700

Re: **NE-0004-16,** No Effects Determination, Caltrans, Hunter and Panther Creek Bridge Replacement Projects, Highway 101, Del Norte Co.

Dear Ms. Dart:

The Coastal Commission staff has received the above-referenced "no effects" determination for the replacement of the Hunter and Panther Creek Bridges, approximately 18 miles south of Crescent City, on Highway 101 in Del Norte County. The creeks are tributaries of the Klamath River, and the Highway 101 crossings are located slightly outside the coastal zone. The new bridges are needed to meet current seismic and design standards.

The new Panther Creek bridge will be a single-span, 160 ft. long, steel-arch structure, which will avoid any permanent wetland or creek fill by fully spanning the creek. The new Hunter Creek bridge will be a two-span, 130 ft. long, cast-in-place/prestressed structure. One pier will be located within the creek channel; however it will reduce fill in the creek compared to existing conditions, because the existing bridge is supported by two piers in the creek. In-water work will be needed for this replacement bridge. Both bridges have been designed to accommodate separated bicycle and pedestrian access.

The project will include a number of measures to protect public views, air and water quality, wetlands and other sensitive habitats, agriculture, and cultural resources. These would include aesthetic treatment of the bridges, restoration of disturbed areas with native vegetation, avoidance of use of agricultural lands for staging areas, use of Best Management Practices and other water quality measures, temporary creek flow diversions, use of dust and air pollution controls in accordance with air district rules, limiting in-water work to the low-flow season (June 15-Oct. 15), monitoring by a biological monitor and worker education, fencing sensitive areas, hydroacoustic monitoring where warranted (through consultation with the National Marine Fisheries Service), limitations on any night lighting needed, and consultation with the Yurok tribe to assure protection of cultural resources and native ceremonial activities.

We **agree** with your assessment that, with the above measures, these two bridge replacement projects activity would not adversely affect wetlands, streams, environmentally sensitive habitat, water quality, public views, or other coastal zone resources. We therefore **concur** with your "no effects" determination. Please contact Mark Delaplaine at (415) 904-5289 if you have any questions.

Sincerely,

(for) JOHN AINSWORTH
Acting Executive Director

cc: Arcata District
U.S. Army Corps of Engineers, San Francisco District

APPENDIX G

Bridge Terminology and Design

LIST OF BRIDGE DEFINITIONS

The following list of definitions has been provided to assist the public and other reviewers of this document in understanding the technical terms used to describe methods of construction used in bridge replacement.

Abutment: A retaining wall supporting the ends of a bridge, and, in general, retaining or supporting the approach embankment.

Approach: The part of the bridge that carries traffic from the land to the main parts of the bridge.

Backwater: The increase in the upstream water elevation resulting from an obstruction to flow, such as a bridge and/or embankment placed in the floodplain.

Barrier Rail: A low, reinforced concrete wall along edges of a bridge to prevent vehicles from going over the sides. The railing may or may not adopt some form of safety shape.

Beam: A horizontal structural member supporting vertical loads by spanning from one support to another. A box beam is a hollow box: its cross-section is a rectangle or square.

Bearing Pile: A member constructed of steel and/or concrete driven into the ground to carry axial loads. A member of the Substructure.

Bearing: A device at the ends of beams that is placed on top of a pier or abutment. The ends of the beam rest on the bearing, which is an element that provides the interface between the superstructure and the substructure. The bearing transmits load from the superstructure to the substructure and allows for thermal movements and rotations due to traffic.

Bedrock: The solid rock layer beneath sand or silt.

Bent Cap: A horizontal substructure element that receives the load from the superstructure and transfers the load to columns or piles.

Bent: A type of pier comprised of multiple columns. A rigid frame commonly made of reinforced concrete or steel that supports a vertical load and is placed transverse to the length of a structure. Bents are commonly used to support beams and girders. An end bent is the supporting frame forming part of an abutment. The vertical members of a bent are columns or piles.

Cast-in-Place (CIP): Concrete poured within formwork on site to create a structural element in its final position. The most likely elements to be cast-in-place include bent, bent cap, abutment, wing wall and in some cases deck.

Cofferdams: A barrier, usually temporary, constructed to exclude water from an area that is normally submerged. Made commonly of steel sheet piles, cofferdams allow construction on the dams, bridges, and similar structures.

Crashworthy: A system that has been crash tested to establish that its structural and geometric performance is of/at an established level.

Culvert: A drain, pipe, or conduit that allows water to pass under a road or railroad embankment.

Deck: The component of a bridge that is driven upon, including shoulders. Some decks are asphalt while others are constructed as reinforced concrete slabs. Average Daily Traffic determines which surface is used.

Diversion Channel: A bypass created to divert water around a structure so that construction can take place.

Embankment: A raised area of fill used in roadway approaches. In some cases, retaining walls are used to support or "hold in" the fill area where other constraints exist adjacent to the approaches.

Fill: Earth, stone or other material used to raise the ground level, form an embankment or fill the inside of an abutment, pier or closed spandrel.

Flood Frequency: The concept of the probable frequency of a given flood. More precisely it is the inverse of the probability that a flood will be exceeded at least once in a given year.

Footing: The enlarged lower portion of the substructure or foundation that transfers load from a column directly to the soil, bedrock or piles: usually below grade and not visible.

Freeboard: The clearance between the bottom of the superstructure and the design high-water elevation.

Functionally Obsolete: A functionally obsolete bridge is one that was built to standards that are not used today. These bridges are not automatically rated as structurally deficient, nor are they inherently unsafe.

H-Piles: Square structural beams used as piles for deep foundations. They have a vertical "flange" on each side that runs perpendicular to the lateral "web." From above, they look like the letter "H."

Half-width Construction: Bridge construction method where the bridge is constructed one lane at a time so that one lane of traffic is open at all times.

Headwall: The device placed at the end of a bridge that comprises a large portion of the abutment. Headwalls are used to retain the road formation soil around and above the abutments and prevent erosion at the abutment.

Impact Hammer Pile Driving: Method of installing piles by dropping weight on segments of steel casing with impact hammers. Hammers may be lifted by steam, air, or diesel.

"Jack and Slide": Bridge construction method that involves construction of the bridge adjacent to the old bridge and then moving the bridge laterally into place. This method typically reduces construction time, environmental impacts, and traffic delays.

Oscillation Pile Driving: Method of installing piles by oscillating segments of steel casing with hydraulic cylinders.

Parapet: A railing system made of reinforced concrete along the outside edge of a bridge deck used to protect vehicles and pedestrians.

Pier: Also called bent. Typically bents with one column are called piers.

Pile: A long column driven deep into the ground to form part of a foundation or substructure. (See Bearing Pile).

Post-tensioning: Application of tensile forces to the steel tendons after the segments are in place. These forces allow the span to carry the desired loads.

Pre-Cast Girder: Girder is fabricated off-site of Portland cement using reinforcing steel and post-tensioning cables. These girders are shipped to the construction site by truck and hoisted into place by cranes.

Prestressed Concrete: A type of pre-cast concrete girder in which compressive stresses are introduced by the application of pre-stressing forces in a fabrication facility. The pre-stressing tendons are stretched, the concrete cast and set around them and then released from the form. These forces allow the member to carry larger loads than conventional reinforcement.

Reinforced Concrete: Concrete with steel bars or mesh embedded in it for increased strength and durability.

Revetment: A facing of masonry or stones to protect an embankment from erosion.

Rip Rap: Gabions, stones, blocks of concrete or other protective covering material of like nature deposited upon river and stream beds and banks, to prevent erosion and scour by water flow.

Scour: Removal of material from the streambed or embankment as a result of erosive action of stream flow.

Sheet Piles: Piles that are relatively thin, interlocking sheets of steel that are installed to obtain a continuous barrier below ground. The primary use of these piles is retaining walls and cofferdams.

Skew: When the superstructure is not perpendicular to the substructure, a skew angle is created. The skew angle is the angle between the alignment of the superstructure and the alignment of the substructure.

Span: The horizontal space between two supports of a structure. Also refers to the structure itself. The clear span is the space between the inside surfaces of piers or other vertical supports. The effective span is the distance between the centers of two supports. Bridges are referred to by the number of spans creating the entire bridge. For a single-span bridge, the structure extends from one abutment to another without crossing over an intermediate support or creating a cantilever.

Structurally Deficient: Bridges are considered structurally deficient if significant load-carrying elements are found to be in poor condition due to deterioration or the adequacy of the waterway opening provided. The fact that a bridge is classified under the federal definition as “structurally deficient" does not imply that it is unsafe. A structurally deficient bridge typically requires significant maintenance to remain in service and eventual rehabilitation or replacement to address deficiencies. Structurally deficient bridges are often posted with weight limits of vehicles using the bridges to less than the maximum weight typically allowed by statute.

Substructure: The substructure consists of all parts that support the superstructure. The main components are abutments or end-bents, Piers or interior bents, Foundation, Footings, and Pilings.

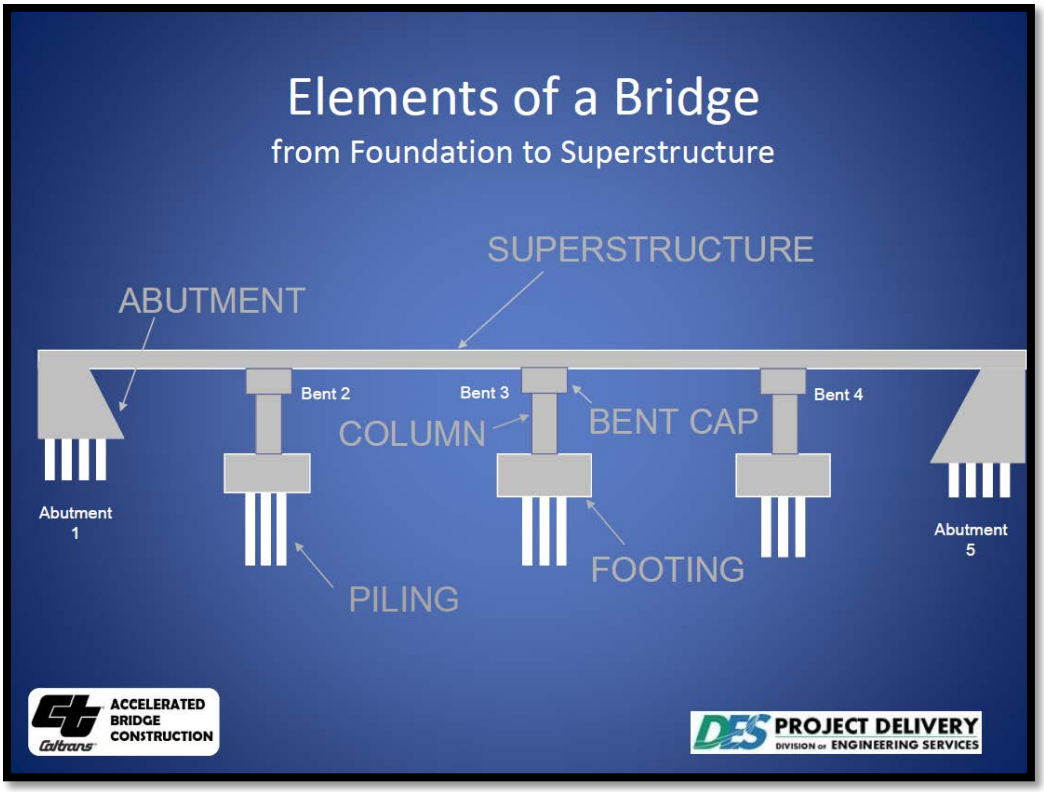
Superstructure: The component of a bridge, which supports the deck or riding surface of the bridge. The superstructure consists of the components that actually span the obstacle the bridge is intended to cross. It includes the bridge deck, structural member, parapets, handrails, sidewalk, lighting and drainage features

Tendon: Steel strands used for post tensioning.

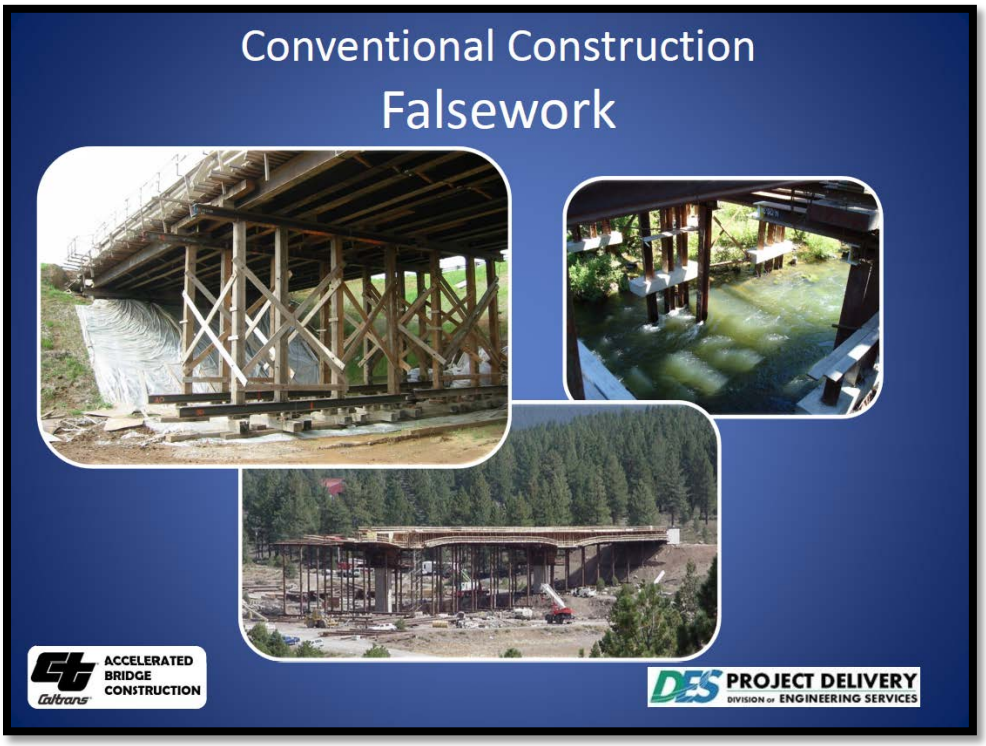
Vibratory Pile Driving: Method of installing piles by vibrating segments of steel casing Vibratory hammers are electrically or hydraulically powered, usually have a variable operating frequency range (vibrations per minute).

Wearing Surface: The topmost layer of material applied upon a roadway to receive the traffic loads and to resist the resulting disintegrating action: also known as wearing course.

Wing Walls: The retaining wall extension of an abutment intended to retain the side slope material of an approach roadway embankment.

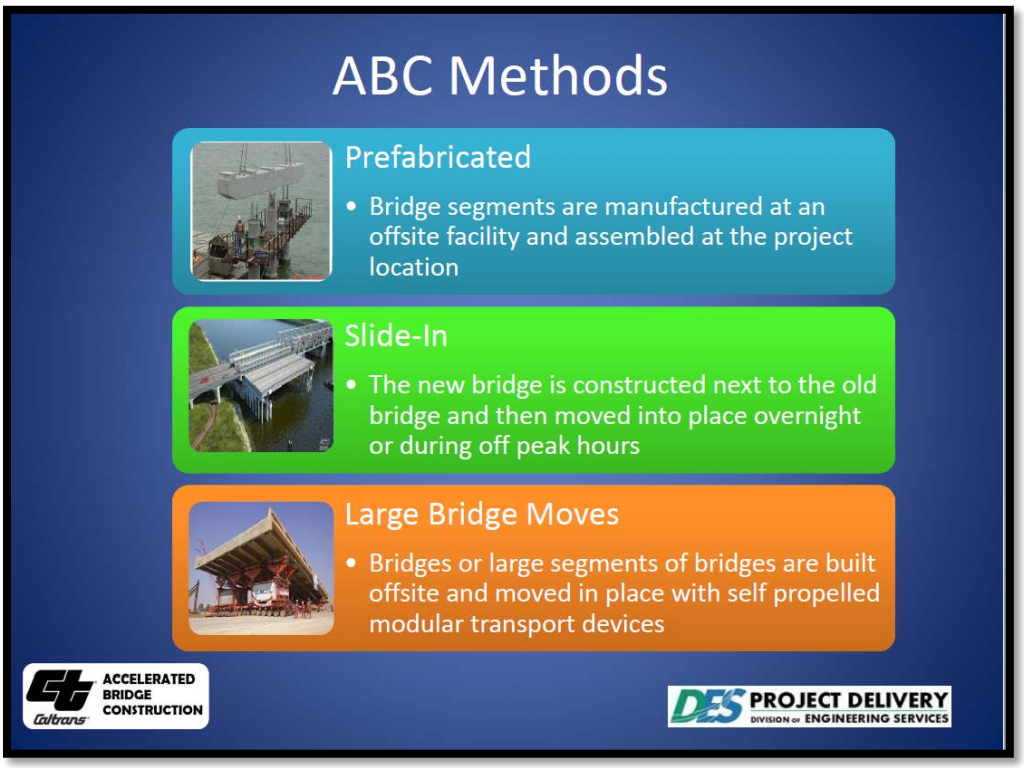


Elements of a Bridge

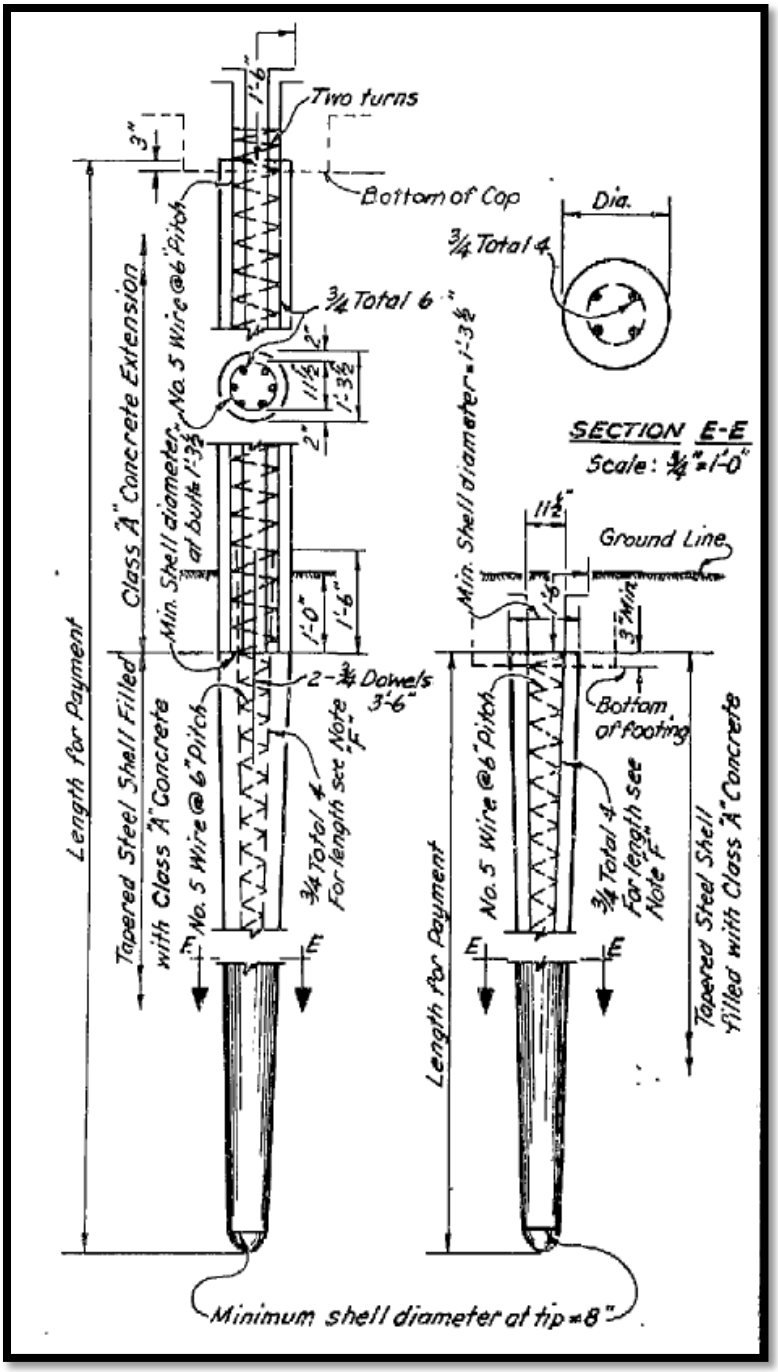


Conventional Construction Falsework

Conventional Construction Cast-In-Place Concrete



Alternative Bridge Construction (ABC) Methods



Raymond Can on Panther Creek Bridge

APPENDIX H

List of Abbreviations and Acronyms

List of Abbreviations and Acronyms

ADL	Aerially Deposited Lead
APE	Area of Potential Effects
BLM-S	Bureau of Land Management Sensitive
BMPs	Best Management Practices
BSA	Biological Study Area
Cal/EPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CH4	methane
CIA	Community Impact Analysis
CIP	cast-in place
CISS	Cast in Steel Shell
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO2	carbon dioxide
CO-CAT	Coastal Ocean Climate Action Team
Cortese List	Hazardous Waste and Substances Site List
CTP	California Transportation Plan
CWA	Clean Water Act
DO	dissolved oxygen
DPS	distinct population segment
DSA	disturbed soil area
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act Consultation
ESA	Environmental Sensitive Area
FESA	Federal Endangered Species Act
FHS	Floodplain Hydraulic Study

FHWA	Federal Highway Administration
fluoroform	HFC-23
FMMP	Natural Resources Conservation Service Farmland Mapping and Monitoring Program
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
HFC-23	fluoroform
HFC-134a	S,s,s,2-tetrafluoroethane
HFC-152a	filuoroethane
HPSR	Historic Property Survey Report
HRER	Historic Resources Evaluation Report
IPCC	Intergovernmental Panel on Climate Change
IS/EA	Initial Study/Environmental Assessment
ISA	Initial Site Assessment
KGR	Klamath Grade Raise and Rehabilitation project
MAP-21	Moving Ahead for Progress in the 21st Century
MLD	Most Likely Descendent
MND	Mitigated Negative Declaration
MPO	Metropolitan Planning Organization
MS4s	municipal separate storm sewer systems
MSA	Magnuson-Stevens Fishery Conservation and Management Act
N2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCSC	Natural Communities of Special Concern
NCUAQMD	North Coast Unified Air Quality Management District
ND	negative declaration
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHTSA	National Highway Traffic Safety Administration
NMFS	National Oceanographic and Atmospheric Administration/National Marine Fisheries Service
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollution Discharge Elimination System
OHWM	Ordinary Highwater Mark
OPR	Office of Planning and Research
OSTP	Office of Science and Technology Policy
PC/PS	precast/pre-stressed
PDT	Project Development Team
PEM1C	Palustrine Emergent, Persistent wetlands
PFO/SS1C	Palustrine Scrub-shrub and Forested wetlands
PM	post miles

PRC	Public Resources Code
PUBH	Palustrine freshwater, Unconsolidated Bottom, Permanently Flooded wetland
Resources Agency	California Natural Resources Agency
RPW	Relatively Permanent Waters
RPW	Riverine Upper Perennial Unconsolidated Bottom
RSP	Rock Slope Protection
RWQCB	Regional Water Quality Control Board
SCC	Species of Special Concern
SCS	Sustainable Communities Strategy
SEL	sound exposure levels
SF6	sulfur hexafluoride
SHOPP	State Highway Operation and Protection Program
SLR	sea level rise
SONCC	Southern Oregon and Northern California Coastal
STRAIN	Structure Replacement and Improvement Needs
SWDR	Stormwater Data Report
SWPP	Storm Water Pollution Prevention
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resource Control Board
THPO	Tribal Heritage Preservation Officer
TMDLs	total maximum daily loads
TMP	Traffic Management Plan
UKTR	Upper Klamath and Trinity River
US 101	U.S. Highway 101
USACE	United State Army Corps of Engineers
USC	United States Code
USDOT	United States Department of Transportation
USFWS	U.S. Fish and Wildlife Service
VA	Value Analysis
VIA	Visual Impact Assessment
WIFL	Little Willow Flycatchers
WQOs	Water Quality Objectives
YOY	young-of-year
YTFP	Yurok Tribal Fisheries Program

APPENDIX I

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