197/199 Safe STAA Access Project

Volume I

Final Environmental Impact Report/ Environmental Assessment and Section 4(f) Evaluation

State Clearinghouse Number: 2008082128

SR 197 and US 199 in Del Norte County
Ruby 1, 01-DN-197 PM 4.5; Ruby 2, 01-DN-197 PM 3.2-4.0;
Patrick Creek Narrows, 01-DN-199 PM 20.5-20.9, PM 23.92-24.08, & PM 25.55-25.65;
Washington/Narrows, 01-DN-199 PM 22.7-23.0, & PM 26.3-26.5
EA: 01-48110, 01-45490, 01-47940, 01-4500U

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 U.S.C. 327.

April 2013

Caltrans

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CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT

FOR

(197/199 Safe *STAA Access Project*)

The California Department of Transportation (Caltrans) has determined that the Ruby 2: Two-foot Shoulders in Spot Locations, Patrick Creek Location 2: Downstream Bridge Replacement, and Washington Curve: Cut-slope Alternatives as well as the build alternatives for the other locations will have no significant impact on the human environment. This FONSI is based on the attached EA which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. It provides sufficient evidence and analysis for determining that an EIS is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the attached EA (and other documents as appropriate).

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 U.S.C. 327.

April 10, 2013
Date

Caltrans District Director

197/199 Safe STAA Access Project

Final Environmental Impact Report/ Environmental Assessment and Section 4(f) Evaluation

SR 197 and US 199 in Del Norte County

Ruby 1, DN 197 PM 4.5 (EA 01-481100)

Ruby 2, DN 197 PM 3.2–4.0 (01-454900)

Patrick Creek Narrows, DN 199 PM 20.5–20.9 (Location 1), PM 23.92–24.08 (Location 2), PM 25.55–25.65 (Location 3) (EA 01-479400)

Washington/Narrows, DN 199 PM 22.7–23.0 and 26.3-26.5 (EA 01-4500U)

April 2013

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

STATE OF CALIFORNIA
Department of Transportation

Approved By: _____ Date: April 10, 2013

Charles C. Fielder
District 1 Director
California Department of Transportation

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Summary

Introduction

The California Department of Transportation (Department) is proposing to construct improvements at spot locations on State Route 197 (SR 197) and U.S. Highway 199 (US 199) in Del Norte County to be able to reclassify the routes as part of the Federal Surface Transportation Assistance Act (STAA) truck route network and to comply with federal and state legislation and regional programs, plans, and policies to allow STAA access. The proposed project is made up of five previously identified, separately proposed projects. These five projects were referred to as Ruby 1, Ruby 2, Patrick Creek Narrows (Locations 1, 2, and 3), the Narrows, and Washington Curve and include a total of seven locations. Since circulation of the original Draft Environmental Document in 2010, the Narrows and Washington Curve have been combined into one project. The proposed project for CEQA and NEPA review in this document combines these four projects into one (due to shared purpose and need) and makes use of the names of the original five projects to identify the location of each improvement currently proposed. All seven project locations currently have roadway geometries that can result in STAA trucks and other long-wheelbase vehicles offtracking across the double yellow line and entering the oncoming traffic lane. Additionally, the limited sight distances at all seven project locations do not allow enough time for drivers to adequately react to roadway conditions ahead and make timely decisions to avoid unexpected conditions ahead.

Overview of Project Area

The proposed project is located in Del Norte County on SR 197 and US 199, east of US 101. The project vicinity and locations are shown in Figure 1-1. Within the project limits, SR 197 and US 199 are rugged, two-lane conventional highways with tight curves and steep cut-slopes providing narrow traffic lanes with narrow shoulders, if shoulders exist.

SR 197 is the designated route for the movement of extralegal[1] truck loads between US 101 and the SR 197/US 199 intersection because it avoids traversing Jedediah Smith Redwoods State Park (located along the westernmost segment of US 199 between US 101 and the SR 197/US 199 intersection) and therefore minimizes impacts on the park and associated environmental resources. SR 197, also known as North Bank Road, is a curvilinear two-lane highway built in the 1930s. It is an important link between US 199 and US 101. SR 197 primarily serves regional and interregional traffic, providing access to homes and public recreational facilities along the Smith River, including Ruby Van Deventer County Park, which provides river access.

Within the project limits, US 199 traverses the canyon of the Middle Fork Smith River. US 199 within the project limits was built in the early 1920s. Highway attributes that characterize this

[1] An *extralegal load* is defined in CVC Section 320.5 as a single unit or an assembled item that, because of its design, cannot be reasonably reduced or dismantled in size or weight so that it can be legally transported as a load without a permit as required by CVC Section 35780. This code section does not apply to loads on passenger cars. Section 35780 requires permits for variances such as size and weight.

area include cliffs, rocky outcrops, dramatic views of the Middle Fork Smith River, and a tightly curved alignment. US 199 links US 101 north of Crescent City to I-5 in Grants Pass.

Purpose and Need

The purpose of the proposed project is to adjust the roadway alignment to accommodate STAA truck travel, thereby removing the restriction for STAA vehicles, and improving goods movement. By making improvements to accommodate STAA trucks, the prohibition for STAA vehicles would be removed, the SR 197/US 199 route would be consistent with federal and state legislation and regional programs, plans, and policies, and the safety and operation of US 199 and SR 197 would be enhanced. This would improve goods movement, and also enhance safety of the routes for automobiles, trucks, and other large vehicles such as motor-homes, buses, and vehicles pulling a trailer.

The primary need for the project is the result of sub-standard curves; absence of, or substandard, shoulders along the traveled way; and narrow lanes. These geometric improvements are necessary within the project limits on the SR 197–US 199 corridor to allow safe STAA truck access, which would allow reclassification of the corridor as part of the STAA network of truck routes. Safety-enhancing improvements, including wider lanes, wider shoulders, longer-radius curves, and improved sight distances, are needed to provide a roadway that is easier to maneuver for all users. Both the Department and Del Norte County Local Transportation Commission support this need.

STAA access to the SR 197/US 199 corridor is needed because this corridor serves as Del Norte County's most direct transportation link to the interstate highway system (I-5 in Grants Pass, Oregon). The restrictions on STAA vehicles currently limit options for goods movement into and out of the county. The Del Norte County Local Transportation Commission considers US 199 to be the route that contributes the most to goods movement and mobility in support of the county's economy. SR 197 is the designated route for the movement of extralegal loads[2] between US 101 and US 199 (California Department of Transportation 1999a); therefore, it is a secondary component of this transportation link. The SR 197–US 199 corridor is important for the goods movement because Del Norte County has neither a railway nor a deep-water shipping port. Most heavy-freight trucks leaving Del Norte County are hauling export goods bound for distribution hubs and population centers via the most expeditious route.

In support of the Federal STAA, California passed Assembly Bill (AB) 866 in 1983 to implement the STAA provisions. The 2008 Regional Transportation Improvement Program (RTIP) and 2007 and 2011 Regional Transportation Plans (RTPs) support and request improvement of the 197/199 corridor to allow STAA truck access (Del Norte Local Transportation Commission 2007, 2008; LSC Transportation Consultants 2011). The 1999 Route Concept Reports for SR 197 and US 199 concluded that the routes should be widened and realigned to safely accommodate STAA trucks. This federal and state legislation and the regional

[2] An *extralegal load* is defined in California Vehicle Code Section 320.5 as a single unit or an assembled item that, because of its design, cannot be reasonably reduced or dismantled in size or weight so that it can be legally transported as a load without a permit as required by California Vehicle Code Section 35780. This code section does not apply to loads on passenger cars. Section 35780 requires permits for variances such as size and weight.

programs, plans, and policies are discussed in further detail elsewhere in this document: see Chapter 1, Section 1.2, "Purpose and Need," regarding State Assembly Bill 866 (1983) and the Route Concept Reports; see Chapter 2, Section 2.1.1.2 for the RTIP, and Section 2.1.5.1 for the RTP.

Alternative access to the interstate highway system is much less direct. Currently, STAA trucks that travel north on US 101 through Del Norte County to I-5 in Grants Pass must travel approximately 247 miles and more than 5 hours. Conversely, with STAA truck access on US 199, a one-way journey to I-5 in Grants Pass would be approximately 90 miles and less than 2 hours (Fehr & Peers 2010). To use US 199 to reach the interstate highway system presently, STAA truck cargo being transported from US 101 must be unloaded and transferred to shorter trucks before entering the SR 197–US 199 corridor; for trailers shorter than 48 feet, tractors can be swapped before entering the corridor.

Proposed Project

A summary of the proposed project is described below by project site. Alternatives are described where alternatives are proposed.

Ruby 1 (SR 197: PM 4.5)

One build alternative was considered at this project location. To improve the roadway, the curve of the road would be lengthened and shoulders would be increased from their existing 0- to 1-foot widths. On the southbound side, the new shoulder width would vary from 0 to 4 feet. Four-foot shoulders are proposed on the northbound side. To match the new roadway width, one existing culvert would be extended, one would be replaced, and a new drainage inlet would be installed. This alignment was designed specifically to avoid removal of large redwoods and minimize impacts.

Ruby 2 (SR 197: PM 3.2 to 4.0)

Three build alternatives were considered at this project location: Four-Foot Shoulders, Two-Foot Shoulders, and Two-Foot Widening in Spot Locations. Each alternative would improve the existing road curve, roadbed elevation, and roadway width. To match the new roadway width, two culverts would be extended or replaced, and one drainage inlet would be constructed. The approaches to eight private roads and one public road would be upgraded to match the modified roadway. The differences in the three alternatives are described briefly below.

Four-Foot Shoulders Alternative

This alternative would increase the shoulder widths to 4 feet on both sides of the roadway.

Two-Foot Shoulders Alternative

This alternative would increase the shoulder widths to 2 feet on both sides of the roadway.

Two-Foot Widening in Spot Locations Alternative (Preferred)

This alternative would increase the shoulder widths to 2 to 4 feet in spot locations. This alternative was designed specifically to avoid impacts to large redwood and minimize root impacts. This alternative was selected as the preferred alternative for this location. This alternative was changed slightly during the Design Exception process, and some areas of 2-foot shoulders were increased to 4-foot shoulders where there would not be substantial impacts to large trees. Please see Chapter 1, Section 1.3.7, "Identification of a Preferred Alternative," for further discussion.

Patrick Creek Narrows Location 1 (US 199: PM 20.5 to 20.7)

One build alternative was considered at this project location. The existing roadway curves would be improved and the roadway would be widened to accommodate two 12-foot-wide lanes and 4-foot shoulders throughout the majority of the location, transitioning to 1- to 4-foot wide shoulders at both ends of the location. To accommodate the widening and broader roadway curves, an approximately 190-foot-long, 5-foot-tall retaining wall is proposed along the river side of the road above a portion of the existing steep rock-armored riverbank. A Type 80 concrete barrier modified with architectural treatment would be installed on top of the wall. Two 18-inch culverts would be replaced with 24-inch culverts, and one existing 24-inch culvert would be lengthened, all with new drainage inlets.

Patrick Creek Narrows Location 2 (US 199: PM 23.9 to 24.3)

Three alternatives for improvements were considered at this project location: the Upstream Bridge Replacement, Downstream Bridge Replacement, and Bridge Preservation with Upslope Retaining Wall Alternatives. The alternatives would realign and widen the existing 11- to 12-foot lanes to 12 feet and would increase the shoulders to a width of 8 feet, transitioning to 2 to 8 foot shoulders at both ends of the project. A cut slope of 0.5:1 to 0.75:1 is anticipated. Because of the fractured nature of the bedrock, rock fall may be expected after construction. Therefore, a permanent rock-fall mitigation system may be needed. This could consist of a wire-mesh drape or incorporate a rock-fall catchment area at roadway level. One culvert within the limits of this project location would be replaced to match the new roadway width. The differences in the three alternatives are described briefly below. A sand trap would be installed along the inboard ditch. A new cross culvert will be added to carry the flow across the roadway. A new wall would be constructed on the outside of a curve to support the metal beam guardrail.

Upstream Bridge Replacement Alternative

This alternative would replace the existing Middle Fork Smith River Bridge with a bridge upstream from its current location. In addition a retaining wall/rock bolting[3] or rock net drapery would be constructed on the cut slope side of the highway. The retaining wall/rock bolting area would be approximately 400 feet long and up to 100 feet high.

[3] The purpose of rock bolting is to pin two planes of rock together by bolting the slipping plane to a solid rock plane. Rock bolts secure permanent steel bars that are grouted, tensioned, and locked into place with a metal faceplate on the final cut slope.

Downstream Bridge Replacement Alternative (Preferred)

This alternative would replace the existing bridge with a bridge downstream from the current location. In addition to the retaining wall discussed above under the common features, an additional retaining wall and sidehill viaduct would be constructed downstream from the new bridge extending for approximately 250 feet and transition directly into the proposed new bridge approach. This alternative was selected as the preferred alternative for this location. Please see Chapter 1, Section 1.3.7, "Identification of a Preferred Alternative," for further discussion.

Bridge Preservation with Upslope Retaining Wall Alternative

This alternative would retain the existing bridge but realign the roadway on either end of the bridge to allow large trucks to cross. In addition to the retaining wall discussed above under the common features an additional retaining wall/rock bolting or rock net drapery would be constructed on the cut slope side of the highway, measuring approximately 300 feet long and up to 100 feet high.

Patrick Creek Narrows Location 3 (US 199: PM 25.55 to 25.65)

One build alternative was considered for this project location. This alternative would increase the shoulder width to at least 8 feet on both sides of the road and eliminate the current "S" curve. To support the wider roadway, an approximately 180-foot-long wall up to an approximate height of 15 feet is proposed on the river side. Two 18" culverts within the limits of this project location would be replaced with 24" culverts. Drainage inlets would be installed at the inlets for three culverts.

The Narrows (US 199: PM 22.7 to 23.0)

One build alternative was considered for this project location. This alternative would increase lane widths to 12 feet and provide 0.5 to 2-foot shoulders. Widening would be accomplished by excavating into the existing cut slope. A 2-foot-wide unpaved drainage ditch would be added to the cut side of the road. One new culvert and drain inlet would be constructed. Also, an existing culvert and drain inlet would be replaced to match the new edge of pavement. In addition to roadway widening, isolated outcrops of overhanging or loose rock above the excavation limits would be stabilized with rock bolting or other means.

Washington Curve (US 199: PM 26.3 to 26.5)

Two build alternatives were considered at this project location: the Cut Slope and the Retaining Wall alternatives. The features common to both build alternatives include the following. These alternatives would improve the compound curve at this project location and increase the lane width to a minimum of 12 feet. One culvert would be replaced. The differences in the two alternatives are described briefly below.

Cut Slope Alternative (Preferred)

A new slope would be excavated on the cut slope side of the roadway and the shoulders would be widened to a minimum of 4 feet. Between the base of the cut slope and the edge of the paved shoulder, an 8 foot wide unpaved area would be provided to intercept and contain rockfall. This alternative was selected as the preferred alternative for this location. Please see Chapter 1, Section 1.3.7, "Identification of a Preferred Alternative," for further discussion.

Retaining Wall Alternative

This alternative would construct a retaining wall along the cut slope of the roadway to provide additional roadway width.

Preferred Alternatives

Ruby 2: Two-Foot Widening in Spot Locations

The Two-Foot Widening in Spot Locations was chosen by the Project Development Team as the preferred alternative for this location because it has the least impact on large trees. The other alternatives for this location had significant impacts on large redwoods. This alternative would not remove large redwoods and still meets the purpose and need of the project. See Section 1.3.7 for full description of preferred alternatives.

Patrick Creek Location 2: Downstream Bridge Replacement

The Downstream Bridge Replacement Alternative was chosen by the Project Development Team as the preferred alternative for this location because it has the least amount of impact. The Upstream and In-place Replacement Alternatives involved large cut slope excavations which could lead to unstable slopes and visual impacts. The Downstream Alternative was able to avoid in-stream work which led to less impact on Salmonids. See Section 1.3.7 for full description of preferred alternatives.

Washington Curve: Cut Slope Alternative

The Cut Slope Alternative was chosen by the Project Development Team as the preferred alternative for this location because the Retaining Wall was determined to have larger visual impacts. The wall would have been 900 feet long and 30 feet tall, making it the largest wall on the route and a substantial visual incongruity along the scenic route. The Cut Slope would be ¾ rock matching the current rocky views of the canyon. See Section 1.3.7 for full description of preferred alternatives.

CEQA/NEPA Environmental Document

The proposed project is a joint project by the California Department of Transportation and the Federal Highway Administration (FHWA), and is subject to state and federal environmental

review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The Department is the lead agency under NEPA and CEQA. In addition, FHWA's responsibility for 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 the Department under its assumption of responsibility pursuant to 23 United States Code (USC) 327.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, it is quite often the case that a "lower level" document is prepared for NEPA. One of the most commonly seen joint document types is an Environmental Impact Report/Environmental Assessment (EIR/EA).

Following receipt of public comments on the Draft EIR/EA and Partial Recirculated Draft EIR/Supplemental EA, this Final EIR/EA was prepared. The Partial Recirculation involved only Section 2.3.1 Natural Communities and Section 2.3.3 Plants, and addressed additional information on potential effects to trees and an additional special status plant species. This Final EIR/EA contains responses to comments on the Draft EIR/EAs, and identifies the preferred alternatives. The Department plans to certify the EIR and issue Findings, since the Department has eliminated or substantially lessened all significant effects on the environment where feasible, as shown in the Findings. The Department determined that a Statement of Overriding Considerations under CEQA was unnecessary since the Department finds that the proposed project will not result in unavoidable significant environmental effects; all potentially significant effects will be mitigated to below a level of significance. The Department plans to issue a Finding of No Significant Impact (FONSI) under NEPA since the Department finds that the proposed project as a whole would not result in significant environmental effects.

Project Impacts

Table S-1 summarizes the potential project effects after measures to avoid and minimize environmental harm are implemented. For every project site and alternative in the table, each potential effect is categorized as having either "no impact," if it would not affect a given environmental topic; "no adverse impact," if it would not have a significant, harmful effect on an environmental topic; or "adverse," if it could have a significant effect on an environmental topic. Note that the term "adverse" may have a different threshold or definition, depending on whether the impact is being considered under federal or state laws. For example, a finding of May Affect, Likely to Adversely Affect for a federally listed species could be proposed for a variety of impact types, including harassment, under the federal Endangered Species Act (ESA). That finding may or may not be determined to be significant, depending on whether anticipated impacts are temporary/permanent and the kind and level of impact (e.g., harassment only, versus killing, and the anticipated number of individuals or population(s) that might be affected). Conversely, harassment is not considered under the California ESA, so harassment would not be considered adverse or significant. Details of each environmental topic, potential effect, and associated avoidance, minimization, and/or mitigation measures are discussed in Chapter 2.

Coordination with Other Public Agencies

Table S-2 describes the permits, reviews, and approvals required for project construction. This information is reiterated in Table 1-5 in Chapter 1.

Table S-2. Permits and Approvals

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act (ESA) Section 7 consultation for threatened and endangered species	Completed
National Marine Fisheries Service (NMFS)	ESA Section 7 consultation for threatened and endangered species	Completed
U.S. Army Corps of Engineers	Clean Water Act (CWA) Section 404 authorization for fill of waters of the United States	Ongoing
U.S. Department of Agriculture Forest Service	Coordination based on Forest Service sensitive and Northwest Forest Plan species, tree removal permit, scenic byway and Wild and Scenic River concurrence for the Middle Fork Smith River (US 199), Section 4(f) coordination and concurrence, and coordination for conducting work within the Department's right-of-way easement held by the Forest Service	Completed
Del Norte County Parks Department	Temporary easement in Ruby Van Deventer County Park for driveway improvements	Completed
California Department of Fish and Wildlife	California Fish and Game Code Section 1602 streambed alteration agreement and California Wild and Scenic Rivers coordination through the Section 1602 application process (Smith River coordination via 1602 agreements for SR 197 locations, and Middle Fork Smith River coordination via 1602 agreements for US 199 locations)	Ongoing
National Park Service	Wild and Scenic River concurrence for the Smith River	Completed
North Coast Regional Water Quality Control Board	CWA Section 401 water quality certification and coverage under the Department's National Pollutant Discharge Elimination System permit (Order 00-06-DWQ)	Ongoing
North Coast Unified Air Quality Management District	Formal notification submitted a minimum of 14 days before construction, permit for compliance with national emission standards for hazardous air pollutants, acceptance of dust control plan, and acceptance of lead compliance plan	Not yet initiated

Table S-1. Summary of Potential Effects at SR 197 and US 199 Project Sites

Environmental Topic	Potential Effect	SR 197 Sites and Build Alternatives				US 199 Sites and Build Alternatives								No Build (No Action) Alternative
		Ruby 1	Ruby 2			Patrick Creek Narrows Location 1	Patrick Creek Narrows Location 2			Patrick Creek Narrows Location 3	The Narrows	Washington Curve		
			Four-Foot Shoulders	Two-Foot Shoulders	Two-Foot Shoulders in Spot Locations (Preferred)		Upstream Bridge Replacement	Downstream Bridge Replacement (Preferred)	Bridge Preservation with Upslope Retaining Wall			Cut Slope (Preferred)	Retaining Wall	
Land Use Consistency	Consistency with Crescent City General Plan	Consistent	Consistent			Consistent	Consistent			Consistent	Consistent	Consistent		Consistent
	Consistency with County General Plan	Consistent	Consistent			Consistent	Consistent			Consistent	Consistent	Consistent		Consistent
	Consistency with Six Rivers National Forest/Smith River National Recreation Area	Consistent	Consistent			Consistent	Consistent			Consistent	Consistent	Consistent		Consistent
	Consistency with Mission and Regional Transportation Improvement Program (RTIP) of Del Norte Local Transportation Commission	Consistent	Consistent			Consistent	Consistent			Consistent	Consistent	Consistent		Inconsistent
	Consistency with Smith River Scenic Byway	Consistent	Consistent			Consistent	Consistent			Consistent	Consistent	Consistent		Consistent
	Consistency with Existing Land Uses	Consistent	Consistent			Consistent	Consistent			Consistent	Consistent	Consistent		Consistent
Wild and Scenic Rivers	Potential Impacts to Wild and Scenic Rivers	No impacts	No impacts			No impacts	No adverse impacts			No impacts	No impacts	No impacts		No impacts
Parks and Recreation	Temporary Effects on Parks and Recreation Facilities During Construction	No adverse impacts				No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Growth	Potential for Growth Impacts	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Community Character and Cohesion	Temporary Construction-Related Access and Circulation Impacts	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Temporary Impacts on Parking During Construction	No adverse impacts	No impacts	No impacts	No impacts	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Relocations and Real Property Acquisitions	Property Acquisitions for Permanent Right-of-Way	No impacts	No adverse impacts	No adverse impacts	No adverse impacts	No impacts	No adverse impacts	No impacts	No adverse impacts	No adverse impacts	No impacts	No impacts		No impacts
Utilities/Emergency Services	Temporary Delays for Law Enforcement, Fire, and Emergency Service Providers	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Traffic and Transportation/ Pedestrian and Bicycle Facilities	Traffic Delays During Construction (see Chapter 1, Tables 1-2 and 1-3)	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Visual/Aesthetics	Change the Existing Visual Character or Quality of Project Site and its Surroundings	No adverse impacts	No adverse impacts	No adverse impacts		No adverse impacts	No adverse impacts	No adverse impacts		No adverse impacts	No adverse impacts	No adverse impacts	No adverse impacts	No impacts
Cultural Resources	Potential Cultural Resource Impacts	No impacts	No impacts			No impacts	No impacts			No impacts	No impacts	No impacts		No impacts
Hydrology and Floodplain	Potential Hydrology and/or Floodplain Impacts	No adverse impacts	No adverse impacts			No impacts	No impacts			No impacts	No impacts	No impacts		No adverse impacts
Water Quality and Storm Water Runoff	Potential for Reduced Water Quality from Increased Storm Water Runoff	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts	No adverse impacts	No impacts
	Potential for Reduced Water Quality from Erosion	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No adverse impacts
	Potential for Reduced Water Quality from Loss of Wetland and Other Jurisdictional Waters	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts

Table S-1. Continued

Environmental Topic	Potential Effect	SR 197 Sites and Build Alternatives				US 199 Sites and Build Alternatives								No Build (No Action) Alternative
		Ruby 1	Ruby 2			Patrick Creek Narrows Location 1	Patrick Creek Narrows Location 2			Patrick Creek Narrows Location 3	The Narrows	Washington Curve		
			Four-Foot Shoulders	Two-Foot Shoulders	Two-Foot Shoulders in Spot Locations (Preferred)		Upstream Bridge Replacement	Downstream Bridge Replacement (Preferred)	Bridge Preservation with Upslope Retaining Wall			Cut Slope (Preferred)	Retaining Wall	
Geology/Soils/Seismic/ Topography	Potential for Erosion, Landslide, and Rock Fall	No adverse impacts	No adverse impacts	No adverse impacts		No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No adverse impacts
	Potential for Construction-Related Soil Erosion and Sedimentation	No impacts	No impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Potential Impacts on Worker Safety during Blasting Operations	No blasting	No blasting			No blasting	No adverse impacts			No blasting	No adverse impacts	No blasting	No blasting	No impacts
	Potential Impacts on Worker Safety from Rock Fall during Construction of Cut Slopes	No impacts	No impacts			No impacts	No adverse impacts	No adverse impacts		No impacts	No adverse impacts	No adverse impacts	No impacts	No impacts
	Potential for Debris to Enter River During Bridge Demolition	No impacts	No impacts			No impacts	No adverse impacts		No impacts	No impacts	No impacts	No impacts		No impacts
Hazardous Waste/ Materials	Potential for Hazardous Material Spills During Construction	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Potential for Exposure to Aerially-Deposited Lead	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Potential for Release of Hazardous Waste/Materials Associated with Construction, Traffic, or Roadway Maintenance	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Potential for Release of Hazardous Waste/Materials Associated with the Removal or Modification of Facilities or Structures	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Potential Impacts Associated With Naturally-Occurring Asbestos	No impacts	No impacts			No adverse impacts	No impacts			No impacts	No impacts	No adverse impacts		No adverse impacts
Air Quality	Temporary Increase in Ozone Precursor (ROG and NOx), CO, and PM10 Emissions during Grading and Construction Activities	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Release of Naturally-Occurring Asbestos Fibers into the Air During Grading and Construction Activities	No impacts	No impacts			No adverse impacts	No impacts			No impacts	No impacts	No adverse impacts		No adverse impacts
Noise and Vibration	Potential Disturbance from Construction Noise Levels (Non-Blasting)	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Potential for Disturbance to Nearby Noise-Sensitive Land Uses from Controlled Blasting Activities	No blasting	No blasting			No blasting	No adverse impacts			No blasting	No adverse impacts	No blasting		No impacts
Natural Communities (See Section 2.3.1 for detailed comparisons of effects by alternative)	Permanent removal of natural communities at a given project location	No adverse impacts	Adverse impact	No adverse impacts		No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Temporary disturbance and effects on natural communities.	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Permanent removal of redwood trees with a dbh of 36 inches or more	No impacts	Adverse impact	No impacts		No impacts	No impacts			No impacts	No impacts	No impacts		No impacts
	Permanent removal of trees other than redwoods	No adverse impacts	No adverse impacts			No impacts	No adverse impacts			No impacts	No impacts	No adverse impacts		No impacts
	Temporarily Restrict the Passage of Fish, including Anadromous Fish	No impacts	No impacts			No impacts	No impacts		No impacts	No impacts	No impacts	No impacts		No impacts

Table S-1. Continued

Environmental Topic	Potential Effect	SR 197 Sites and Build Alternatives				US 199 Sites and Build Alternatives								No Build (No Action) Alternative
		Ruby 1	Ruby 2			Patrick Creek Narrows Location 1	Patrick Creek Narrows Location 2			Patrick Creek Narrows Location 3	The Narrows	Washington Curve		
			Four-Foot Shoulders	Two-Foot Shoulders	Two-Foot Shoulders in Spot Locations (Preferred)		Upstream Bridge Replacement	Downstream Bridge Replacement (Preferred)	Bridge Preservation with Upslope Retaining Wall			Cut Slope (Preferred)	Retaining Wall	
Wetlands and Other Waters	Temporary impacts to wetlands and/or other waters	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
(See Section 2.3.2 for detailed comparisons of fill by alternative)	Permanent impacts to wetlands and/or other waters	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Plant Species	Permanent removal of native plant habitat at a given project location	No impacts	No impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
(See Section 2.3.3 for detailed comparisons of effects by alternative)	Permanent Effects on Specific Special-Status and CNPS List 4 Plants	No impacts	No impacts			No adverse impacts	No adverse impacts	No adverse impacts	No adverse impacts	No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Animal Species	Temporary disturbance to special-status animal species and their habitat	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
(See Section 2.3.4 for detailed comparisons of effects by alternative)	Permanent removal of habitat for animal species	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
	Effects on Chinook salmon	No impacts	No impacts			No impacts	No adverse impacts		No impacts	No impacts	No impacts	No impacts		No impacts
	Effects on coastal cutthroat trout	No impacts	No impacts			No impacts	No adverse impacts		No impacts	No impacts	No impacts	No impacts		No impacts
Threatened and Endangered Species	Temporary disturbance to threatened and endangered species and their habitat	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
(See Section 2.3.5 for detailed comparisons of effects by alternative)	Permanent removal of habitat for threatened and endangered species	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No impacts
Invasive Species	Potential for proposed location improvements to promote spread of invasive species	No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts			No adverse impacts	No adverse impacts	No adverse impacts		No adverse impacts
Potential Cumulative Impacts to Environmental Resources	Contribution to Cumulative Loss of Old-Growth Redwood Trees	No adverse impacts	Adverse impact		No adverse impacts	No impacts	No impacts			No impacts	No impacts	No impacts		No impacts

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List of Tables and Figures

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List of Acronyms

µg/m^3	micrograms per cubic meter
AADT	annual average daily traffic
AB 1493	Assembly Bill 1493
ACMs	asbestos-containing materials
ADL	aerially deposited lead
ADT	average daily traffic
AMR	American Medical Response
APCO	Air Pollution Control Officer
APE	Area of Potential Effects
APN	Assessor's Parcel Number
ASR	Archaeological Survey Report
ATCMs	Airborne Toxic Control Measures
BFE	Base Flood Elevation
BML	Bald Mountain-Big Lagoon
BMPs	Best Management Practices
BSA	biological study area
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Safety and Health
Cal-IPC	California Invasive Plant Council
Cal-IPC Inventory	California Invasive Plant Inventory
CARB	California Air Resources Board
CAT	Citizens Advisory Team
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife (formerly Department of Fish and Game)
CEDS	Comprehensive Economic Development Strategy, Del Norte County, California, 2006–2008
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CIA	Community Impact Assessment
CMV	commercial motor vehicle
CNPS	California Native Plant Society
CO	carbon monoxide

CO_2	carbon dioxide
Coastal Act	California Coastal Act of 1976
Construction General Permit	General Permit for Construction Activities
COZEEP	Construction Zone Enhanced Enforcement Program
CRHR	California Register of Historical Resources
CSP	corrugated steel pipe
CTSA	Consolidated Transportation Service Agency
CWA	Clean Water Act
dBA	A-weighted decibel
dbh	diameter at breast height
DEMO (HPP)	Federal Demonstration–High Priority Project
Department	California Department of Transportation
DFG	California Department of Fish and Game (now Department of Fish and Wildlife)
DLCRC	District Lane Closure Review Committee
DNADS	Del Norte Association for Developmental Services
DNLTC	Del Norte Local Transportation Commission
DOT	Department of Transportation
DPS	Distinct Population Segment
DTSC	California Department of Toxic Substances Control
EA	Expense Authorization
EFH	Essential Fish Habitat
EIR/EA	Environmental Impact Report/Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
Forest Service	U.S. Department of Agriculture Forest Service
FR	Federal Register
Geocon	Geocon Consultants
GHG	greenhouse gas
HAPs	hazardous air pollutants
HFCs	hydrofluorocarbons
HPSR	Historic Property Survey Report
Hz	Hertz
I-5	Interstate 5
IGR	Intergovernmental Review
IPCC	Intergovernmental Panel on Climate Change
IRIS	Integrated Risk Information System
ISA	initial site assessment

ITS	Intelligent Transportation Systems
ITSP	1998 Interregional Transportation Strategic Plan
KPRA	kingpin-to-rear-axle
LCP	lead-containing paint
L_{eq}	equivalent sound level
LID	Low Impact Development
LOS	level of service
LOTB	As-Built Log of Test Borings
MBTA	Migratory Bird Treaty Act of 1918
MCE	Maximum Credible Earthquake
MEP	maximum extent practicable
mg/kg	milligrams per kilogram
MLD	Most Likely Descendent
mpg	miles per gallon
mph	miles per hour
MS4	Municipal Separate Storm Sewer System
MSATs	mobile source air toxics
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NATA	1999 National Air Toxics Assessment
NCAB	North Coast Air Basin
NCIC	North Coastal Information Center
NCRWQCB	North Coast Regional Water Quality Control Board
NCUAQMD	North Coast Unified Air Quality Management District
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act of 1966, as amended
NMFS	National Marine Fisheries Service
NN	National Network
NO	nitric oxide
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOC	Notice of Construction
NOP	Notice of Preparation
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRA	National Recreation Area
NRHP	National Register of Historic Places
O_3	ozone
ODOT	Oregon Department of Transportation

OES	Del Norte County Office of Emergency Services
OGFC	open-graded friction course (a type of asphalt concrete)
OHP	California Office of Historic Preservation
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
Pb	lead
PF	Public Facility
PFCs	perfluorocarbons
Planning Area	Crescent City Planning Area
PM	post mile
PM10	particulate matter less than 10 micrometers in diameter
PM2.5	particulate matter less than 2.5 micrometers in diameter
POC	Port Orford Cedar
POM	Polycyclic organic matter
PPDG	Project Planning and Design Guide
ppm	parts per million
ppv	peak particle velocity
PRC	Public Resources Code
psi	pounds per square inch
RAP	Relocation Assistance Program
RCRA	Resource Conservation and Recovery Act of 1976
RCT	Redwood Coast Transit
ROD	Record of Decision-Standards and Guidelines
ROG	reactive organic compounds
RR-1/1	Rural Residential—1 dwelling unit per acre
RSA	resource study area
RSP	rock slope protection
RTIP	Del Norte Local Transportation Commission's 2008 Regional Transportation Improvement Program for Del Norte County
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
S&M	Survey and Manage
sf	square feet
SF_6	sulfur hexafluoride
SHOPP	State Highway Operation and Protection Program
SHPO	State Historic Preservation Officer
Six Rivers RMP	Six Rivers National Forest Land and Resource Management Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District's
SO_2	sulfur dioxide
SPGR	Structure Preliminary Geotechnical Report
SR	State Route
SRNF	Six Rivers National Forest
STAA	Surface Transportation Assistance Act

STLC	soluble threshold limit concentration
SWDR	Storm Water Data Report
SWMP	Storm Water Management Plan
TACs	toxic air contaminants
TASAS	Traffic Accident Surveillance and Analysis System
TDM	Transportation Demand Management
THP	timber harvesting plan
THPO	Tribal Historic Preservation Officer
TMDLs	Total Maximum Daily Loads
TMP	Transportation Management Plan
TSM	Transportation System Management
TWW	Treated Wood Waste
U.S.C.	United States Code
UC Davis	University of California Davis
US	U.S. Route
US 101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USBM	U.S. Bureau of Mines
USC	U.S Code
USFWS	U.S. Fish and Wildlife Service
USDOT	U.S. Department of Transportation
USGS	U.S. Geological Survey
VMT	vehicle miles traveled
vpd	vehicles per day
VQO	visual quality objectives
WET	Wetland Evaluation Technique
yd^3	cubic yards

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Department) is proposing to construct improvements at spot locations on State Route (SR) 197 and U.S. Route (US) 199 in Del Norte County to be able to reclassify the routes as part of the Federal Surface Transportation Assistance Act (STAA) truck route network and comply with federal and state legislation and regional programs, plans. This improvement project is made up of five previously identified and separately proposed projects. These five projects are referred to as Ruby 1, Ruby 2, Patrick Creek Narrows (Locations 1, 2, and 3), and the Narrows/Washington Curve, and include a total of seven locations. The proposed project combines these projects into one and makes use of the names of the previously identified projects in order to identify the location of each improvement currently proposed. All seven locations currently have roadway geometries that can result in STAA trucks and other long-wheelbase vehicles offtracking across the double yellow line and entering the oncoming traffic lane. Additionally, limited sight distances at all seven locations do not allow enough time for drivers to react to roadway conditions ahead adequately.

Because it would provide STAA truck access on the SR 197–US 199 corridor between U.S. Highway 101 (US 101) and the Oregon state line, where STAA truck access is already provided on US 199, the combined need for improvements at the seven project locations has independent utility (i.e., it creates one stand-alone project that is a reasonable expenditure even if no additional transportation improvements in the area are made). No alternatives are proposed on highways other than SR 197 and US 199 because these two highways provide the most direct link to the interstate highway system for Del Norte County. Within the project limits, SR 197 and US 199 are rugged, two-lane conventional highways with tight curves and occasional steep cut slopes providing narrow traffic lanes with narrow shoulders, if shoulders exist. The project locations and the routes' regional context are shown in Figure 1-1.

Following are preliminary details on the funding program and fiscal year that each project is funded in for each of the original five separately funded projects, introduced by original project name and Expense Authorization (EA) number. All seven locations must be improved to accommodate STAA trucks in order for the SR 197–US 199 corridor to be reclassified as STAA-accessible. If one or more of the locations is not improved for some reason, the Department would re-assess whether there is a need to make improvements to any of the project locations to improve safety or reduce continual maintenance problems. The following costs were estimated during the winter of 2013; because these estimates will change as more detailed designs are prepared for each location, these estimates should be considered preliminary.

- **Ruby 1, EA 48110:** This originally proposed project (referred to in this document as a project location) is programmed in the fiscal year 2013/2014 District 1 minor program (State Highway Operation and Protection Program [SHOPP]) for approximately $0.6 million in construction capital.

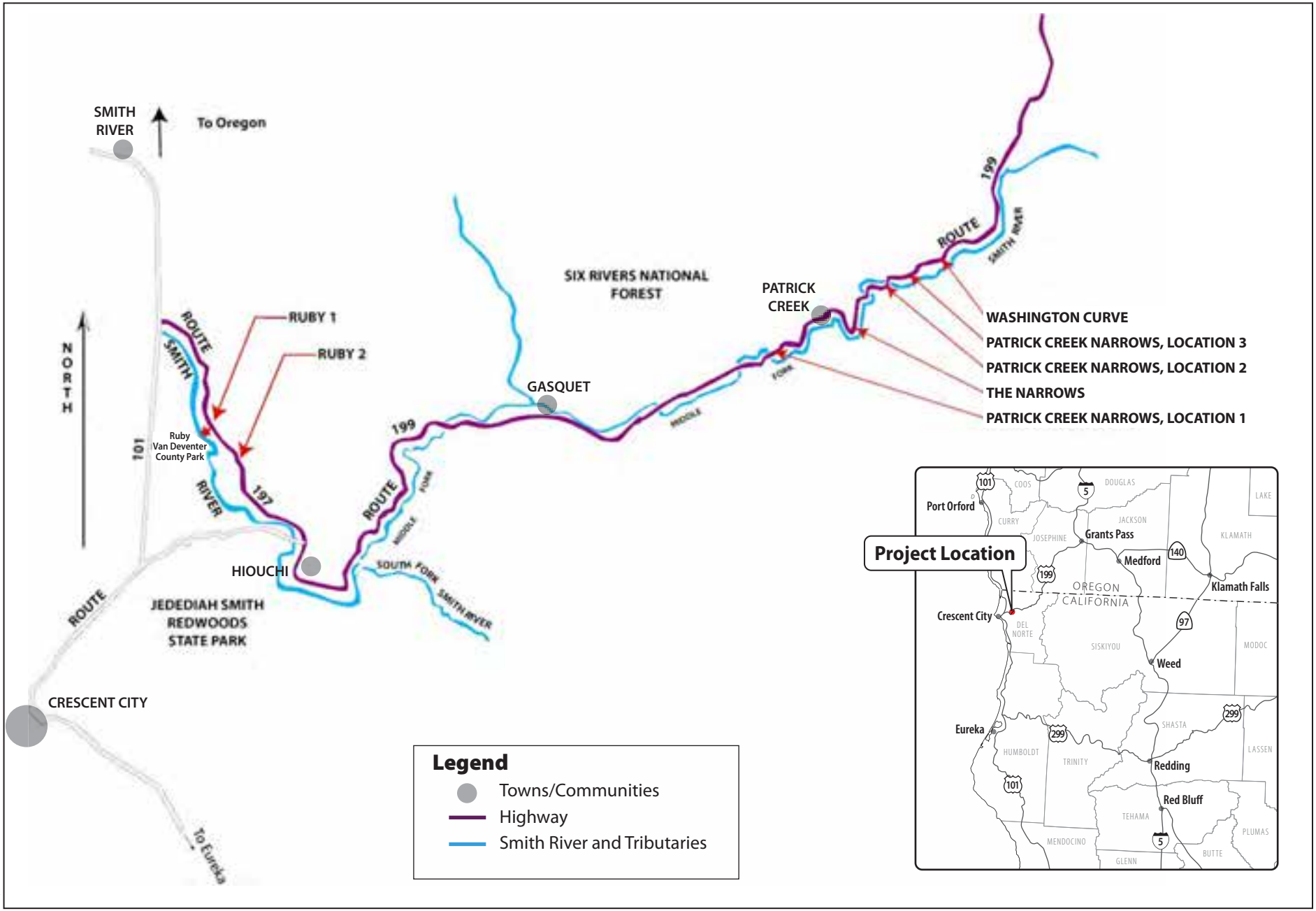
- **Ruby 2, EA 45490:** This originally proposed project (referred to in this document as a project location) is programmed in the fiscal year 2014/2015 District 1 minor program (SHOPP) for approximately $0.9 million in construction capital.
- **The Washington Curve/the Narrows, EA 4500U (formerly 45000 and 44830):** These projects (originally proposed separately and now combined into one project) (referred to in this document as project locations) are programmed in the fiscal year 2015/2016, but may be moved to 2013/2014, SHOPP for $4.6 million.
- **Patrick Creek Narrows, EA 47940:** This originally proposed project (referred to in this document as three project locations) is included in the fiscal year 2012/2013 Federal Statewide Transportation Improvement Program and Federal Demonstration–High-Priority Project (DEMO [HPP]) funds for approximately $13 million in construction capital. It is also included in the State Transportation Improvement Program adopted by the California Transportation Commission on June 13, 2008, and the 2008 Regional Transportation Plan for Del Norte County, adopted by the Del Norte Local Transportation Commission on January 10, 2008. It is this group of locations, based on funding sources, that makes the Del Norte County Local Transportation Commission a co-sponsor of the entire 197/199 Safe STAA Access project with the Department.

1.2 Purpose and Need

1.2.1 Purpose

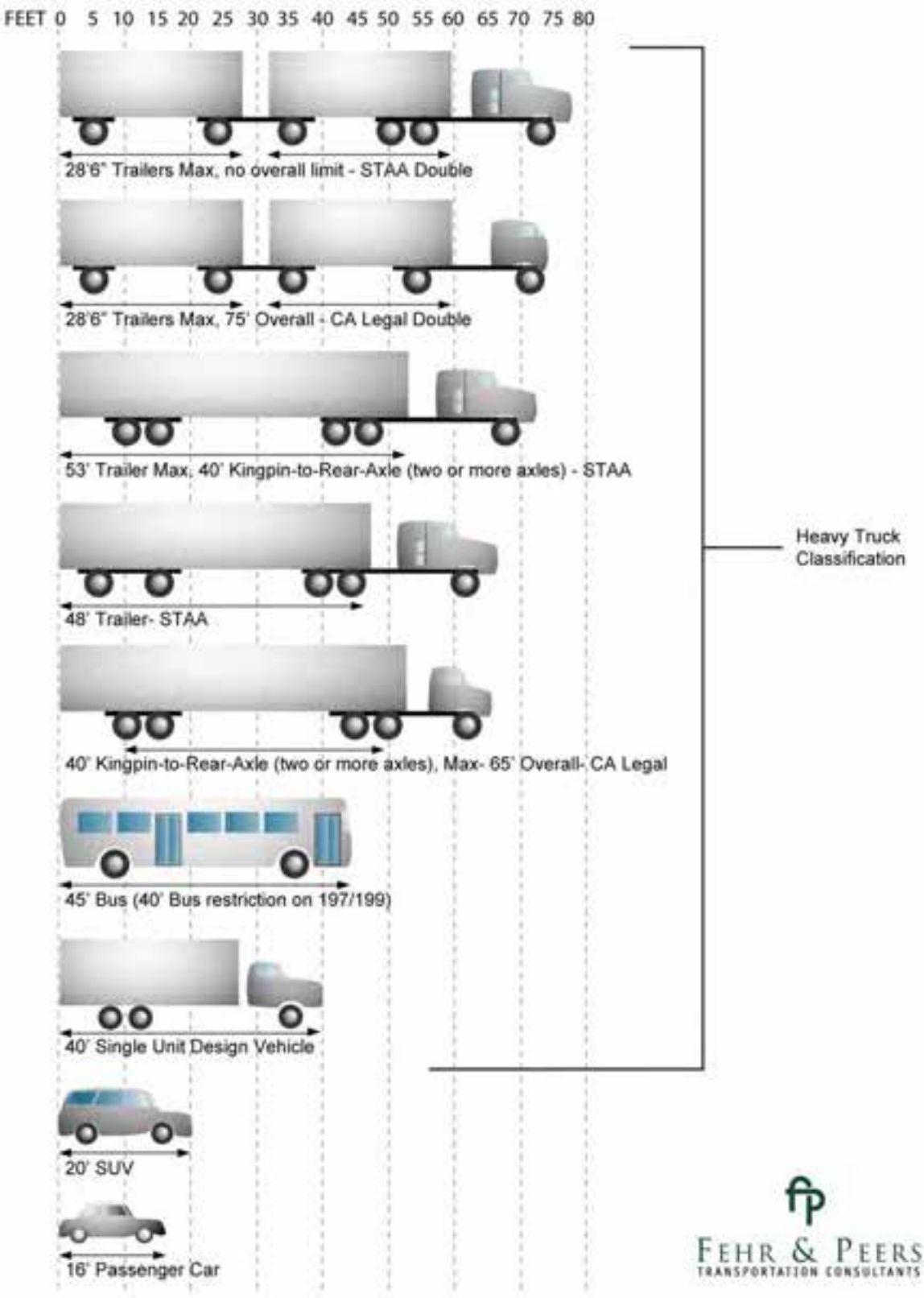
The purpose of the proposed project is to improve spot locations on SR 197 and US 199 in Del Norte County to accommodate STAA truck travel, thereby removing the restriction for STAA vehicles and improving goods movement. By making specific improvements to accommodate STAA trucks, the prohibition for STAA vehicles would be removed; the SR 197/US 199 route would be consistent with federal and state legislation and regional programs, plans, and policies; and the safety and operation of US 199 and SR 197 would be enhanced. This would improve goods movement and also enhance safety on the routes for automobiles, trucks, and other large vehicles such as motor homes, buses, and vehicles with trailers. The proposed project has logical termini (rational end points) because it addresses issues related to the curves that currently result in the STAA vehicle prohibition. The project has independent utility because no further improvements are required on the SR 197–US 199 corridor to lift the restriction on STAA vehicles between US 101 at Crescent City and Interstate (I) 5 at Grants Pass, Oregon.

STAA trucks are defined as having either a 48-foot trailer, or as having a 53-foot trailer with a limit of 40-foot distance from kingpin of the cab to the rear axle of the trailer. STAA trucks were made legal on the National Network, a network of federal highways that includes primarily interstates, by the 1982 Federal STAA. A visual comparison of STAA trucks to other vehicles is shown in Figure 1-2.



Graphics ... 00599.08 EA-EIR (1-10) JD

Figure 1-1
Project Vicinity and Location Map



Source: Fehr & Peers, 197/199 Safe STAA Access Project Traffic Analysis Report, March 2010

Graphics\00599.08 Tech Studies (3-2010)JD

Figure 1-2
Visual Comparison of STAA Trucks

1.2.2 Need

The primary need for the project is the result of substandard curves; absence of, or substandard, shoulders along the traveled way; and narrow lanes. Specific geometric improvements are necessary within the project limits on the SR 197–US 199 corridor to allow safe STAA truck access, which would allow reclassification of the corridor as part of the STAA network of truck routes. Safety-enhancing improvements, including wider lanes, wider shoulders, longer radius curves, and improved sight distances, are needed to provide a roadway that is easier to maneuver for all users. Both the Department and Del Norte County Local Transportation Commission support this need.

STAA access to the SR 197/US 199 corridor is needed because this corridor serves as Del Norte County's most direct transportation link to the interstate highway system (I-5 in Grants Pass, Oregon). The restrictions on STAA vehicles currently limit options for goods movement into and out of the county. The Del Norte County Local Transportation Commission considers US 199 to be the route that contributes the most to goods movement and mobility in support of the county's economy. According to the *Route Concept Report for Route 197*, SR 197 is the designated truck route for the movement of extralegal loads[1] between US 101 and US 199 (California Department of Transportation 1999a); therefore, it is a necessary component of this transportation link. The segment of US 199 between US 101 and the SR 197/US 199 intersection that passes through Jedediah Smith Redwoods State Park and old-growth redwood trees on a narrow curvilinear alignment is not considered part of this transportation link because of potential environmental impacts on the park and associated environmental resources. The SR 197–US 199 corridor is important for the goods movement because Del Norte County has neither a railway nor a deep-water shipping port. Most heavy-freight trucks leaving Del Norte County are hauling export goods bound for distribution hubs and population centers via the most expeditious route. Del Norte County's Comprehensive Economic Development Strategy identifies the SR 197–US 199 corridor as the community's key link to I-5 and presents a specific strategy to "advocate for continued highway 199 and 197 improvements" (Del Norte County 2006). Therefore, local planning policies and strategies are consistent with and support the need for the proposed project. The 2008 Regional Transportation Improvement Program (RTIP) and 2007 and 2011 Regional Transportation Plans (RTPs) support and request improvement of the SR 197–US 199 corridor to allow STAA truck access (Del Norte Local Transportation Commission 2007, 2008; LSC Transportation Consultants 2011). The 1999 route concept reports for SR 197 and US 199 concluded that the routes should be widened and realigned to accommodate STAA trucks safely.

STAA truck access is currently restricted in California on the SR 197–US 199 corridor because of substandard curves; no, or substandard, shoulders along the traveled way; and/or narrow lanes in the seven proposed project locations. These conditions have been shown to result in STAA trucks offtracking into the oncoming traffic lane at the seven proposed locations. Safety-enhancing improvements, including wider lanes, wider shoulders, longer radius curves, and enhanced sight distances, are needed at the seven proposed project locations to provide a roadway that is easier for STAA trucks to traverse; these improvements would benefit all users

[1] An *extralegal load* is defined in California Vehicle Code (CVC) Section 320.5 "as a single unit or an assembled item that, because of its design, cannot be reasonably reduced or dismantled in size or weight so that it can be legally transported as a load without a permit as required by CVC Section 35780." This code section does not apply to loads on passenger cars. Section 35780 requires permits for variances such as size and weight.

and allow STAA trucks and other large vehicles to negotiate the SR 197–US 199 corridor while minimizing or eliminating offtracking into the oncoming traffic lane at the seven proposed locations. This would allow reclassification of the corridor as part of the STAA network of truck routes. The Del Norte County Local Transportation Commission supports compliance with, and requirements within, the Federal STAA.

In 1982, the Federal government passed the STAA, requiring that states allow STAA trucks reasonable access to terminals. Appendix F includes a summary of legislation regarding truck route classifications and definitions. STAA trucks are limited to three designations of highways that together comprise the STAA network:

- **National Network**—primarily Interstate and Defense Highways, such as I-5, I-10, and I-80.
- **Terminal Access routes**—portions of state routes or local roads that can accommodate STAA trucks and allow them to travel between National Network routes, or allow STAA trucks to reach the truck's operating facility or a facility where freight originates or terminates.
- **Service Access routes**—routes within one road mile of the National Network, which provide access to fuel, food, lodging, or repair.

In contrast, "California Legal" trucks can use the STAA network and California Legal routes (i.e., state routes that allow California Legal-size trucks). Currently, SR 197 and US 199 do not allow STAA trucks, except under certain exemptions. Some STAA trucks presently are allowed to travel on SR 197 and US 199 to deliver directly to locations on US 199 per an exemption under the California Vehicle Code (CVC) Section 35401.5(f), which provides an exemption to licensed carriers of household goods. This exemption lifts the limitation of STAA access for licensed household goods carriers when directly en route to or from a point of loading or unloading, if travel on restricted STAA access highways is necessary and incidental to the shipment of the household goods. Under these circumstances, STAA household goods carrier trucks are permitted to travel along SR 197 and US 199. However, when exemptions are made, these STAA trucks likely are not able to stay within their travel lane at some locations, especially those with tight curves.

The Department's STAA truck tracking trials[2] and computer modeling software (AutoTURN) concluded that STAA-length vehicles often cross the double yellow line, or offtrack, at the identified pinch point locations based on roadway geometries; these offtracking locations are where improvements are proposed. The computer model also helped determine the amount of widening or realignment required at those locations to provide sufficient room for STAA trucks to negotiate the curves without encroaching into the opposing lane. *Offtracking* is the tendency for rear tires to follow a shorter path than the front tires when turning and is the primary concern with longer vehicles because rear tires may clip trees, knock down signs, encroach onto shoulders, or cross into the opposing/adjacent lane of traffic. When a truck or other large vehicle

[2] A number of reports and studies have identified the lack of access for STAA trucks on SR 197 and US 199. A key study was the set of STAA truck tracking trials by Department District 1 Traffic Operations/Permits on SR 197 and US 199 in August 2003 and October 2005 (*DN-197/199 Corridor Extra-Legal Load and STAA Vehicle Accessibility Study* (March 2006). Additional reports identifying improvement strategies needed to upgrade the corridor to accommodate STAA vehicles are listed in Section 3.1 of the draft Project Report for the 197/199 Safe STAA Access project (June 2010).

offtracks into the opposing lane and meets an unsuspecting driver or other large truck traveling in the opposite direction, there is little to no room available for drivers to maneuver and avoid a collision. The proposed project would improve sections of SR 197 and US 199 by widening the lanes, redesigning tight-radius curves, and providing wider shoulders, thereby allowing drivers additional room for recovery and negotiating tight curves when opposing traffic or bicyclists and/or pedestrians are present.

In 1983, California passed Assembly Bill (AB) 866 to implement the STAA provisions. The Department then evaluated the state highway system. The highways with geometric standards high enough to accommodate STAA trucks were designated by the Department as "Terminal Access." The Department continues to evaluate and open STAA access to existing state routes as improvements are made to allow safe access for STAA vehicles, in accordance with the Federal STAA of 1982. Currently, US 101 and I-5 allow STAA trucks (US 101 has existing restriction points for STAA trucks but is classified as terminal access), but US 199 and SR 197 do not (except for exempted STAA vehicles). The lack of STAA truck access on the SR 197–US 199 corridor restricts options for goods movement between Crescent City and I-5 as well as other destinations.

After California passed Assembly Bill (AB) 866 to implement the STAA provisions, the Department evaluated the state highway system. The highways with geometric standards high enough to accommodate STAA trucks were designated by the Department as "Terminal Access." The Department continues to evaluate and open STAA access to existing state routes as improvements are made to allow safe access for STAA vehicles, in accordance with the Federal STAA of 1982. Currently, US 101 and I-5 allow STAA trucks (US 101 has existing restriction points for STAA trucks but is classified as terminal access), but US 199 and SR 197 do not (except for exempted STAA vehicles). In addition to failing to meet the federal requirement of providing reasonable access for STAA trucks to terminals, the lack of STAA truck access on the SR 197–US 199 corridor restricts options for goods movement between Crescent City and I-5.

STAA-approved highways are those that have broad enough curves and wide enough travel lanes and shoulders to accommodate STAA trucks. The process for redesignating the SR 197–US 199 corridor as STAA-approved involves determining locations where STAA trucks would cross the double yellow line and determining the amount of widening or realignment required at those locations to provide sufficient room for STAA trucks to negotiate the curves without encroaching into the opposing lane; this has already been accomplished using the Department's truck trials and computer modeling software (AutoTURN), mentioned above. After locations are identified as needing improvements and the improvements are determined, the environmental review process occurs (currently in progress), followed by designing details for each location. After the improvements are constructed, the Department's District 1 would recommend STAA designation for the SR 197–US 199 corridor, and the Department's Sacramento office would approve the STAA designation request.

The entire SR 197–US 199 corridor between the SR 197/US 101 intersection and the point where US 199 crosses from California into Oregon was considered and evaluated when the project need was identified. The need was identified conceptually in the September 1989, *Route 199 Route Concept Report*. Individual spot improvement locations were identified and the estimated cost to widen them for STAA access was presented in the June 1998, *Comprehensive Study of Routes*

197 and 199. In Oregon, US 199 is already STAA truck–accessible between the state line and I-5. The proposed project has logical termini (rational end points) as it addresses the roadway segments that currently result in the STAA vehicle prohibition. The project has independent utility because no further improvements on US 199 and SR 197 are required to lift the restriction on STAA vehicles between Crescent City and I-5.

Two route concept reports, one for SR 197 and one for US 199, were prepared by the Department in July 1999 (California Department of Transportation 1999a, 1999b). These planning documents describe the Department's long-range approach to continued development of these two highways. Each report contains concepts for the facilities themselves, the level of service (LOS),[3] goods movement, rehabilitation, and safety and operational improvements. The reports conclude that the two routes should be widened and realigned to safely accommodate STAA trucks.

Alternative access to the interstate highway system is much less direct. Currently, STAA trucks that do not meet the STAA exemption and that travel north on US 101 through Del Norte County to I-5 in Grants Pass must travel approximately 247 miles and more than 5 hours. Conversely, with STAA truck access on US 199, a one-way journey to I-5 in Grants Pass would be approximately 90 miles and less than 2 hours (Fehr & Peers 2010). To use US 199 to reach the interstate highway system presently, STAA truck cargo being transported from US 101 that does not meet the exemption must be unloaded and transferred to multiple, shorter, California Legal trucks before entering the SR 197–US 199 corridor; for trailers shorter than 48 feet, tractors can be swapped before entering the corridor. Alternatively, STAA trucks may choose to travel the longer route.

1.2.2.1 Improvement Needs by Project Location

On SR 197 and US 199, large vehicles that need more roadway width than the existing highways provide (e.g., STAA trucks hauling household goods, exempted from the STAA restriction per CVC Section 35401.5(f) only if transporting goods directly to locations on US 199 and not traveling through the corridor; buses; or vehicles towing a trailer) encroach into the opposing lane to negotiate tight curves or fixed objects at the shoulder's edge, disrupting traffic flow in areas where sight distance is limited. A study on extralegal-load and STAA truck access was conducted by the Department for the SR 197–US 199 corridor to identify the remaining locations that restrict access for large trucks (California Department of Transportation 2006).

All seven locations have roadway geometries, as described below, that can result in STAA trucks and other long-wheelbase vehicles offtracking across the double yellow line and entering the oncoming traffic lane. Additionally, the limited sight distances at all seven project locations do not allow enough time for drivers to react to roadway conditions ahead adequately. For a discussion of outcomes if the proposed project does not occur, please refer to the No Build (No Action) Alternative, discussed in Section 1.3.2. Because the proposed project would provide STAA truck access on the SR 197–US 199 corridor between US 101 and the Oregon state line

[3] *Level of service* is a qualitative measure of operating conditions within a traffic stream, and their perception by motorists and/or passengers. A level of service definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety. Levels of service are categorized from A to F, with level F having the worst delays, maneuverability, and comfort and convenience.

(STAA access is already provided on the Oregon portion of US 199 to I-5), the combined need for improvements at the seven locations has independent utility (i.e., it creates one stand-alone project that is a reasonable expenditure even if no additional transportation improvements in the area are made).

Specific roadway conditions that support the need for the proposed project are described below for each location. Highway post mile (PM) limits are also provided. PMs for US 199 start at its intersection with US 101, north of Crescent City, and increase going northeast. PMs for SR 197 start at its intersection with US 199 and increase northwestward to its intersection with US 101.

- **Ruby 1 (SR 197: PM 4.5):** The narrow roadway, short-radius curves, and narrow or nonexistent shoulders often contribute to long-wheelbase vehicles, including California Legal trucks and motor homes, offtracking across the double yellow line.
- **Ruby 2 (SR 197: PM 3.2 to 4.0):** The narrow roadway, short-radius curves, narrow or nonexistent shoulders, and trees and stumps on the side of the roadway often contribute to long-wheelbase vehicles, including California Legal trucks and motor homes, offtracking across the double yellow line.
- **Patrick Creek Narrows, Locations 1, 2, and 3 (US 199: PM 20.5 to 25.7):** The sharply curving alignment, short-radius curves, narrow or nonexistent shoulders, and narrow lanes often contribute to long-wheelbase vehicles, including California Legal trucks and motor homes, offtracking across the double yellow line. When large vehicles cross the Middle Fork Smith River Bridge (Location 2), the entire half-width of the bridge is occupied, leaving no room for pedestrians, bicycles, or maintenance workers.
- **The Narrows (US 199: PM 22.7 to 23.0):** The sharply curving alignment, overhanging rocks on the cliff side of the roadway, metal-beam guardrail on the river side of the roadway, nonexistent shoulders, and narrow lanes often contribute to long-wheelbase vehicles, including California Legal trucks and motor homes, offtracking across the double yellow line.
- **Washington Curve (US 199: PM 26.3 to 26.5):** The overhanging cliffs with steep cut slopes, short-radius curves, narrow or nonexistent shoulders, narrow lanes, and metal-beam guardrail on the river side of the highway often contribute to long-wheelbase vehicles, including California Legal trucks and motor homes, offtracking across the double yellow line.

1.2.2.2 Corridor Collision Rates

District 1 Traffic Safety Office received a request for a revised collision analysis for seven STAA spot locations of SR 197 and US 199. A review of the collision history was completed for the time period of October 1, 2002, through September 30, 2007; this collision history is summarized in Table 1-1.

Table 1-1. Collision History

Site	Location (PM)		Time Period		Actual Rates*			State Average Rates*		
	From	To	From	To	Fatal	F + I	Total	Fatal	F + I	Total
Ruby 1	004.450	004.550	10/1/2002	9/30/2007	0.000	0.000	0.550	0.017	0.330	0.720
Ruby 2	003.200	004.000	10/1/2002	9/30/2007	0.000	1.100	2.190	0.017	0.330	0.720
Patrick Creek Narrows Location 1	020.400	020.700	10/1/2002	9/30/2007	0.189	0.950	1.510	0.022	0.440	0.870
Patrick Creek Narrows Location 2	023.900	024.280	10/1/2002	9/30/2007	0.000	0.760	1.320	0.022	0.440	0.870
Patrick Creek Narrows Location 3	025.550	025.700	10/1/2002	9/30/2007	0.189	0.570	0.760	0.022	0.440	0.870
The Narrows	022.700	023.000	10/1/2002	9/30/2007	0.000	0.000	1.130	0.022	0.440	0.870
Washington Curve	026.300	026.500	10/1/2002	9/30/2007	0.000	0.760	1.130	0.022	0.440	0.870
* Collision rates are per million vehicles										

The Department of Transportation Collision Analysis memorandum (June 2010) states:

Ruby 1: DN 197 PM 4.5

- This spot location is 0.10 of a mile and has experienced two collisions, which resulted in zero fatal, zero injury, and two property damage only (PDO) type of collisions. The "Actual" collision rates "F+I" (Fatal plus Injury) and "Tot" (Total) for this segment of highway are approximately 0.0 and 0.76 times greater than the statewide average for similar facilities, respectively.
- In addition, two primary traffic patterns are apparent: 1) One hundred percent of collisions are a result of Run-Off-Road (ROR). 2) One hundred percent of all collisions are a result of Unsafe Speed for Conditions. Both collisions occurred during Wet Road Surface and Dark conditions.

Ruby 2: DN 197 PM 3.2/4.0

- This spot location is 0.445 of a mile and has experienced eight collisions, which resulted in zero fatal, four injury, and four property damage only (PDO) type of collisions. The "Actual" collision rates "F+I" (Fatal plus Injury) and "Tot" (Total) for this segment of highway are approximately 3.33 and 3.04 times greater than the statewide average for similar facilities, respectively.
- In addition, two primary traffic patterns are apparent: 1) Approximately Sixty-three percent of collisions are a result of Run-Off-Road (ROR). 2) Sixty-two percent of all collisions are a result of Unsafe Speed for Conditions. Eighty-eight percent of collisions occurred during Wet Road Surface conditions.

Patrick Creek Narrows (PCN) Loc. 1: DN 199 PM 20.4/20.7

- This spot location is 0.30 of a mile and has experienced eight collisions, which resulted in one fatal, four injury, and three property damage only (PDO) type of collisions. The "Actual" collision rates "F+I" (Fatal plus Injury) and "Tot" (Total) for this segment of highway are approximately 2.16 and 1.74 times greater than the statewide average for similar facilities, respectively.

- In addition, two primary traffic patterns are apparent: 1) Sixty-two percent of collisions are a result of Run-Off-Road (ROR). 2) Thirteen percent of all collisions are a result of Cross Centerline into Opposing Traffic. Seventy-five percent of collisions occurred during Wet Road Surface and fifty percent during Dark conditions.

(PCN) Loc. 2: DN 199 PM 23.9/24.3

- This spot location is 0.38 of a mile and has experienced seven collisions, which resulted in zero fatal, four injury, and three property damage only (PDO) type of collisions. The "Actual" collision rates "F+I" (Fatal plus Injury) and "Tot" (Total) for this segment of highway are approximately 1.73 and 1.52 times greater than the statewide average for similar facilities, respectively.
- In addition, three primary traffic patterns are apparent: 1) Forty-three percent of collisions are a result of Run-Off-Road (ROR). 2) Forty-three percent of collisions are a result of Cross Centerline into Opposing Traffic. 3) Forty-three percent of collisions are a result of Unsafe Speed for Conditions.

(PCN) Loc. 3: DN 199 PM 25.5/25.7

- This spot location is 0.15 of a mile and has experienced four collisions, which resulted in one fatal, two injury, and one property damage only (PDO) type of collisions. The "Actual" collision rates "F+I" (Fatal plus Injury) and "Tot" (Total) for this segment of highway are approximately 1.30 and 0.87 times greater than the statewide average for similar facilities, respectively.
- In addition, two primary traffic patterns are apparent: 1) Seventy-five percent of collisions are a result of Run-Off-Road (ROR). 2) Twenty-five percent of collisions are a result of Cross Centerline into Opposing Traffic. In addition, all collision occurred during Wet Road Surface conditions.

The Narrows: DN 199 PM 22.7/23.0

- This spot location is 0.30 of a mile and has experienced six collisions, which resulted in zero fatal, zero injury, and six property damage only (PDO) type of collisions. The "Actual" collision rates "F+I" (Fatal plus Injury) and "Tot" (Total) for this segment of highway are approximately 0.0 and 1.30 times greater than the statewide average for similar facilities, respectively.
- In addition, three primary traffic patterns are apparent: 1) Fifty percent of collisions are a result Other than Driver. 2) Seventeen percent of collisions are a result of Cross Centerline into Opposing Traffic. 3) Seventeen percent of collisions are a result of Run-Off-Road (ROR).

Washington Curve: DN 199 PM 26.3/26.5

- This spot location is 0.20 of a mile long and has experienced six collisions, which resulted in zero fatal, four injury, and two property damage only (PDO) collisions. The "Actual" collision rates "F+I" (Fatal plus Injury) and "Tot" (Total) for this segment of highway are approximately 1.73 and 1.30 times greater than the statewide average for similar facilities, respectively.
- In addition, two primary traffic patterns are apparent: 1) Thirty-three percent of collisions are a result of Run-Off-Road (ROR). 2) Thirty-three percent of collisions are a result of Unsafe Speed for Conditions.

1.3 Project Description

This section describes the proposed project and the alternatives for each location that were developed by a multidisciplinary team[4] to achieve the project purpose and need while avoiding or minimizing environmental impacts. Build alternatives at each of the seven specific locations are described, as is the No Build (No Action) Alternative. No alternatives are proposed on highways other than SR 197 and US 199 because the SR 197–US199 corridor provides the most direct link to the interstate highway system for Del Norte County.

The proposed project is located in Del Norte County on SR 197 and US 199, east of US 101. It combines four separately identified, separately proposed projects that individually are intended to correct road features that currently result in offtracking by large vehicles, including STAA trucks that are allowed on the SR 197/US 199 route transporting household goods. The project locations are shown in Figure 1-1. Post miles for US 199 start at its intersection of US 101, north of Crescent City, and increase going northeast. Post miles for SR 197 start at its intersection with US 199 and increase northwestward to its intersection with US 101.

The purpose of the proposed project is to improve spot locations on SR 197 and US 199 in Del Norte County to accommodate STAA vehicles. By making improvements to accommodate STAA trucks, the prohibition for STAA vehicles would be removed, the requirements of the Federal STAA would be met, and the safety and operation of US 199 and SR 197 would be enhanced. The posted speed limit would not be raised.

The lack of STAA truck access on the SR 197–US 199 corridor restricts options for goods movement between Crescent City and I-5 as well as other regional destinations. Safety-enhancing improvements, including wider lanes, wider shoulders, longer radius curves, and improved sight distances, would provide a roadway that would be easier for STAA trucks to use. These improvements would benefit all users.

1.3.1 Project Setting

Within the project limits, SR 197 and US 199 are conventional two-lane undivided highways with narrow lanes and shoulders. SR 197 is the designated route for the movement of extralegal truck loads between US 101 and the SR 197/US 199 intersection because it avoids traversing Jedediah Smith Redwoods State Park (located along the westernmost segment of US 199 between US 101 and the SR 197/US 199 intersection) and therefore minimizes impacts on the park and associated environmental resources. SR 197, also known as North Bank Road, is a curvilinear two-lane highway built in the 1930s. It is an important link between US 199 and US 101. SR 197 primarily serves regional and interregional traffic, providing access to homes and public recreational facilities along the Smith River, including Ruby Van Deventer County Park, which provides river access. SR 197 follows the north bank of the Smith River, which is state- and federally designated as Wild and Scenic and is considered one of the "crown jewels" of the

[4] The multidisciplinary team includes members from the following Department divisions and disciplines: Design, Project Management, Environmental Specialists, Environmental Engineering, Construction, Structures Construction, Geotechnical Engineering, Structures Design, Hydraulics, Right of Way**,** Landscape Architecture, Structures Foundations, and Maintenance.

National Wild and Scenic River System. SR 197 is listed as eligible for inclusion in the State Scenic Highway System, but Del Norte County has yet to initiate the official designation process. Sharp curvilinear sections of SR 197 have limited sight distance, narrow to nonexistent shoulders, and large redwood trees and stumps at the edge of the pavement or the travel lane.

Within the project limits, US 199 traverses the canyon of the Middle Fork Smith River, a state- and federally designated Wild and Scenic River. US 199 is designated as a U.S. Department of Agriculture Forest Service (Forest Service) scenic byway through the Smith River National Recreation Area. US 199 is also listed as eligible for inclusion in the State Scenic Highway System, but Del Norte County has yet to initiate the official designation process. US 199 within the project limits was built in the early 1920s. Highway attributes that characterize this area include cliffs, rocky outcrops, dramatic views of the Middle Fork Smith River, and a tightly curved alignment. US 199 links US 101 north of Crescent City to I-5 in Grants Pass.

1.3.2 Project Alternatives

This section describes the proposed project and the alternatives that were developed by a multidisciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. Proposed improvements for each of the seven project locations are discussed below. The evaluation of alternatives is based primarily on total project cost and the level of impact on sensitive environmental resources. Water quality and geologic stability were particularly important to consider under the three alternatives at Patrick Creek Narrows Location 2, two of which consider a potential bridge replacement. Safety issues related to rockfall for a cut slope versus a retaining wall along the highway are considered, as are potential impacts on sensitive animal and plant species and communities, drainage patterns, large conifer trees, and aesthetics.

1.3.2.1 Ruby 1 (SR 197: PM 4.5)

One build alternative was considered at this project location (Figure 1-3). It was designed to provide the least impact on Ruby Van Deventer County Park, trees, and associated habitats while providing safe STAA access. Specifically, redwood trees and habitat for northern spotted owl and marbled murrelet were primary considerations in the development of this alternative. Other alternatives evaluated were not considered practicable because they would have had more impact on those resources. Details of those other alternatives are described in Section 1.3.6.2, Alternatives Considered but Eliminated from Further Consideration for Ruby 1.

To improve the roadway, the curve of the road would be lengthened, lane widths would remain 12 feet, and shoulders would be increased from their existing 0- to 1-foot widths. On the southbound side, the new shoulder width would vary from 0 to 4 feet. Four-foot shoulders are proposed on the northbound side. Asphalt concrete would be applied to the curve of the roadbed

to improve the existing superelevation.[5] In addition, the asphalt surface would be an open-graded friction course (OGFC; a type of asphalt concrete) overlay. These improvements would provide for, and are the minimum improvements needed for, safe STAA access.

To match the new roadway width, one existing culvert would be extended, one would be replaced, and a new drainage inlet would be installed. The portion of the culvert that would be extended would be at the inlets of the existing culvert. Work would be done during the dry season, but water diversion or dewatering may be required during construction.

Private right-of-way would need to be acquired on the northbound side of the highway. All work on the southbound side of the highway would occur within the existing right-of-way, except where the entrance to Ruby Van Deventer County Park would be modified to match the upgraded highway. The park is considered a recreational property under Section 4(f) of the Department of Transportation Act. Two utility poles would be relocated. Existing gravel pullouts nearby would be used to stage equipment.

The estimated cost of this alternative is approximately $0.6 million.

1.3.2.2 Ruby 2 (SR 197: PM 3.2 to 4.0)

Three build alternatives were considered at this project location: the Four-Foot Shoulders, Two-Foot Shoulders, and Two-Foot Widening in Spot Locations Alternatives. All three alternatives would provide sufficient width for STAA trucks. The Department's highway design standards specify 4-foot shoulders for two-lane highways with volumes such as those on SR 197, and 2-foot minimum "existing in-place" shoulder width. According to these standards, roadways with existing shoulder widths at or above the 2-foot minimum existing in-place width should be rehabilitated at their current width. Shoulders less than this width should be widened to 4-feet. The Two-Foot Shoulder and Four-Foot Shoulder Alternatives were designed to meet these two standards. The Two-Foot Widening in Spot Locations Alternative was designed to prevent impacts on large redwood trees while still providing the necessary width for STAA trucks. A formal Design Exception documenting the decision process was required because the 4-foot shoulder standard was not met. The features common to all three build alternatives are discussed below, followed by a discussion of features unique to each alternative.

Common Features of the Ruby 2 Build Alternatives

Each alternative would improve the existing curves, superelevation, and roadway width. To widen the roadway, cut slopes of 1:1 (or flatter) and fill slopes of 2:1 (or flatter) are currently proposed. To match the new roadway width, two culverts would be extended or replaced. Work would be done during the dry season, but water diversion or dewatering may be required during construction. In addition, the roadway would be surfaced with an OGFC overlay to improve traction in wet conditions.

The approaches to eight private driveways and one public road would be upgraded to match the modified roadway. Existing gravel pullouts would be used as staging areas.

[5] The *superelevation* is the amount by which the outside of the curved roadbed is raised above the inside to provide some of the cornering force required to hold a moving vehicle in the turn, reducing the tendency for the tires to lose adhesion outwards.

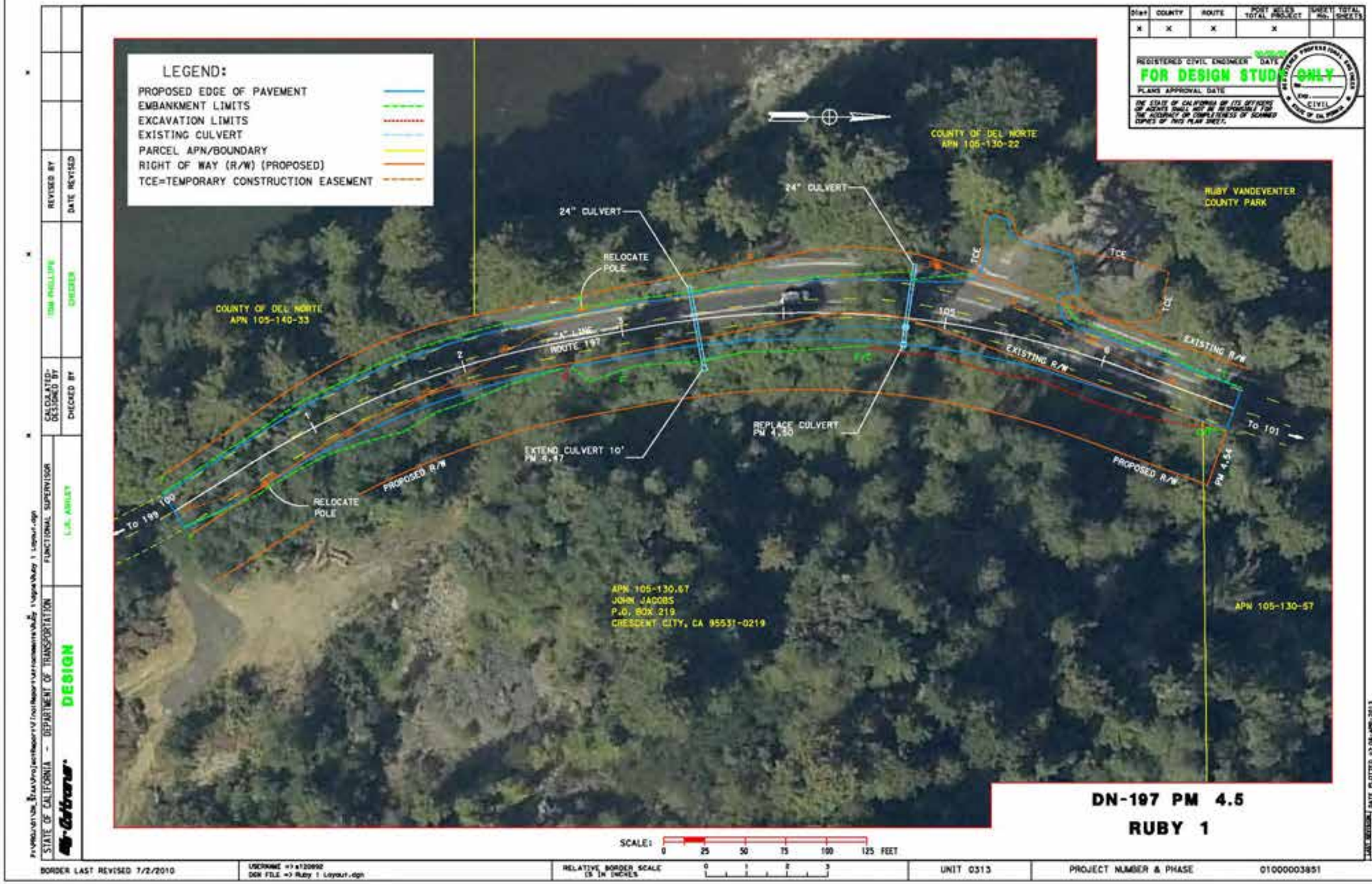


Figure 1-3
Ruby 1

Currently, several mailboxes are too close to the existing edge of the travel lane**.** This distance is a safety concern for the mail carriers, residents, and traveling public. In rural areas, it is desirable that the distance between the edge of the travel lane and the mailboxes be at least 8 feet. If the recommended distance cannot be met, the mailboxes would need to be relocated as part of the proposed project. The most suitable new location is at the intersection of SR 197 and Kaspar/Keene Road. In general, the U.S. Post Office and the residents must be in agreement if relocation is considered in any of the alternatives.

Unique Features of the Ruby 2 Build Alternatives

The following discussion identifies the unique features of each build alternative.

Four-Foot Shoulders Alternative

This alternative would increase the shoulder widths to 4 feet on both sides of the roadway (Figures 1-4a and 1-4b). The shoulder widths currently vary from 0 to 4 feet. The increased shoulder widths would meet the Department's Design Standards for shoulder width, provide sufficient width for STAA truck access, and would provide more room for service vehicles (e.g., garbage trucks, mail delivery) and the traveling public to pull off the roadway when necessary and would improve the sight distance for residents exiting their driveways. Design exceptions for minimum stopping sight distance and curve radii would be required.

Approximately 1,200 cubic yards of material would be excavated or placed. Right-of-way would need to be acquired. Utility poles would need to be relocated. Segments of chain-link fence would also need to be relocated to accommodate the proposed width of the road after construction.

The estimated cost of this alternative is approximately $1.8 million.

Two-Foot Shoulders Alternative

This alternative was developed to meet the "Minimum Existing In-Place" shoulder width standard. It would increase the shoulder widths to a minimum of 2 feet on both sides of the roadway (Figures 1-5a and 1-5b). The shoulder widths currently vary from 0 to 4 feet. Design exceptions for shoulder width, minimum stopping sight distance and curve radii would be required.

Approximately 700 cubic yards of material would be excavated or placed to construct the widening. Right-of-way would need to be acquired. Utility poles would need to be relocated. Segments of chain link fence would need relocation to accommodate the proposed roadway width.

The estimated cost of this alternative is approximately $1.6 million.

Two-Foot Widening in Spot Locations Alternative (Preferred)

This alternative was developed to provide the minimum necessary improvements to provide STAA truck access while avoiding and minimizing impacts on large redwood trees. It would increase shoulder widths from 2 to 4 feet in spot locations (Figures 1-6a and 1-6b). The shoulder widths currently vary from 0 to 4 feet. This design has changed since circulation of the Draft Environmental Impact Report/Environmental Assessment DEIR/EA and the Partial Recirculation Draft Environmental Impact Report/Supplemental Environmental Assessment PRDEIR/SEA.

The shoulder design width has increased from 2 feet to 4 feet in areas where the increased width would not necessitate the removal of large redwoods or affect the roots of remaining large redwoods. The overall concept for this alternative was to avoid impacts on large redwoods by allowing for varying shoulder widths, and this has not changed. Design exceptions were required for this alternative.

Approximately 700 cubic yards of material would be excavated or placed. Right-of-way would need to be acquired. Two utility poles would need to be relocated; this was determined during design refinement (after circulation of the DEIR/EA and selection of the preferred alternative). Design refinement was needed to ensure that large redwoods would not be cut as a result of proposed construction.

The estimated cost of this alternative is approximately $0.9 million.

1.3.2.3 Patrick Creek Narrows Location 1 (US 199: PM 20.3 to 20.7)

One build alternative is being considered at this project location. It was designed to avoid geologic instability and provide safe STAA access, with the least effect on the Middle Fork Smith River. The existing roadway curves would be improved. The roadway would be widened to accommodate two 12-foot-wide lanes and 4-foot-wide shoulders throughout the majority of the location, transitioning to 1- to 4-foot-wide shoulders at both ends of the location. The shoulder widths currently vary from 0 to 3 feet (Figure 1-7). This alternative would not meet Department standards for shoulder widths, and Fact Sheet Exceptions to the Mandatory Design Standards have been approved.

The embankment on the uphill side (southwesterly lane) of the roadway consists of an 80-foot cut slope of unconsolidated cobbles and boulders. Excavation of the bottom portions of this slope might result in perennial rockfall. Therefore, to accommodate the widening and broader roadway curves, an approximately 190-foot-long, 5-foot-tall retaining wall (extending from approximately PM 20.54 to 20.57) is proposed along the river side of the road above a portion of the existing steep rock-armored riverbank. The retaining wall would consist of piles and have architectural rock finish supporting an architectural rock finish modified Type 80 concrete barrier. Additional roadway work would include reconstructing the existing drainage ditch adjacent to the base of the cut slope; striping; providing OGFC overlay to improve friction and traction, a centerline rumble strip, and shoulder backing; reconstructing the existing guardrail; and constructing a new metal-beam guardrail at the north end of the wall (approximately 75 feet long). Existing gravel pullouts would be used as staging areas.

Naturally occurring asbestos (NOA) has been identified through testing at Patrick Creek Narrows Location 1, and it is possible that excavated material and material removed during pile installation would contain NOA at levels which would make it unsuitable for surfacing application. Due to the presence of NOA, the construction Contractor would be required to hire an industrial hygienist to develop an Asbestos Compliance Plan and a Dust Control Plan. In addition, the Contractor would be required to take appropriate measures to contain and dispose of any material with NOA. Any fill or imported material would need to contain less than 0.25% NOA; if the fill or imported material were to contain more than 0.25% NOA, it would need to be

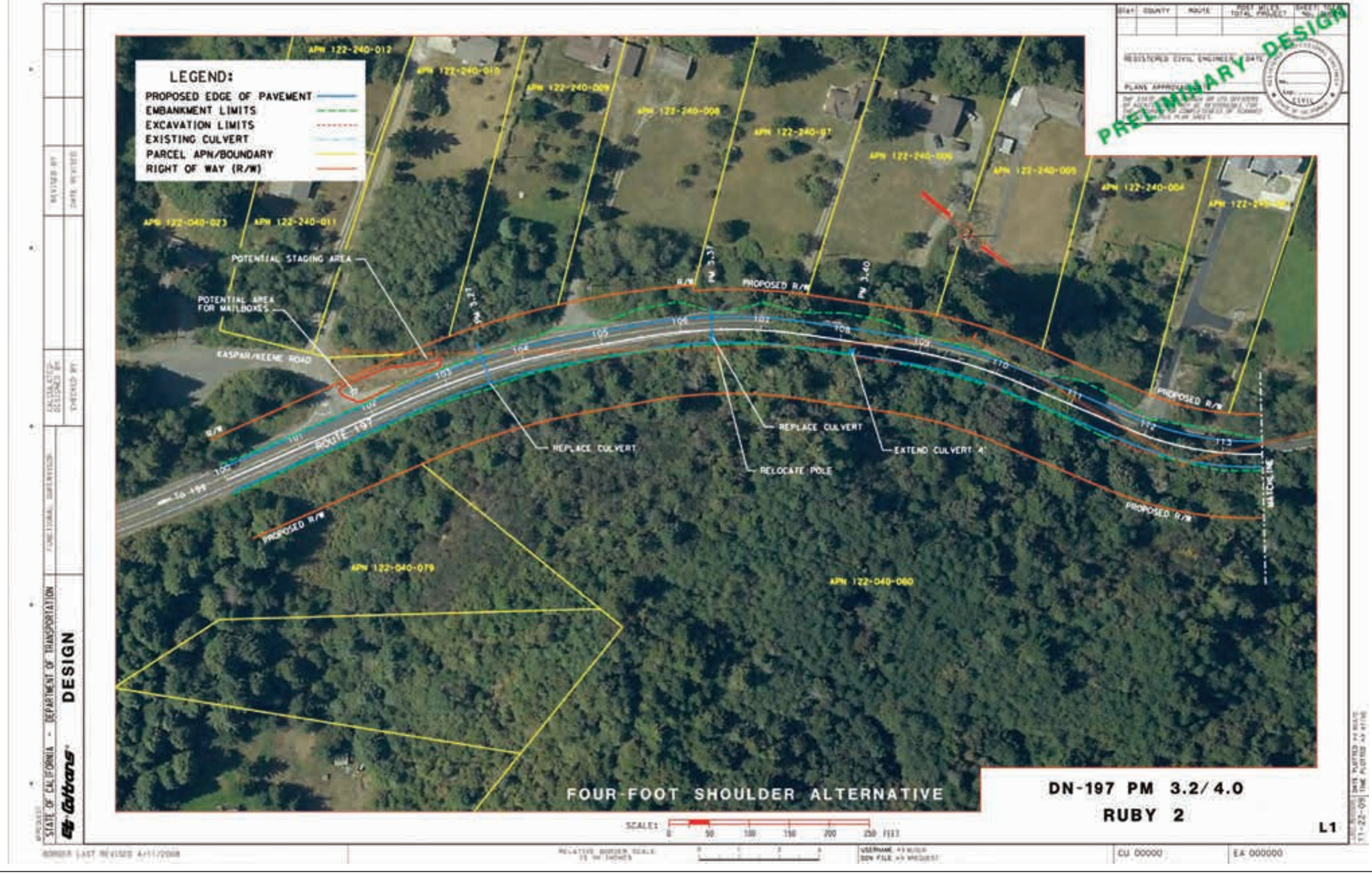


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Figure 1-4a
Ruby 2, Four-Foot Shoulders

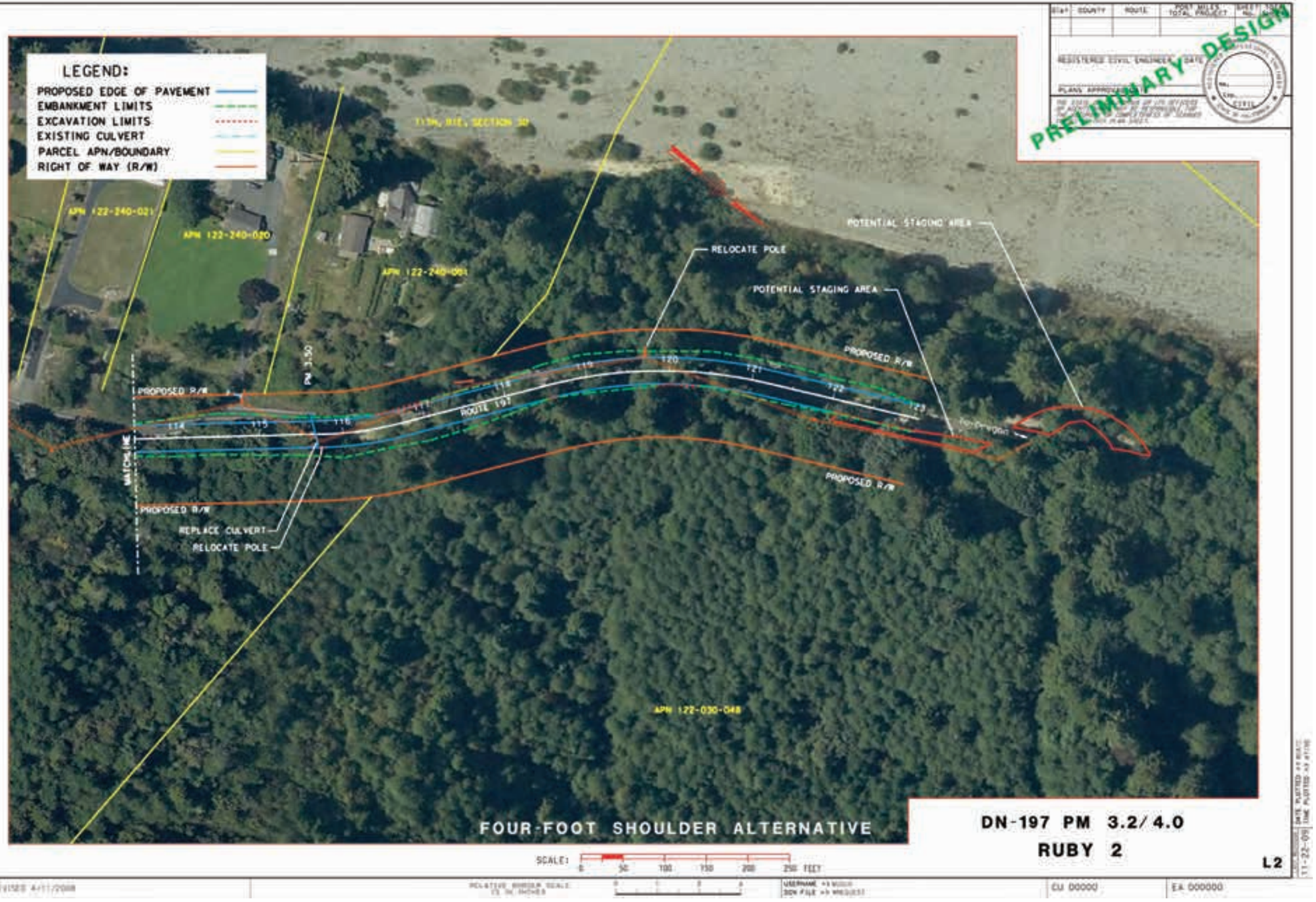

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Figure 1-4b
Ruby 2, Four-Foot Shoulders

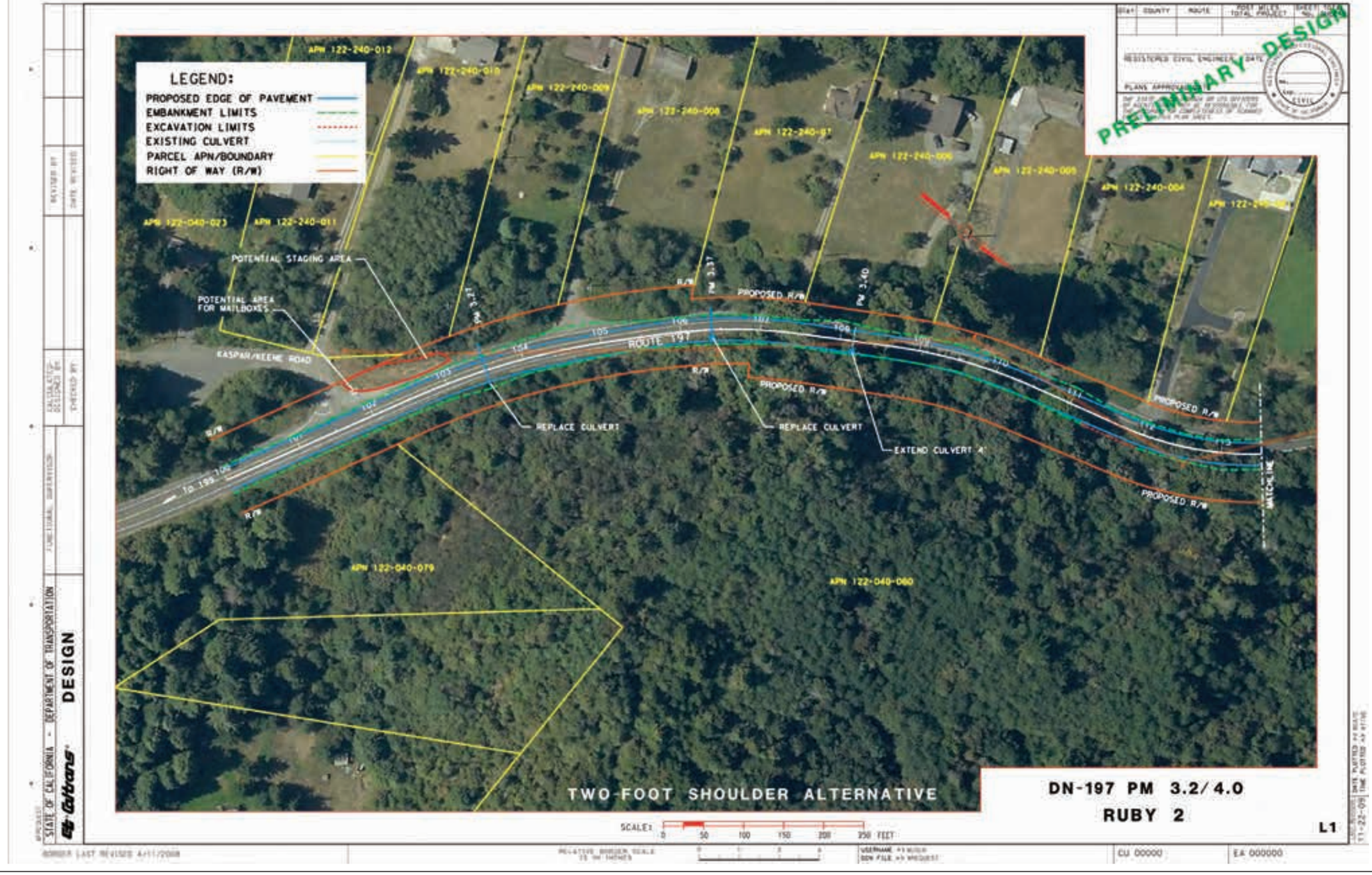

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Figure 1-5a
Ruby 2, Two-Foot Shoulders

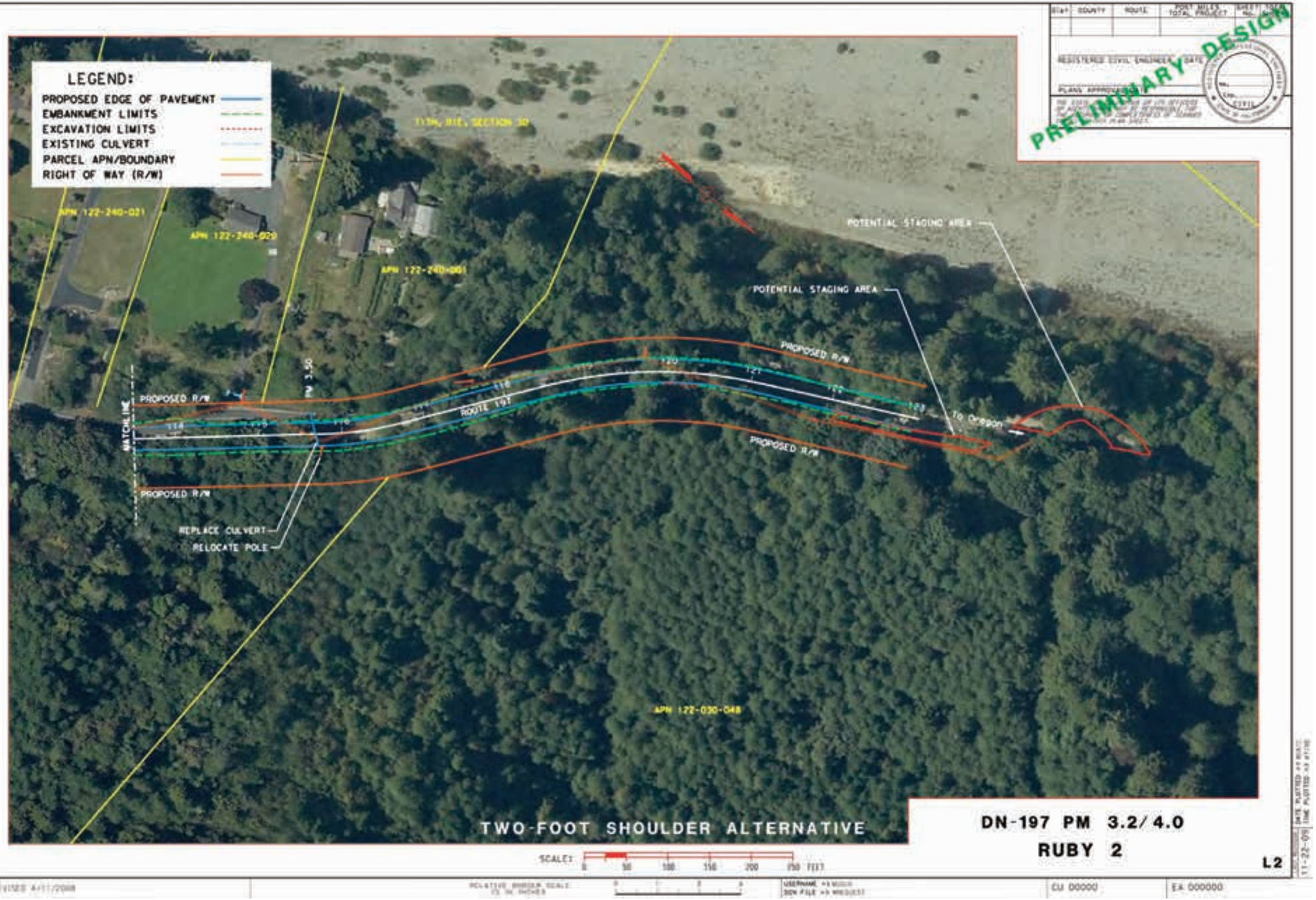

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Figure 1-5b
Ruby 2, Two-Foot Shoulders

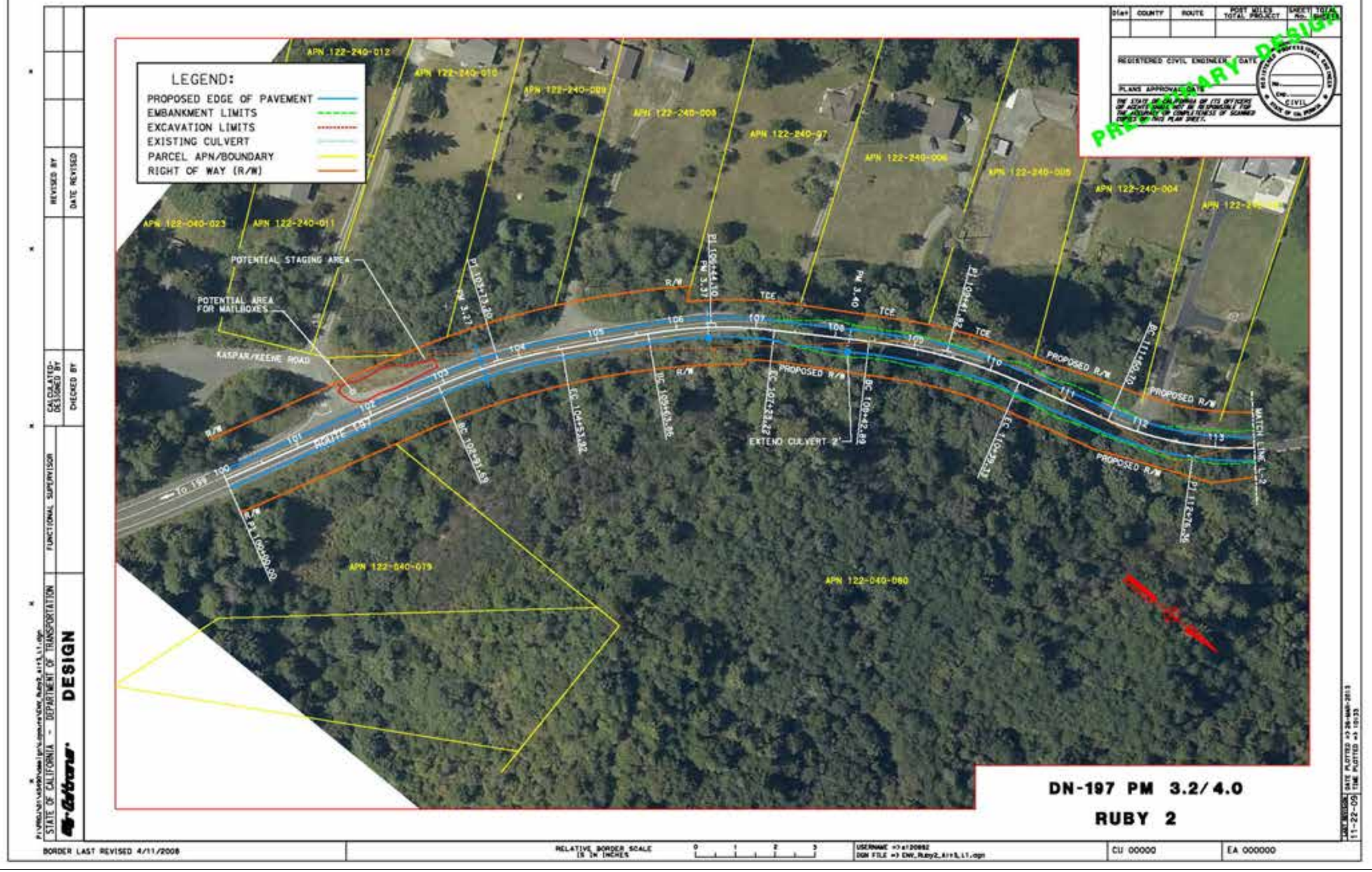


Figure 1-6a
Ruby 2, Two-Foot Widening in Spot Locations

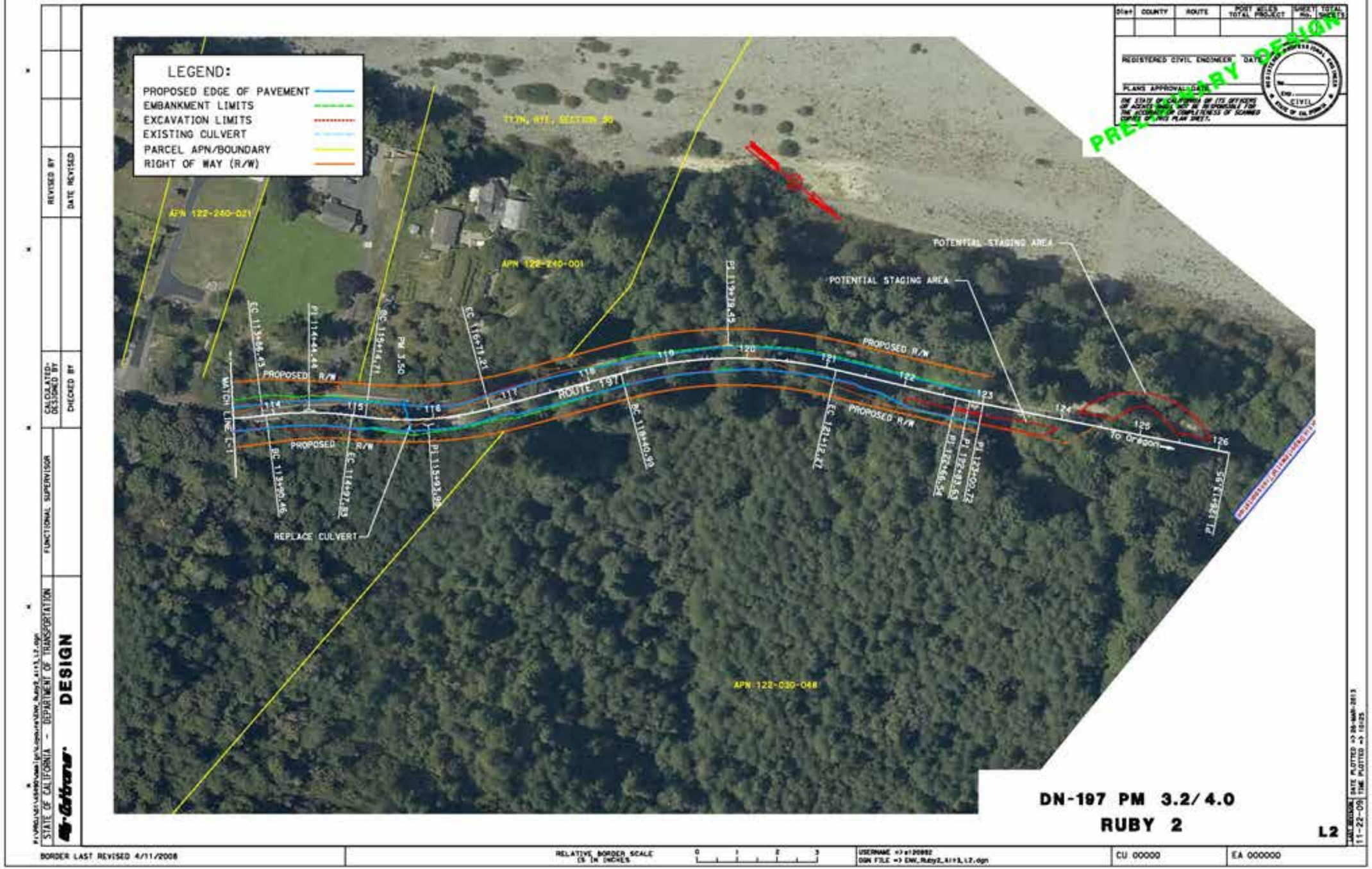


Figure 1-6b
Ruby 2, Two-Foot Widening in Spot Locations

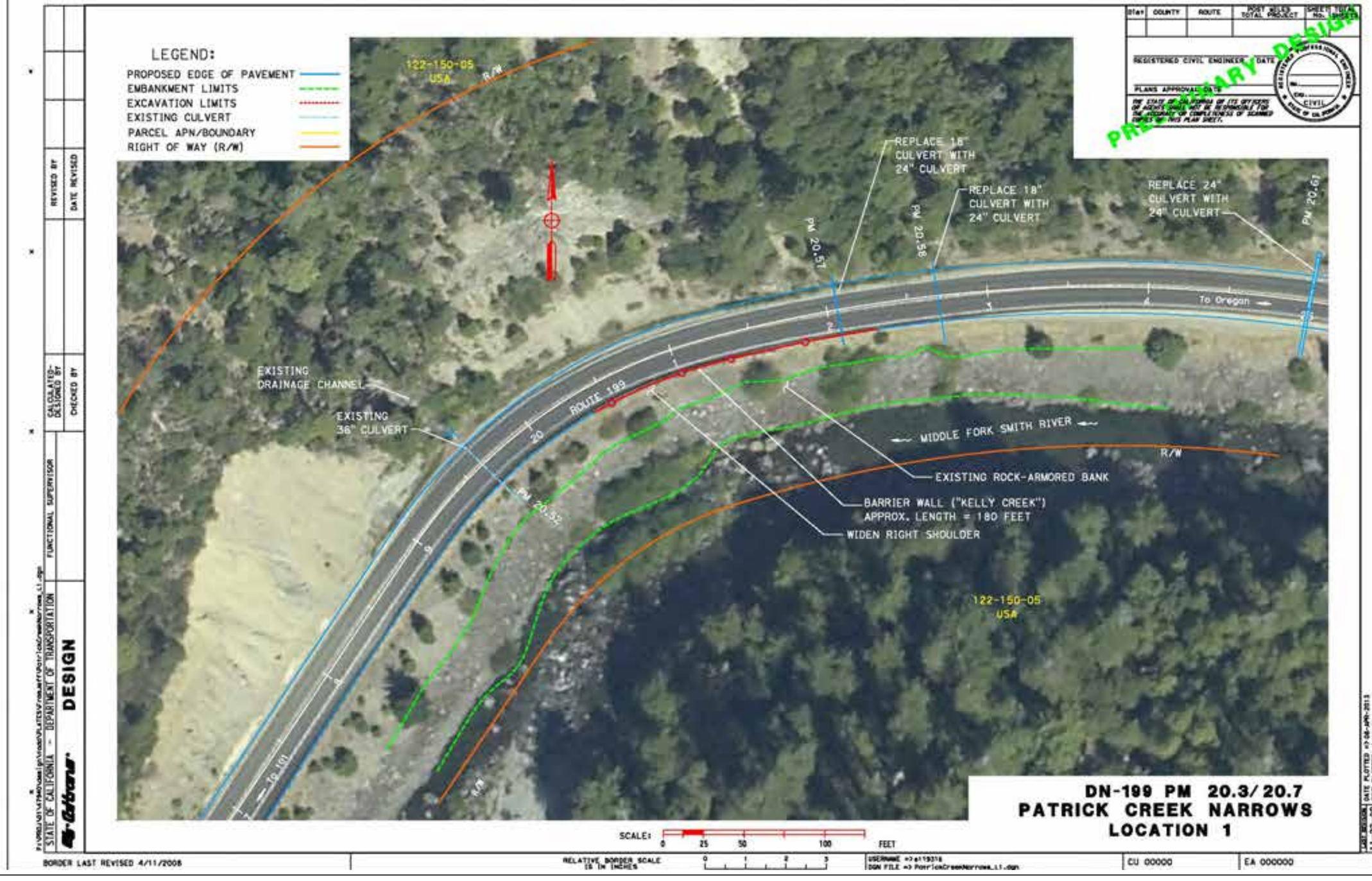


Figure 1-7
Patrick Creek Narrows Location 1

capped with at least 3 inches of non-asbestos-containing material, per North Coast Unified Air Quality Management District regulations.

An existing 24-inch culvert at PM 20.62 would be replaced with a longer culvert to match the new roadway width at the inlet and outlet. Also, two 18-inch culverts at PM 20.57 and 20.58 would be replaced with 24-inch culverts, both with new drainage inlets. One of the culverts, at PM 20.57, would intersect the proposed retaining wall. Work would be done during the dry season, but water diversion or dewatering may be required during construction.

No additional right-of-way is anticipated to be necessary for this project location. No utilities are located within the project limits.

The estimated cost is approximately $1.7 million.

1.3.2.4 Patrick Creek Narrows Location 2 (US 199: PM 23.9 to 24.2)

Three alternatives for improvements were considered at this project location to address safe STAA access: the Upstream Bridge Replacement, Downstream Bridge Replacement, and Bridge Preservation with Upslope Retaining Wall Alternatives. An existing arch bridge, the Middle Fork Smith River Bridge, is within the limits of this project location under all three alternatives. The bridge, constructed in 1925, is only 24 feet wide and is functionally obsolete. *Functionally obsolete* is a term used by Structure Maintenance and Structure Design in reference to the Middle Fork Smith River Bridge (Bridge number 01-0015). Widening the existing bridge would require constructing an additional arch on each side of the bridge and would cost as much as a replacement bridge. The widened bridge would have a life expectancy limited to that of its original and oldest components. The theoretical design life of bridges is typically 75-100 years. The American Association of State Highway and Transportation Officials (AASHTO) LFRD Bridge Design Specifications define "service life" as the period of time that the bridge is expected to be in operation. AASHTO specifies 75 years as the theoretical design life. The Middle Fork Smith River Bridge was built in 1925, so it has exceeded its theoretical design life. Bridge inspection reports indicate the bridge is in acceptable condition but has indications of some deterioration. The current seismic design criteria designate the Maximum Considered Earthquake (MCE) ground motions to have a probability of exceedance of 3% in 75 years, which is an approximate return period of 2,500 years. The existing bridge would also need to be seismically retrofitted to the new criteria. The bridge is not eligible for protection as a historic resource because it has been modified and widened since its original construction. The features common to all three build alternatives are discussed below, followed by a discussion of features unique to each alternative.

Common Features of the Patrick Creek Narrows Location 2 Build Alternatives

The alternatives would realign and widen the existing 11- to 12-foot lanes to 12 feet and increase the shoulders to a width of 8 feet. The shoulder widths currently vary from 0 to 2 feet. These improvements would allow, and are needed for, safe STAA access.

To accommodate the widening on the westernmost extent of the project location, approximately 3,000 cubic yards of rock excavation from the rock cut slope would be required. Rock excavation would extend up to approximately 40 feet above the highway and expose approximately 0.3 acre of newly excavated rock slope. A hoe ram, rock splitter, and/or controlled blasting would be required to construct the rock cut slope. A cut slope of 0.5:1 to 0.75:1 is

anticipated. Because of the fractured nature of the bedrock, rockfall may be expected after construction. Therefore, a permanent rockfall mitigation system consisting of a wire mesh would be installed.

One culvert within the limits within this project location would be replaced and relocated to match the new roadway width, a traction sand trap would be added to the outlet of this culvert. Work would be done during the dry season, but water diversion or dewatering may be required during construction for culvert work. One culvert would be added to improve drainage and direct stormwater into a bio-strip. Improvements at this location would also include an OGFC overlay to improve friction and traction, striping, a centerline rumble strip, and shoulder backing. The existing metal-beam guardrail along the gabion wall would be removed and replaced with aesthetically treated modified Type 80 guardrail, which would be placed on top of a retaining wall.

A new wall with aesthetic treatment, approximately 130 feet long and up to 4 feet high, would be constructed on the outside of the curve at PM 23.9 to support the metal-beam guardrail reconstruction.

No utilities are located within the project limits. Existing gravel and paved pullouts nearby would be used to stage equipment.

Unique Features of the Patrick Creek Narrows Location 2 Build Alternatives

The following discussion identifies the unique features of each build alternative.

Upstream Bridge Replacement Alternative

This alternative would replace the existing Middle Fork Smith River Bridge with a bridge upstream from its current location. In addition to the excavation described in under "Common Features of the Patrick Creek Narrows Location 2 Build Alternatives," an additional retaining wall/rock bolting[6] or rock net drapery would be constructed on the cut slope side of the highway. The retaining wall/rock bolting area would be approximately 400 feet long and up to 100 feet high and expose an additional approximately 0.5 acre of new rock cut slope and/or disturbed soil area beyond the work described under "Common Features of the Patrick Creek Narrows Location 2 Build Alternatives" (Figure 1-8).

The existing cut slope above the proposed retaining wall/rock bolt area shows evidence of past instability. Excavation of this cut slope for retaining wall construction would be complex and difficult. Controlled blasting could be required in some areas of the cut slope excavation. Rock scaling, rock bolting, and temporary rock-fall barriers could be necessary before construction to ensure worker safety. A rock-fall barrier or drape would likely need to be placed above the proposed cut slope to reduce the risk of rockfall.

Two bridge design options were evaluated for this alternative: a concrete arch bridge and a concrete box girder bridge. The arch bridge option would be approximately 310 feet long by 44 feet wide, and would have two 12-foot-wide lanes and 8-foot shoulders. The concrete box girder

[6] The purpose of rock bolting is to pin two planes of rock together by bolting the slipping plane to a solid rock plane. Rock bolts secure permanent steel bars, which are grouted, tensioned, and locked into place with a metal faceplate on the final cut slope.

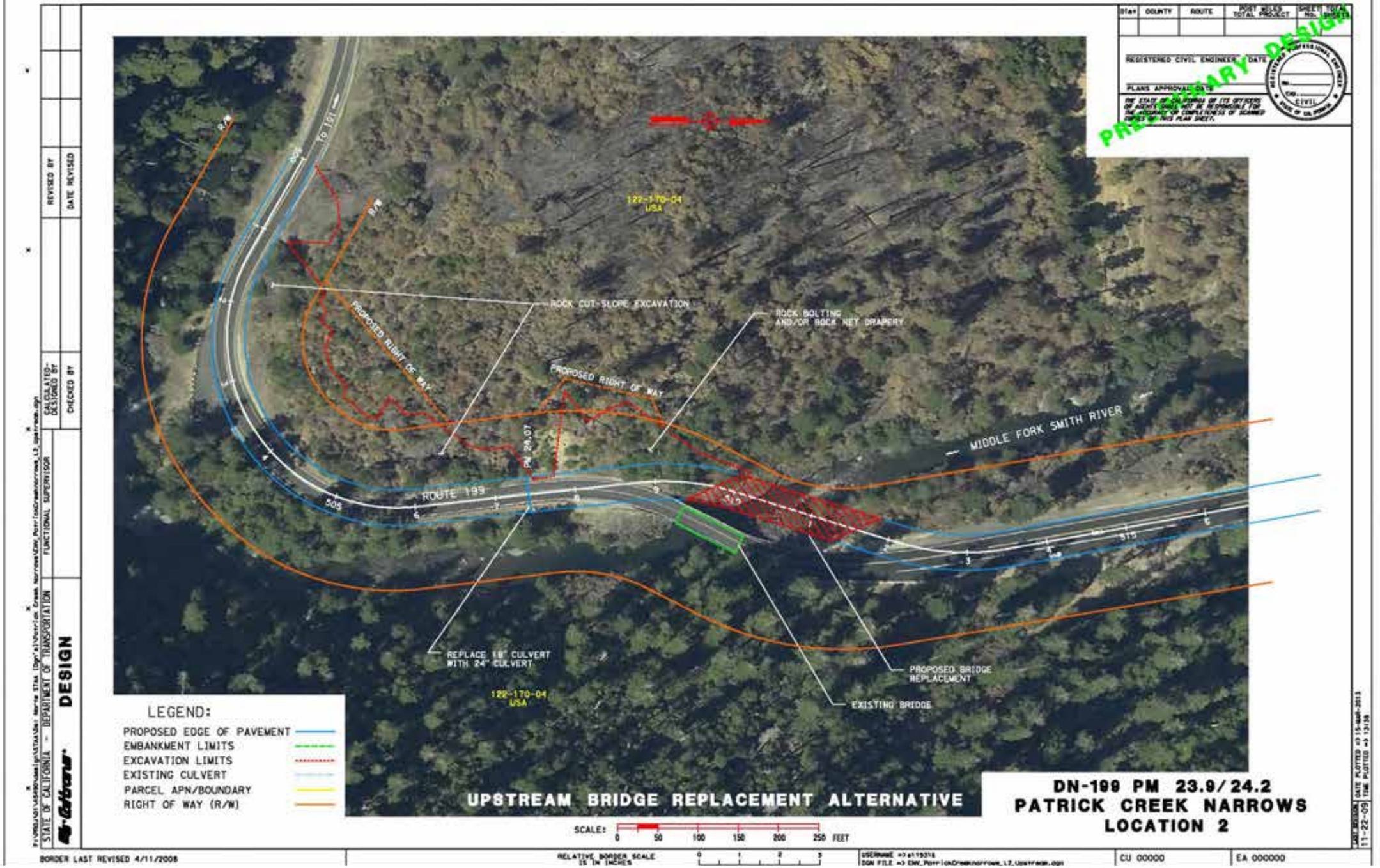


Figure 1-8
Patrick Creek Narrows Location 2: Upstream Bridge Replacement

bridge option would be approximately 300 feet long by 40 feet wide, and would have two 12-foot-wide lanes and 8-foot shoulders.

The following are the two main elements that would be necessary for bridge construction at this location:

1. Falsework to construct the new bridge, and
2. A containment platform for debris from the demolition of the existing bridge.

A single large platform may be constructed that serves both tasks. This platform would require support, such as concrete pads, on the banks of the Middle Fork Smith River.

After the new bridge is complete, the existing bridge would be removed. Demolition and debris containment plans would be prepared, including provisions to minimize debris entering the Middle Fork Smith River. The temporary supports of the containment system would be similar to bridge falsework and falsework foundation used in the river channel during construction of the new bridge. The existing spread footing foundation would be cut off flush at the ground surface. Also, portions of the old roadway southwest of the old bridge and directly adjacent to the old bridge would be removed and revegetated. A portion of the old roadway would possibly be retained for drainage features.

The estimated cost of this alternative is approximately $9.3 million.

Downstream Bridge Replacement Alternative (Preferred)

This alternative would replace the existing bridge with a bridge downstream from the current location.

A retaining wall and sidehill viaduct approach would be constructed downstream from the new bridge. The retaining wall would extend for approximately 153 feet, and the viaduct would extend for approximately 95 feet and transition directly into the proposed new bridge. The retaining wall would vary in height from 10 to 20 feet and be supported along the bank of the Middle Fork Smith River. The sidehill viaduct, which would be founded on drilled piles, would support the northbound traffic lane over the bank of the Middle Fork Smith River.

This bridge alternative would also require a retaining wall on the Oregon side of the bridge that would reach approximately 10 feet high and be 175 feet long (Figure 1-9). The existing culvert at PM 24.07 would be abandoned. A new 24 inch culvert with a Traction Sand Trap would be placed at PM 23.95 and a new 18 inch culvert would be placed at PM 24.17 to drain to a constructed bio-strip.

Two bridge design options were evaluated for this alternative: a concrete arch bridge and a concrete box girder bridge. Both the arch and box girder options would provide a bridge approximately 250 feet long by 44 feet wide with two 12-foot-wide lanes and 8-foot shoulders. As with the Upstream Bridge Replacement Alternative, this alternative would require the use of temporary falsework and a debris containment system. The existing bridge would be removed after construction of the new bridge.

The estimated cost of this alternative is approximately $9.7 million.

Bridge Preservation with Upslope Retaining Wall Alternative

This alternative would retain the existing bridge but realign the roadway on either end of the bridge to allow large trucks to cross. The existing bridge would still be functionally obsolete, but this alternative widens the highway at each end of the bridge (i.e., widens the bridge approaches) so that STAA trucks would be able to align themselves within their respective lane and cross the narrow bridge while staying within their lane. In addition to the excavation described under "Common Features of the Patrick Creek Narrows Location 2 Build Alternatives," an additional retaining wall/rock bolting or rock net drapery would be constructed on the cut slope side of the highway. The retaining wall/rock bolting area would be approximately 300 feet long and up to 100 feet high and expose an additional approximately 0.25 acre of new rock cut slope and/or disturbed soil area beyond the work described under "Common Features of the Patrick Creek Narrows Location 2 Build Alternatives." The retaining wall or rock bolting would provide additional width to align large vehicles before they cross the narrow bridge. This alternative would not preclude future bridge replacement (Figure 1-10).

The existing cut slope above the proposed retaining wall/rock bolting area shows evidence of past instability. Excavation of this cut slope for retaining wall construction would be complex and difficult. Controlled blasting could be required in some areas of the cut slope excavation. Rock scaling, rock bolting, and temporary rockfall barriers could be necessary before construction to ensure worker safety. A rock-fall barrier or drape would likely need to be placed above the proposed cut slope to reduce the risk of rockfall.

The estimated cost of this alternative is approximately $6.2 million.

1.3.2.5 Patrick Creek Narrows Location 3 (US 199: PM 25.5 to 25.7)

One build alternative was considered for this project location. The alternative is designed to avoid geologic instability and provide safe STAA access, with the least effect on the Middle Fork Smith River. This section of roadway has an "S" curve with two 12-foot lanes, and the shoulders are currently 1 foot wide. This alternative would increase the shoulder width up to 8 feet on both sides of the road and improve the "S" curve. This alternative improves the road alignment to accommodate STAA truck off-tracking and improves safety by providing 4-foot to 8-foot wide paved shoulders to allow additional recovery room for errant vehicles. However, not all design standards could be met, due to geologic, environmental and cost constraints, and a Fact Sheet Exceptions to Mandatory Design Standards has been approved for curve radii, shoulder width (4-feet for approximately 150 feet of existing steep embankment), and stopping sight distance.

A new wall would be constructed on the riverside to support the wider roadway. It would be approximately 180-foot-long, approximately 15 feet high, and have architectural rock finish and a modified Type 80 guardrail. A drilled-pile foundation may be required. Aesthetic treatment of the wall will be incorporated. Two 18-inch culverts within the limits of this project location, at PM 25.55 and 25.69, would be replaced with 24-inch culverts and lengthened to match the new roadway width with new inlets (Figure 1-11). A Traction Sand Trap would be added to the culvert at PM 25.55. A drainage inlet and new overside drain would be installed for the culvert at PM 25.61. A rock slope protection area, approximately 6 feet by 14 feet, would be placed at the drainage outlet to the PM 25.69 culvert, above the ordinary high-water mark, to minimize

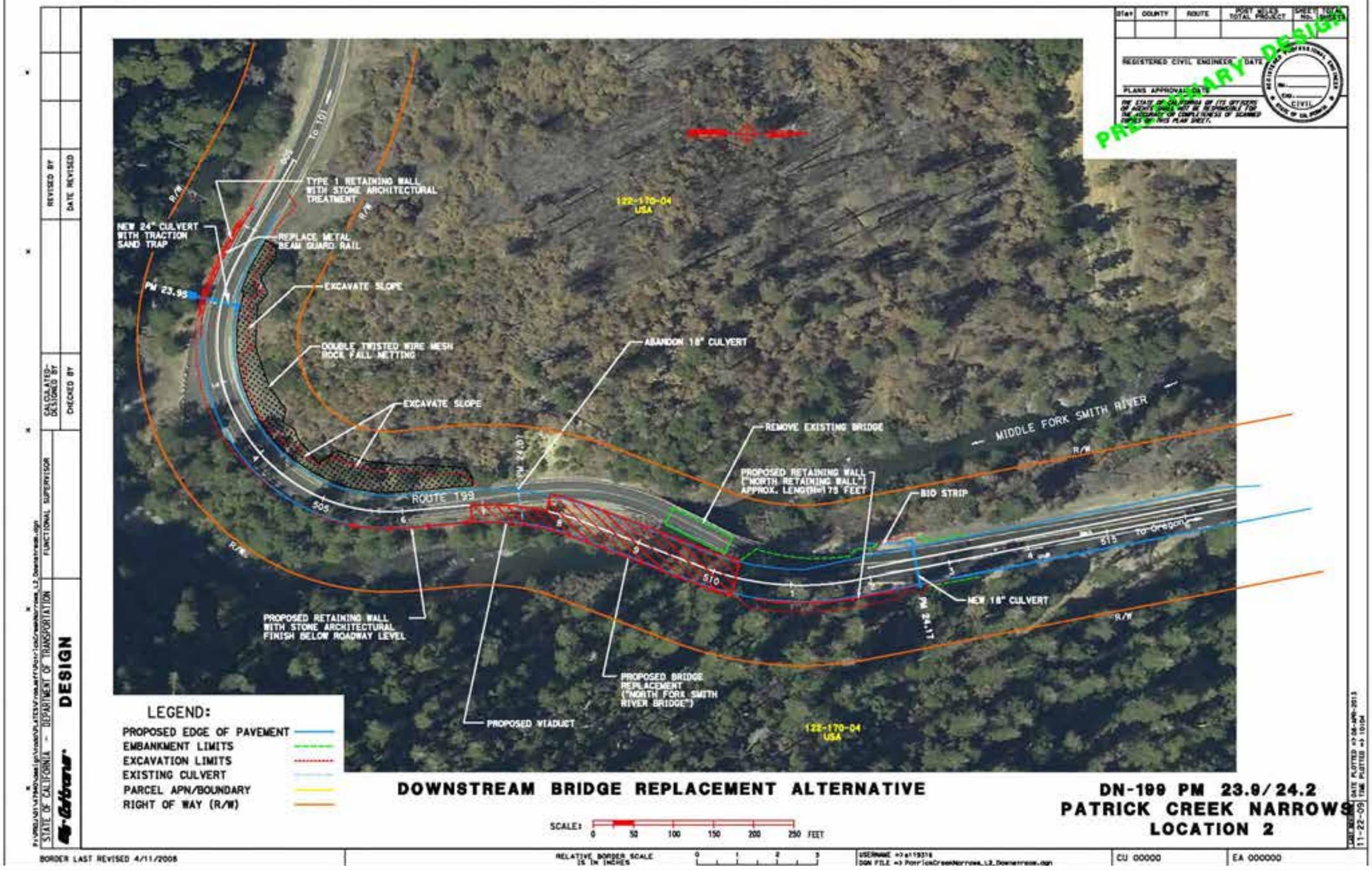


Figure 1-9
Patrick Creek Narrows Location 2: Downstream Bridge Replacement

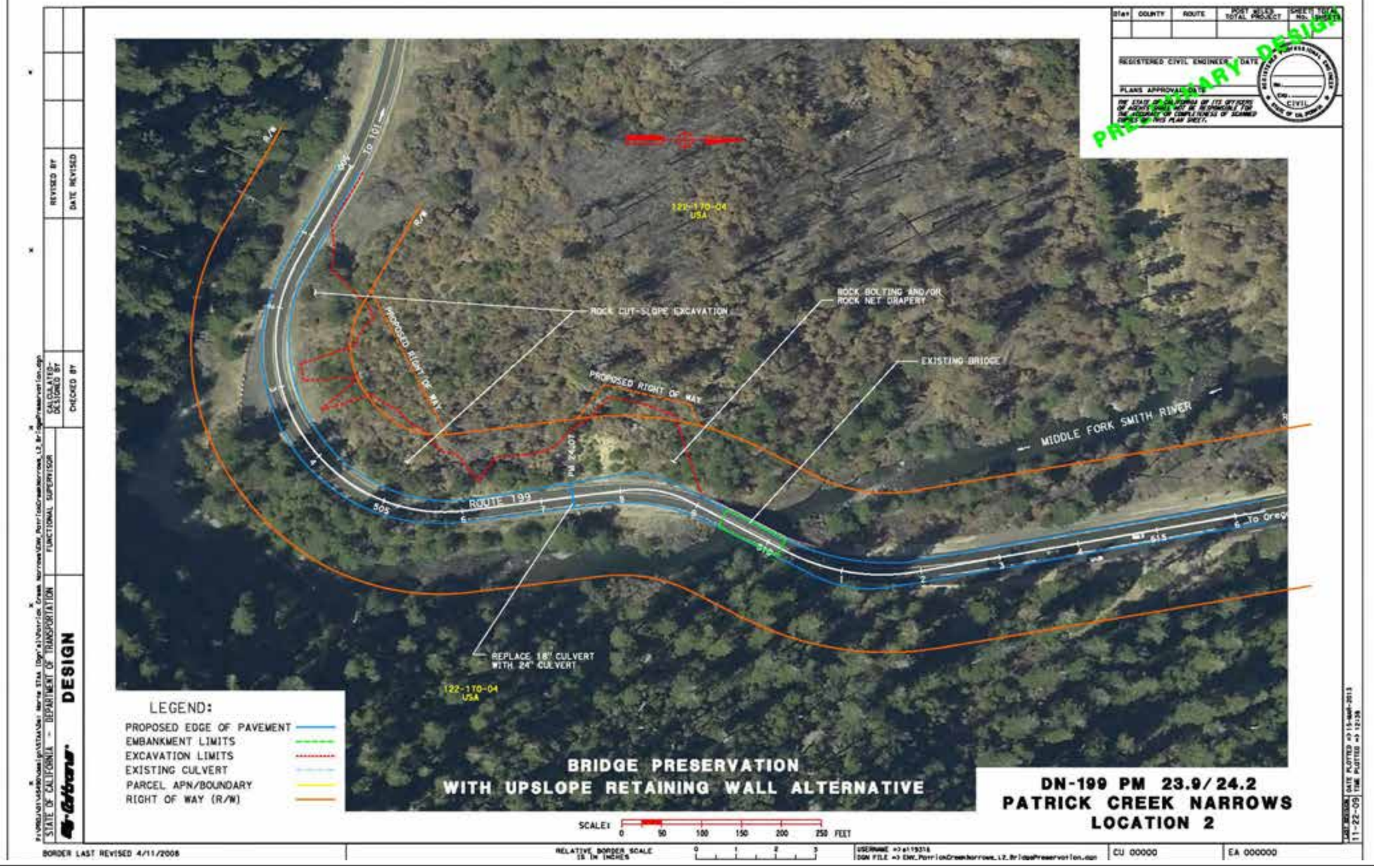


Figure 1-10
Patrick Creek Narrows Location 2: Bridge Preservation

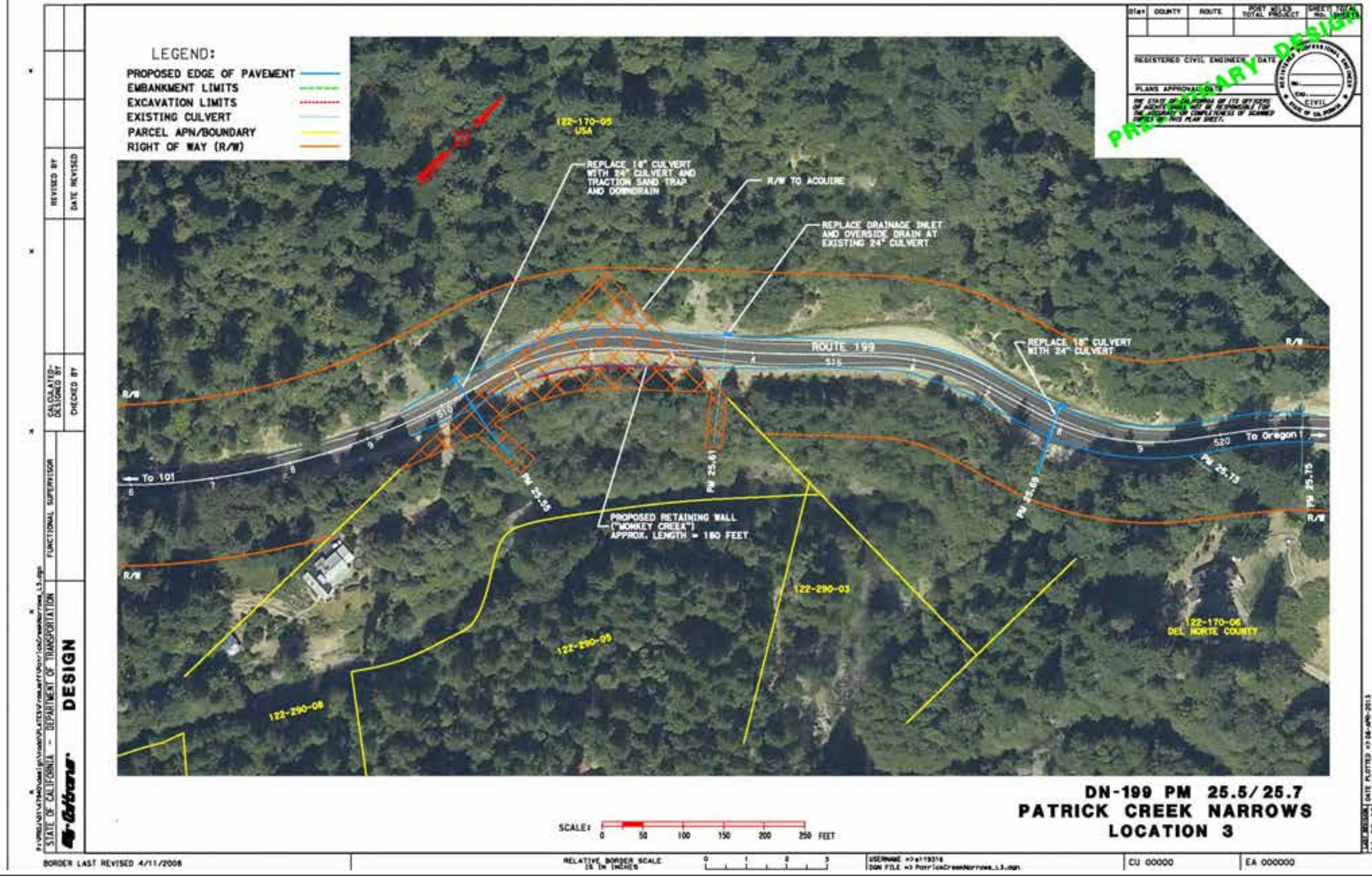


Figure 1-11
Patrick Creek Narrows Location 3

erosion. Work would be done during the dry season, but water diversion or dewatering may be required during construction. Improvements at Patrick Creek Narrows Location 3 would also include an OGFC overlay to improve friction and traction, paving of the existing private driveway from the highway to the break-in-slope of the driveway, striping, a rumble strip, metal-beam guardrail, and shoulder backing.

Permanent right-of-way would need to be acquired at this location from a private landowner. No utility relocation is required. Existing gravel pullouts would be used to stage equipment.

The estimated cost is approximately $1.6 million.

1.3.2.6 The Narrows (US 199: PM 22.7 to 23.0)

One build alternative was considered for this project location. Widening toward the river was considered, but was found to be infeasible because of costs and potential environmental impacts. The travel lane width currently varies from 10 to 12 feet, and there are no shoulders at this location. This alternative would increase lane widths to 12 feet and provide 0.5 to 2-foot shoulders. Widening would be accomplished by excavating into the existing cut slope. These improvements would allow, and are needed for, safe STAA access.

In slope locations composed of soft material, mechanical equipment such as an excavator would be used. Proposed cut heights range from 0 to 25 feet, with an average height of 10 feet and average depth of 4 feet (Figures 1-12a and 1-12b), resulting in approximately 5,500 cubic yards of mostly rock excavation, with some soil as well.

Where extremely irregular rock slopes are vertical or overhanging, sliver cuts would be required. Proposed cut heights vary from 0 to 70 feet, with an average height of 25 feet and average depth of 4.5 feet (Figures 1-12a and 1-12b). The rock excavation/cut limits would be established by controlled blasting or presplitting, which would involve drilling closely spaced holes in the rock face and creating a shear plane by setting off simultaneous charges of explosives in the holes. The results after presplitting are a clean rock face and reduction in rock-fall potential.

To excavate the rock slope at locations where there is enough room for all traffic to pass through a one-way reversible traffic control, the drill would most likely be supported by a crane. Slopes that cannot be reached by crane without blocking traffic would be drilled by other means, such as using a track-mounted drill or drilling by hand.

A 2-foot-wide unpaved drainage ditch would be added to the cut side of the road. One new culvert and drain inlet would be constructed. Also, an existing culvert and drain inlet would be replaced to match the new edge of pavement. Work will be done during the dry season, but water diversion or dewatering may be required during construction.

In addition to roadway widening, isolated outcrops of overhanging or loose rock above the excavation limits would be stabilized with rock bolting, cable drape, reduction by blasting, or other means. Other work includes an overlay of new OGFC pavement to improve friction and traction, a centerline rumble strip, replacement of metal beam guardrail and new striping. Existing gravel pullouts nearby would be used to stage equipment. No right-of-way acquisition is anticipated for this location. No utility relocations are required.

The estimated cost is approximately $3.1 million.

1.3.2.7 Washington Curve (US 199: PM 26.3 to 26.5)

Two build alternatives were considered at this project location to address safe STAA access: the Cut Slope and the Retaining Wall Alternatives. The features common to both build alternatives are discussed below, followed by a discussion of features unique to each alternative.

Common Features of the Washington Curve Build Alternatives

These alternatives would improve the compound curve at this project location. The existing travel lane width varies from 10 to 12 feet, and the shoulders vary from 0 to 4 feet. The improvements would increase the lane width to a minimum of 12 feet. One culvert would be replaced. Work will be done during the dry season, but water diversion or dewatering may be required during construction. Other work would include an open-graded hot-mix asphalt overlay to improve friction and traction, a centerline rumble strip, replacement of a metal-beam guardrail, and new striping. These improvements would allow, and are needed for, safe STAA access.

NOA has been identified at Washington Curve, and testing indicates that excavated material would contain NOA at levels less than 0.25%. Due to the presence of NOA, the construction Contractor would be required to hire an industrial hygienist to develop an Asbestos Compliance Plan and a Dust Control Plan. In addition, the Contractor would be required to take appropriate measures to contain and dispose of any material with NOA.

No right-of-way acquisition is anticipated for this project location. No utility relocations are anticipated. Existing gravel pullouts nearby would be used to stage equipment.

Unique Features of the Washington Curve Build Alternatives

The following discussion identifies the unique features of each build alternative. The main differences between the two alternatives are amount of disturbed area and cost. Both alternatives would provide safe STAA access.

Cut Slope Alternative

A new slope would be excavated on the cut slope side of the roadway. The shoulders would be widened to a minimum of 4 feet. Roadway excavation would be approximately 23,000 cubic yards. The disturbed surface area along the slope would be approximately 1.4 acres. The proposed cut slope ratio would be 0.75:1, depending on geologic conditions (Figure 1-13). Between the base of the cut slope and the edge of the paved shoulder, an 8-foot-wide unpaved area would be provided to intercept and contain rockfall.

The estimated cost of this alternative is approximately $1.7 million.

Retaining Wall Alternative

This alternative proposes to construct a retaining wall along the cut slope of the roadway at this project location to provide additional roadway width. Shoulders would be widened and would vary from 2 to 8 feet. Excavation for construction of the wall would be approximately 5,000-6,000 cubic yards. The total disturbed area would be approximately 0.6–0.8 acre. The wall would be approximately 900 feet long. The wall height would be approximately 12 feet, but would extend to a maximum height of 30 feet midway through the length of the wall. The vertical

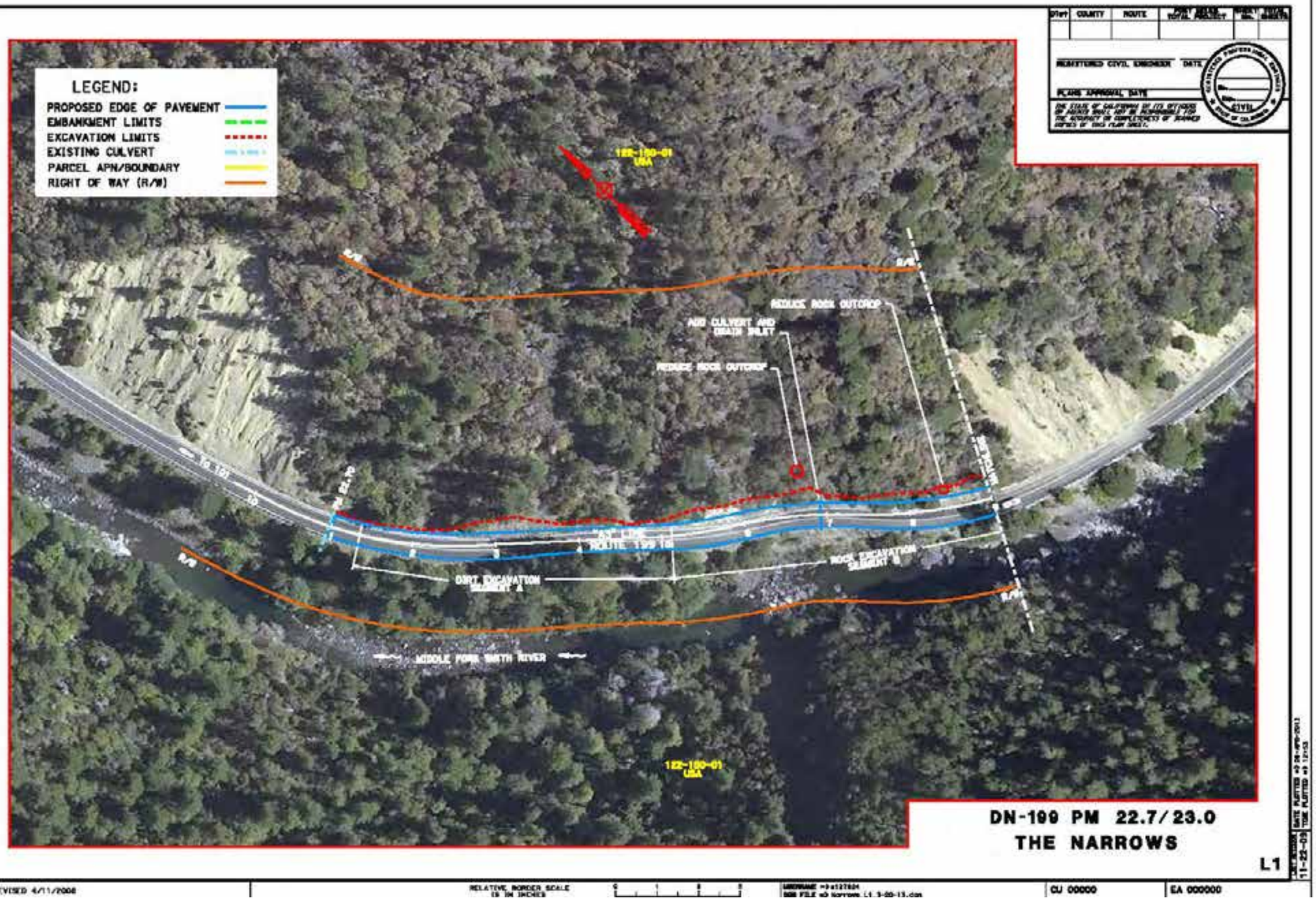


Figure 1-12a
The Narrows

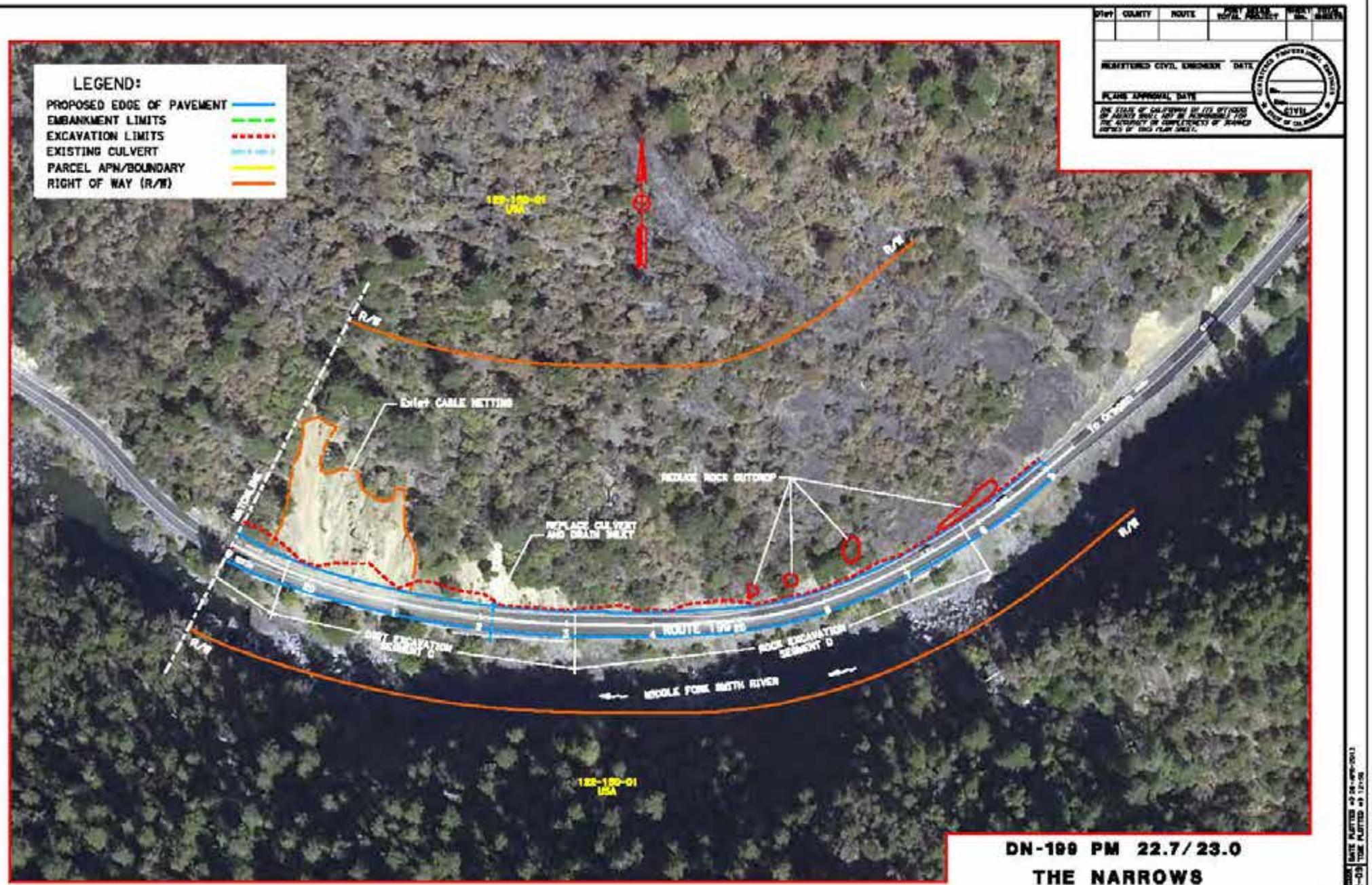


Figure 1-12b
The Narrows

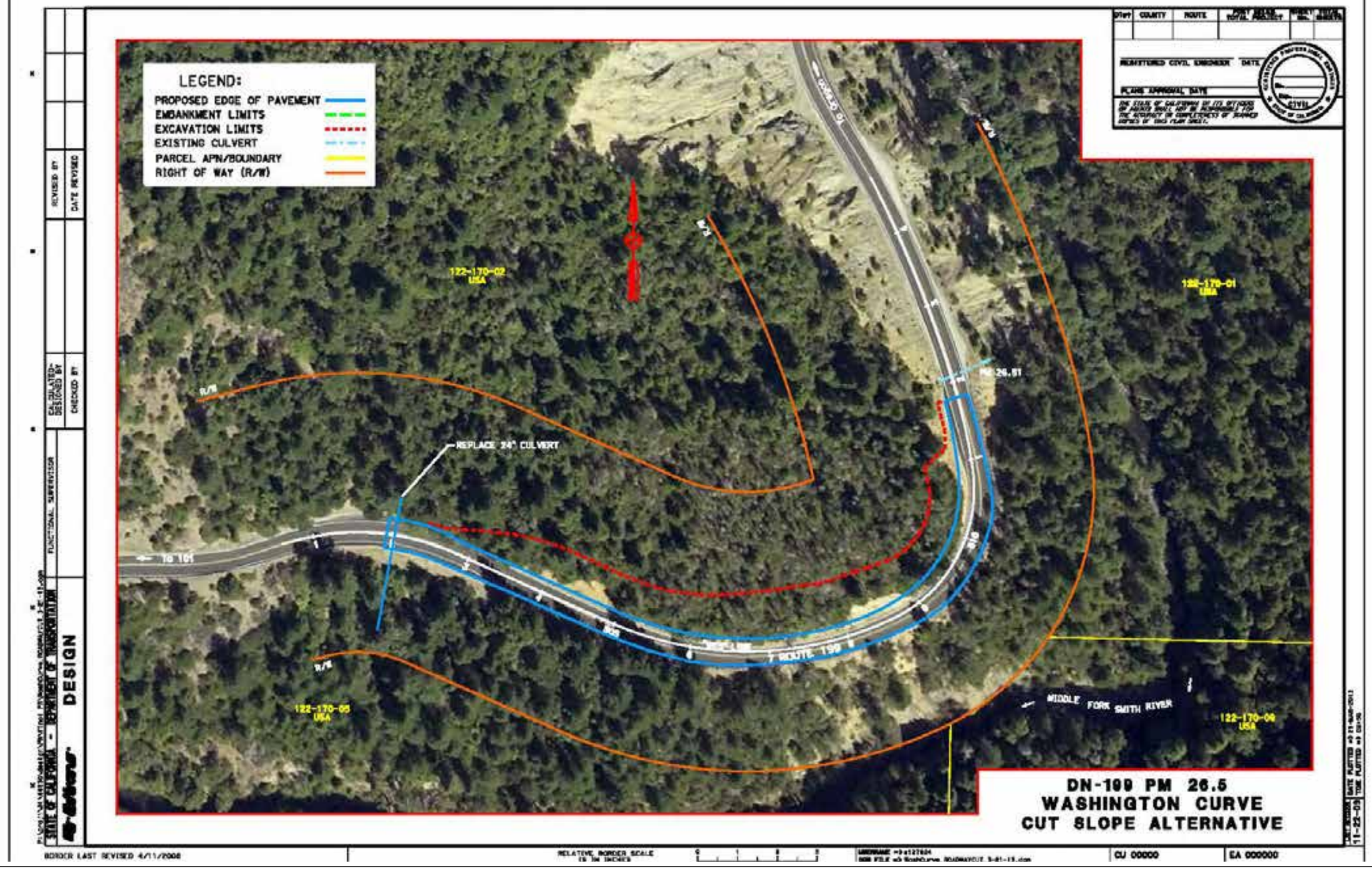


Figure 1-13
Washington Curve Cut Slope

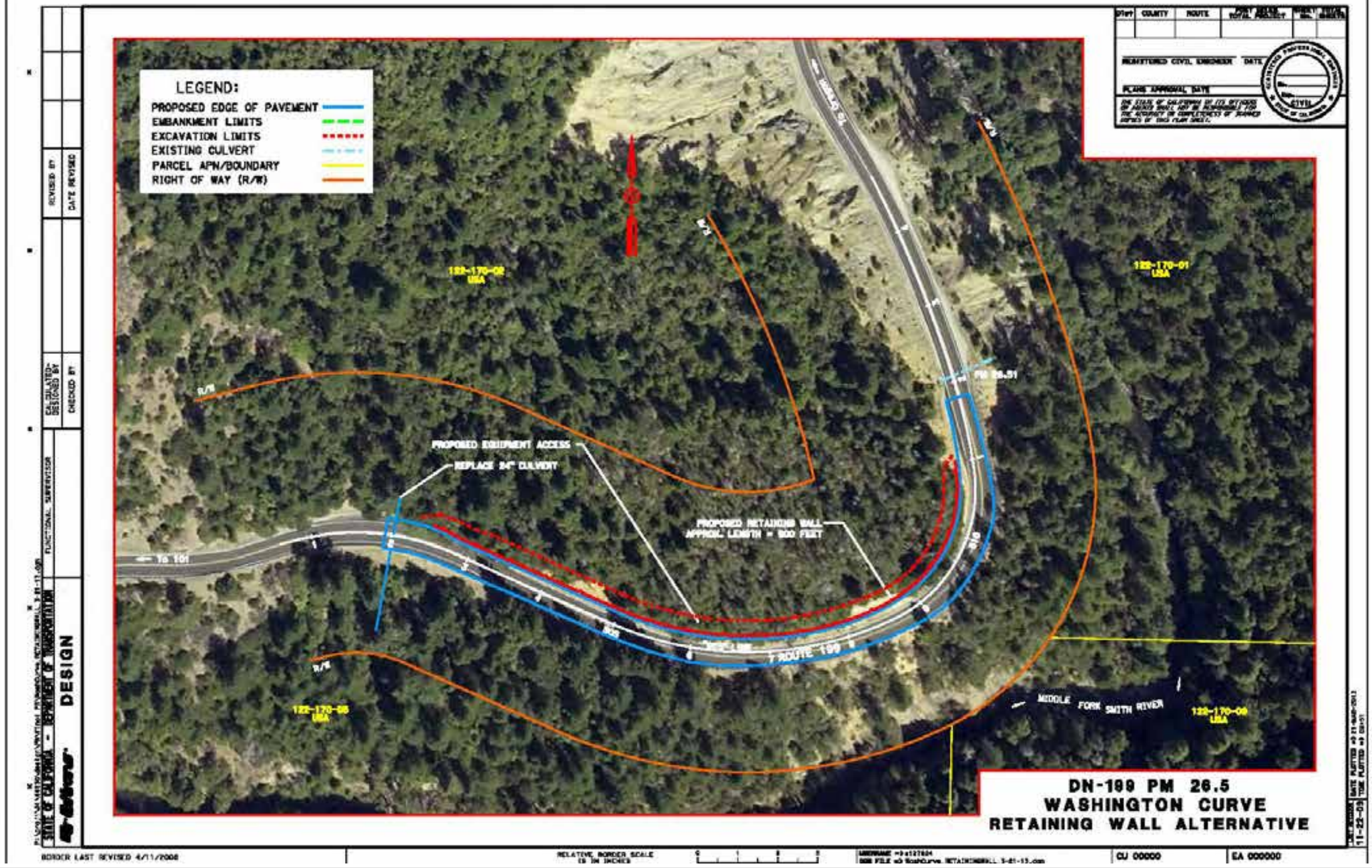


Figure 1-14
Washington Curve Retaining Wall

surface area of the wall would be approximately 14,000 square feet (Figure 1-14). Aesthetic treatment would be included.

The estimated cost of this alternative ranges from approximately $3.1 million to $5 million (currently estimated at $4.5 million), depending on type of retaining wall selected if this alternative is chosen.

1.3.2.8 No Build (No Action) Alternative for All Seven Project Locations

The No Build (No Action) Alternative would maintain the California Legal Advisory Route classification on both SR 197 and US 199. No improvements or widening would occur at any of the seven project locations to bring the roadways to STAA network standards. The current exemption for STAA trucks that are licensed carriers of household goods and that are only transporting goods directly to locations on US 199 but not traveling through the corridor would still remain in effect, per CVC Section 35401.5(f). However, some of the improvements could occur individually at the project locations to reduce continual maintenance problems or improve safety. The No Build (No Action) Alternative would not satisfy the project need or achieve the project purpose.

1.3.3 Equipment and Material Staging and Material Disposal Areas

To temporarily store and stage construction equipment and vehicles, access to several existing roadway pullouts would be temporarily blocked off along SR 197 and US 199. Figures 1-15 through 1-18 indicate the potential locations of these staging areas. Excavated material would be disposed of at existing approved facilities.

1.3.4 Preliminary Construction Schedule and Traffic Management

Construction durations at each project location are summarized in Table 1-2. The anticipated traffic management for each location is also described. Table 1-3 shows the preliminary construction schedule for all project locations in a timetable.

Table 1-2. Preliminary Construction Schedule and Traffic Management

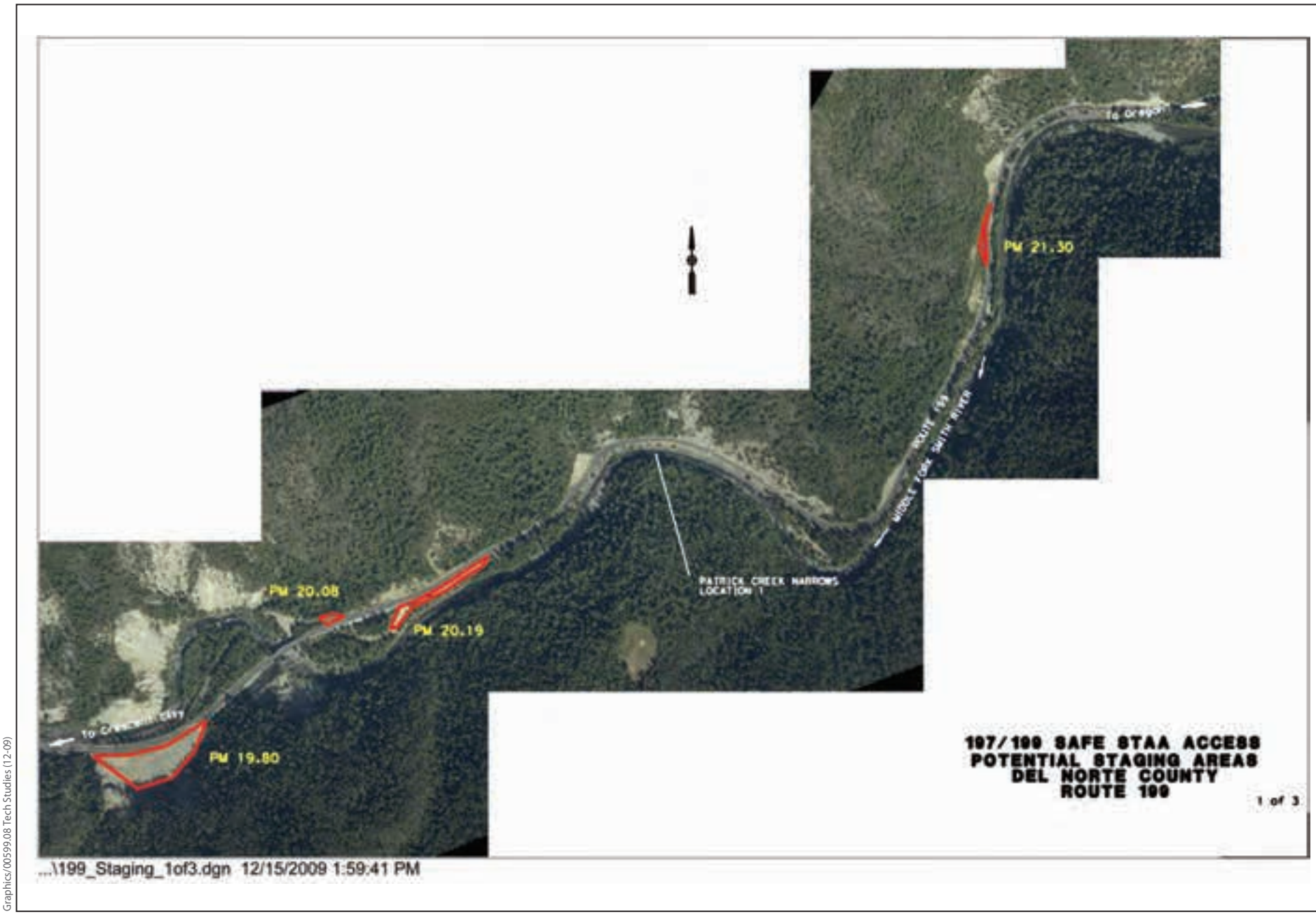
Project Location and Alterative	Construction Season/Year Target	Approx. Construction Duration (Working Days)	Anticipated Traffic Control and Approximate Anticipated Delays
Ruby 1	One season in summer/fall 2013 or 2014	50	One-way reversible traffic control and shoulder closure with 5-minute maximum delay
Ruby 2			
Four-Foot Shoulders	One season in summer/fall 2014 or 2015	80	One-way reversible traffic control with 5-minute maximum delay
Two-Foot Shoulders	One season in summer/fall 2014 or 2015	65	One-way reversible traffic control with 5-minute maximum delay

Project Location and Alterative	Construction Season/Year Target	Approx. Construction Duration (Working Days)	Anticipated Traffic Control and Approximate Anticipated Delays
Two-Foot Widening In Spot Locations	One season in summer/fall 2014 or 2015	60	One-way reversible traffic control with 5-minute maximum delay
Patrick Creek Narrows Location 1	Two seasons between fall 2013 and 2016	90–100	One-way reversible traffic control with temporary traffic signal, one-way reversible traffic with flaggers, and shoulder closures. Five-minute typical and 20-minute maximum delay.
Patrick Creek Narrows Location 2			
Upstream Bridge Replacement	Four seasons starting in fall 2013 and ending in late fall/winter 2016	450	One-way reversible traffic control with temporary traffic signal, one-way reversible traffic with flaggers, and shoulder closures. Five-minute typical and 20-minute maximum delay.
Downstream Bridge Replacement	Four seasons starting in fall 2013 and ending in late fall/winter 2016	360	One-way reversible traffic control with temporary traffic signal, one-way reversible traffic with flaggers, and shoulder closures. Five-minute typical and 20-minute maximum delay.
Bridge Preservation with Upslope Retaining Wall	Four seasons starting in fall 2013 and ending in late fall/winter 2016	250	One-way reversible traffic control with temporary traffic signal, one-way reversible traffic with flaggers, and shoulder closures. Five-minute typical and 20-minute maximum delay.
Patrick Creek Narrows Location 3	Two seasons between 2013 and 2016	50–70	One-way reversible traffic control with flaggers and shoulder closures. Five-minute typical and 20-minute maximum delay.
The Narrows	Two seasons between 2014 and 2016	122	One-way reversible traffic control with 5-minute typical and 75-minute maximum delay for approximately 122 days. Possible complete closure without detour.*
Washington Curve			
Cut Slope	Two seasons between 2014 and 2016	150	One-way reversible traffic control with 5-minute typical and 75-minute maximum delay for approximately 122 days..
Retaining Wall	Three seasons between 2014 and 2017	250–300	One-way reversible traffic control with 5-minute typical and 75-minute maximum delay for approximately 122 days.

* Pending approval by the District 1 Lane Closure Review Committee.

Table 1-3. Preliminary Construction Schedule Timetable with Number of Work Days by Location

Project Location (All Alternatives)	Construction Season*				
	1 2013	2 2014	3 2015	4 2016	5 2017
Ruby 1	50 working days with 5-minute delays	50 working days with 5-minute delays			
Ruby 2		60–80 working days with 5-minute delays	60–80 working days with 5-minute delays		
Patrick Creek Narrows Location 1	20 working days with 5 to 20-minute delays	90–100 working days with 5 to 20-minute delays and shoulder closure	90–100 working days with 5 to 20-minute delays and shoulder closure	90–100 working days with 5 to 20-minute delays and shoulder closure	



Graphics/00599.08 Tech Studies (12-09)

Figure 1-16
Potential Staging Area Locations

Graphics/00599.08 Tech Studies (rev. 3-2010)

Figure 1-15
Potential Staging Area Locations

Graphics/00599.08 Tech Studies (12-09)

Figure 1-18
Potential Staging Area Locations

Graphics/00599.08 Tech Studies (12-09)

Figure 1-17
Potential Staging Area Locations

Project Location (All Alternatives)	Construction Season*				
	1 2013	2 2014	3 2015	4 2016	5 2017
Patrick Creek Narrows Location 2	20 working days with 5 to 20-minute delays	150 working days with 5 to 20-minute delays	150 working days with 5 to 20-minute delays	150 working days with 5 to 20-minute delays	
Patrick Creek Narrows Location 3	20 working days with 5 to 20-minute delays	50–70 working days with 5 to 20-minute delays for 25 working days	50–70 working days with 5 to 20-minute delays for 25 working days	50–70 working days with 5 to 20-minute delays for 25 working days	
The Narrows		50 working days with 5 to 75-minute delays for 40 days	50 working days with 5 to 75-minute delays for 40 days	50 working days with 5 to 75-minute delays for 40 days	
Washington Curve		50–100 working days with 5 to 75-minute delays for 50–100 days for Cut Slope Alternative	50–100 working days with 5 to 75-minute delays and night closures 50–100 days for either alternative	50–100 working days with 5 to 75-minute delays and night closures 50–100 days for either alternative	50–100 working days with 5 to 75-minute delays and night closures 50–100 days for Retaining Wall Alternative

* A construction season typically extends from summer through fall. For the Patrick Creek Narrows locations, the season may extend into winter. Number of working days and estimated delays is approximate. Darker shading represents alternate construction year. Proposed delays are subject to approval by the Department's District 1 Lane Closure Committee, with the intent to minimize traffic delays on the route.

1.3.4.1 General Traffic Management Plan Elements

Preliminary location-specific traffic management plans, or transportation management plans (TMPs), as used by the Department, have been prepared by the Department's District Traffic Operations staff. TMPs are revised at each phase of a project, when new information regarding physical conditions and/or restraints or construction procedures become known, and may be updated up to and during construction. Final TMPs are approved by the Department's District Transportation Management Plan Manager. Each plan contains specific requirements for public noticing, traffic control implementation, property and business access, and safety during project construction. Traffic/transportation management plans typically include, but may not necessarily include all of, the following elements:

- a public awareness campaign,
- highway advisory radio broadcasts,
- portable changeable message signs,
- flagging as appropriate,
- temporary loop sensors and traffic signals, and
- consistent with the Construction Zone Enhanced Enforcement Program (COZEEP), a California Highway Patrol officer posted at the construction site to enforce the speed limit in the construction zone.

1.3.5 Comparison of Build Alternatives

Table 1-4 provides a summary of key project features at each of the seven project locations to provide a comparison of the build alternatives. The evaluation of alternatives was primarily based on total project cost and level of impact on sensitive environmental resources. Where improvements are proposed at a project location, the impacts related to biological habitats (including wetlands), noise caused by blasting, and recreation areas were considered. The possibility of a bridge replacement underscores the need to consider impacts on water quality and geologic stability. Potential impacts related to safety, geologic stability, sensitive animal and plant species and plant communities, drainage patterns, and aesthetics were also considered in the selection of alternatives. These criteria were developed to provide a range of alternatives, when feasible, that met the project purpose and need while avoiding or minimizing potential impacts.

After the public circulation period, all comments on the document were considered. The Department selected a preferred alternative and made a final determination of the project's effect on the environment. In accordance with the California Environmental Quality Act (CEQA), the Department finds that the project complies with CEQA and therefore will certify the EIR and prepare findings for all significant impacts identified. All significant impacts under CEQA can be reduced to less-than-significant levels with implementation of mitigation measures and the selection of the preferred alternatives. After certification of the EIR occurs, the Department will then file a Notice of Determination with the State Clearinghouse. The Notice of Determination will state that the project will have significant impacts, that mitigation measures were included as conditions of project approval to reduce significant impacts to less-than-significant levels, and that the mitigation measures were adopted. Similarly, the Department, as assigned by the Federal Highway Administration (FHWA), determined that the National Environmental Policy Act (NEPA) action does not significantly affect the environment, so the Department will issue a finding of no significant impact (FONSI) in accordance with NEPA.

Table 1-4. Comparison of Project Features by Location and Alternative

Project Location and Alternative	Increased Shoulder Width	Cut Slopes	Retaining Wall	In-River Work	Blasting	Utility Relocation	Est. Cost (Approx. Millions)
No Build (No Action)	No	No	No	No	No	No	Not applicable
Ruby 1	Yes, 0–4 feet	Yes	No	No	No	Two utility poles	$0.6
Ruby 2							
Four-Foot Shoulders	Yes, 4 feet	Yes	No	No	No	Two utility poles	$1.8
Two-Foot Shoulders	Yes, 2 feet	Yes	No	No	No	Two utility poles	$1.6
Two-Foot Widening in Spot Locations	Yes, 2-4 feet	Yes	No	No	No	No	$0.9
Patrick Creek Narrows Location 1	Yes, 4 feet	No	Yes, on river side	No	No	No	$1.7
Patrick Creek Narrows Location 2							
Upstream Bridge Replacement	Yes, 1–8 feet	Yes	Yes, on hill side	Yes	May be required	No	$9.3

Project Location and Alternative	Increased Shoulder Width	Cut Slopes	Retaining Wall	In-River Work	Blasting	Utility Relocation	Est. Cost (Approx. Millions)
Downstream Bridge Replacement	Yes, 1–8 feet	Yes	Yes, on river side	No	May be required	No	$9.7
Bridge Preservation with Upslope Retaining Wall	Yes, 1–8 feet	Yes	Yes, on hill side	No	May be required	No	$6.2
Patrick Creek Narrows Location 3	Yes, 8 feet	No	Yes, on river side	No	No	No	$1.6
The Narrows	Yes, 2-3 feet	Yes	No	No	Yes	No	$2.9
Washington Curve							
Cut Slope	Yes, 4 feet	Yes	No	No	No	No	$1.7
Retaining Wall	Yes, 4 feet	No	Yes, on hill side	No	No	No	$4.5

1.3.5.1 Areas of Controversy

Public controversy has developed regarding this project. There is public opinion, both support and opposition, concerning possible outcomes from allowing STAA truck access within the SR 197–US 199 corridor. The Department received numerous comment letters in opposition to the project, with substantial concern for the large redwoods along SR 197.

1.3.6 Transportation System Management (TSM) and Transportation Demand Management (TDM) Alternatives

TSM strategies increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Examples of TSM strategies include: ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. TSM also encourages automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Modal alternatives integrate multiple forms of transportation modes, such as pedestrian, bicycle, automobile, rail, and mass transit.

Although TSM measures alone could not satisfy the purpose and need of the project, the proposed widening of road widths to allow new shoulder width and increased sight distance will improve safety for bicyclists and pedestrians in those locations and therefore constitute TSM measures for this project.

TDM focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation options in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. Typical activity within this component is providing contract funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases and providing limited rideshare services to employers and individuals. The proposed construction activities and

re-designating the SR 197–US 199 corridor to allow STAA truck access addresses TDM by expanding STAA and other truck drivers' transportation options and provides a shorter route for STAA truck drivers that may wish to transport goods between Grants Pass, Oregon and Crescent City, California and other coastal northern California and southern Oregon destinations.

1.3.7 Identification of a Preferred Alternative

Between circulation of the draft environmental document and approval of the final environmental document, the design of the project evolved in response to public comments and as a result of additional coordination with resource and regulatory agencies. Preferred alternatives for each project location were also selected during this process. The evaluation criteria for selecting the preferred alternatives for the proposed project included the requirement that the preferred alternative meet the purpose and need of the project and be the least overall environmentally damaging for a given location. The No Build Alternative would not meet the purpose and need of the project, and it would fail to be consistent with the Highways, Streets, and Roads Goal in the Del Norte Local Transportation Commission's 2008 Regional Transportation Improvement Program (see Section 2.1.1.2 in the Final EIR/EA). Therefore, the No Build Alternative could not be selected as a preferred alternative because it fails to meet the purpose and need of the proposed project.

The Department has identified the following preferred alternatives by location:

- Ruby 1: Build Alternative
- Ruby 2: Two-Foot Widening in Spot Locations Alternative
- Patrick Creek Narrows Location 1: Build Alternative
- Patrick Creek Narrows Location 2: Downstream Bridge Replacement Alternative
- Patrick Creek Narrows Location 3: Build Alternative
- The Narrows: Build Alternative
- Washington Curve: Cut Slope Alternative

1.3.7.1 Ruby 1, Patrick Creek Narrows Location 1, the Narrows, and Patrick Creek Location 3

After consideration of other possible alternatives (see Section 1.3.8, below), the draft environmental document identified only one proposed build alternative for four of the seven proposed project locations: Ruby 1, Patrick Creek Narrows Location 1, the Narrows, and Patrick Creek Narrows Location 3. The Department has determined that the proposed build alternative for each of those locations is the preferred alternative. No other feasible alternatives were identified for these locations that would meet the need and purpose of the project while avoiding or substantially lessening potential impacts.

1.3.7.2 Ruby 2, Two-Foot Widening in Spot Locations

To avoid the significant impact of cutting large redwood trees, which would have occurred under the Two-Foot Shoulders and Four-Foot Shoulders Alternatives, the Department has selected the

Two-Foot Widening in Spot Locations Alternative as the preferred alternative for this location. This alternative still meets the purpose and need of the project while minimizing impacts on large redwood trees. No large redwood trees would be cut with implementation of this preferred alternative, but some would have been cut if one of the other two alternatives had been selected.

1.3.7.3 Patrick Creek Narrows Location 2, Downstream Bridge Replacement

The Department has selected the Downstream Bridge Replacement Alternative as the preferred alternative for this location. In addition, public comments indicated a preference for, and the Department also preferred, the concrete arch bridge option to match the existing concrete arch bridge that would be replaced. After circulation of the draft environmental document, the Department determined that the proposed replacement bridge at Patrick Creek Narrows Location 2 could be constructed so that no heavy equipment and only minimal temporary foot traffic would occur within the wetted channel, further reducing the effects of this alternative. The Department also determined that there would be no need for water diversion during bridge construction and no trestle, falsework, or debris containment system structures in the wetted channel. Most work would be conducted above the ordinary high-water mark. The Downstream Bridge Replacement Alternative is also preferred over the Upstream Bridge Replacement and Bridge Preservation with Upslope Retaining Wall Alternatives because the existing cut slope above the proposed retaining wall/rock bolt area for those alternatives shows evidence of past instability. In addition, work along the slope was anticipated to be complex and difficult compared with work required for the preferred alternative.

1.3.7.4 Washington Curve, Cut Slope

The Department has selected the Cut Slope alternative for this location. Only two seasons of construction would be required for the Cut Slope Alternative but three seasons for the Retaining Wall Alternative. Further, the retaining wall would be the longest and tallest on US 199 (900 feet long by up to 30 feet high [approximately 14,000 square feet]) if the Retaining Wall Alternative were to be constructed. This would cause a greater visual impact than that of the Cut Slope Alternative. Preliminary geotechnical investigations and observations of the existing slope, conducted as part of periodic ongoing investigations to confirm and clarify knowledge about slopes in the limits of the proposed project locations, indicate that the Cut Slope Alternative would create a large new cut slope. Approximately ¾ of the new cut slope would be a rock face; the northwesternmost ¼ of the cut slope would be a soil face, with the soil anticipated to be relatively stable and not subject to major erosion or landslides given the existing conditions. The new slope face would have at a gentler slope than the slope that exists currently. The soil face would be further stabilized with an erosion-control seed mix with regionally appropriate native plant species and a bonded fiber matrix (i.e., a wood or wood/paper fiber blanket bonded together by a polymer tackifier to help seeds stick to the slope until they can germinate) (see Appendix R, Enhanced Erosion-Control Seeding and Revegetation Plan, for more information). This erosion-control seed mix, using native and regionally appropriate species, would re-establish native vegetation at a more rapid pace than nature could provide, thereby re-establishing the visual character and reducing erosion in soil areas of the new cut slope. After considering the above information, the Department determined that the Cut Slope Alternative would have fewer visual impacts than the Retaining Wall Alternative, and the Cut Slope Alternative would not be subject to major erosion or landslides.

1.3.8 Alternatives Considered but Eliminated from Further Discussion

The alternatives listed below were considered but eliminated from further discussion in the DEIR/EA. The reasons each alternative was eliminated are described.

1.3.8.1 US 199 between US 101 and US 199/SR 197 Intersection Alternative

Improvements were considered on the segment of US 199 between US 101 and the SR 197/US 199 intersection. This segment is classified as a California Legal Advisory Route, the same classification as the remainder of US 199 in California, and it passes through Jedediah Smith Redwoods State Park. Improving this segment to allow for STAA truck access is not practicable, however, because of the potential impacts on state park property, a resource protected under Section 4(f) of the Department of Transportation Act, and the large number of trees located immediately adjacent to the roadway that would have to be removed to improve this segment to STAA standards. Therefore, this alternative was eliminated from further consideration. Further, SR 197 is the designated route for the movement of extralegal loads between US 101 and US 199 (California Department of Transportation 1999a). The purpose and need for the proposed project would be met without improvements to this section of US 199.

1.3.8.2 Ruby 1: Two- and Four-Foot Shoulders Alternatives

At the Ruby 1 site, 2- and 4-foot shoulder alternatives were considered. Both alternatives were eliminated from further consideration because of the higher number of redwood trees (northern spotted owl habitat), including large redwood trees, that would need to be removed compared to the alternative being considered at this location, as well as the potential impacts on Ruby Van Deventer County Park.

1.3.8.3 Patrick Creek Narrows Location 1: Upslope Cut Alternative

Construction of a new cut slope on the uphill (west) side of the highway at Patrick Creek Narrows Location 1 was considered and proposed in the project's scoping document. However, the embankment on the cut slope side consists of cobbles and boulders extending 80 feet above the highway. Excavation of the toe of this slope could result in perennial rockfall, a substantial safety hazard. Therefore, because of geologic instability and safety considerations, this alternative was eliminated from further consideration.

1.3.8.4 Patrick Creek Narrows Location 3: Upslope Cut Alternative

Construction of a new cut slope on the hill (west) side of the highway at Patrick Creek Narrows Location 3 was considered. However, there would have been constructability concerns because of the height of the needed cut (approximately 100 feet). This alternative also would have required approximately 1,800 cubic yards of roadway excavation. In addition, evidence of past slope failures exists on both sides of the required cut, indicating that there is high potential for rocks to fall onto the road or for the slope to fail. Each of these events would represent a substantial safety concern. Therefore, because of geologic instability and safety considerations, this alternative was eliminated from further consideration.

1.3.8.5 The Narrows: Alternate Construction Method Alternative

An alternate construction method was considered for the Narrows site. It would have been identical to the proposed method except that the Contractor would be required to maintain a traffic lane only wide enough for a motor home with boat trailer or smaller vehicle. Larger vehicles, such as full-sized buses and tractor-trailer combinations, would have been required to wait. Storage room for these trucks and buses would have been created inside the lane closure by extending it by 0.25 mile on each side of the work zone, while other traffic would have passed through unimpeded. With this method, the amount of hand drilling would have been considerably reduced. However, the likelihood of extensive delays for trucks and buses, compared to the proposed method, was cause for eliminating this method from further consideration.

1.3.8.6 The Narrows: Side-Hill Viaduct Alternative

Widening a short section of road toward the Middle Fork Smith River was considered at the Narrows site to avoid the highest rock cut. This widening would have been accomplished by construction of a side-hill viaduct. Structural support for the viaduct would have required permanent placement of two retaining walls and concrete piles within the ordinary high-water mark of the river. There also would have been minor changes to hydrology and temporary construction-related impacts, including possible sedimentation that could affect fish. Because widening toward the river could cause greater environmental impacts than widening toward the cut slope, and because the total cost would exceed $4.3 million, this alternative was eliminated from further consideration.

1.3.8.7 Washington Curve: Side-Hill Viaduct Alternative

A viaduct on the river side of the highway at the Washington Curve site was considered but eliminated from further consideration because of excessive environmental impacts (e.g., placement of structures and fill on steep slopes above the river channel; sediment disturbances; and potential impacts on aquatic species, including fish) within the Middle Fork Smith River canyon and because it would have cost more than $6 million. A retaining wall on the river side of the highway at this site was also considered but eliminated from further consideration for the same reasons above and a minimum cost of at least $7 million.

1.4 Permits and Approvals Needed

The permits, reviews, and approvals listed in Table 1-5 are needed for the proposed project.

Table 1-5. Permits and Approvals Required

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act (ESA) Section 7 consultation for threatened and endangered species	Completed
National Marine Fisheries Service (NMFS)	ESA Section 7 consultation for threatened and endangered species	Completed
U.S. Army Corps of Engineers	Clean Water Act (CWA) Section 404 authorization for fill of waters of the United States	Ongoing

Agency	Permit/Approval	Status
U.S. Department of Agriculture Forest Service	Coordination based on Forest Service sensitive and Northwest Forest Plan species, tree removal permit**,** scenic byway (US 199) and Wild and Scenic River concurrence for the Middle Fork Smith River, Section 4(f) coordination and concurrence, and coordination for conducting work within the Department of Transportation right-of-way easement held by the Forest Service	Completed
Del Norte County Parks Department	Temporary easement in Ruby Van Deventer County Park for driveway improvements	Completed
California Department of Fish and Wildlife	California Fish and Game Code Section 1602 streambed alteration agreement and California Wild and Scenic Rivers coordination through the Section 1602 application process (Smith River coordination via 1602 agreements for SR 197 locations, and Middle Fork Smith River coordination via 1602 agreements for US 199 locations)	Ongoing
National Park Service	Wild and Scenic River concurrence for the Smith River	Completed
North Coast Regional Water Quality Control Board	CWA Section 401 water quality certification and coverage under the Department's National Pollutant Discharge Elimination System permit (Order 00-06-DWQ)	Ongoing
North Coast Unified Air Quality Management District	Formal notification submitted a minimum of 14 days before construction, permit for compliance with national emission standards for hazardous air pollutants, acceptance of dust control plan, and acceptance of lead compliance plan	Not yet initiated

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

As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

- **Farmlands.** The project area is not located on or adjacent to lands used for agriculture or land. No farmland would be affected by the proposed project.
- **Timberlands.** While SR 197 and US 199 pass through forested areas, the proposed project is not located within Timber Production Zones. Further, existing state highways are exempt from the California Timberland Productivity Act. The proposed project would not affect timberlands.
- **Coastal Zone.** The project area is located outside the California Coastal Zone and therefore outside the jurisdiction of the California Coastal Commission. The project would not have any effects on the coastal zone.
- **Paleontological Resources.** Given the geologic formations and the location and scope of the proposed project, there is low to no potential for encountering paleontological resources during construction.

2.1 Human Environment

2.1.1 Land Use

This section is a summary of the analysis documented in the Community Impact Assessment prepared for this project (Trott 2010). The study area includes the SR 197–US 199 corridor, which includes the communities of Hiouchi and Gasquet, and the Crescent City area. For regional context, information is also presented for Del Norte County for some topics. There are no farmlands located within or adjacent to the proposed project. Therefore, farmlands are not described in this section.

2.1.1.1 Existing and Future Land Use

Affected Environment

The proposed project comprises improvements at seven locations (including the three Patrick Creek Narrows locations) on SR 197 and US 199. Government jurisdictions of lands adjacent to these locations are identified in Table 2.1.1-1.

Table 2.1.1-1. Government Jurisdictions Adjacent to the Project Locations

Site	Route and Post Mile	Jurisdiction
Ruby 1	SR 197: PM 4.5	Del Norte County
Ruby 2	SR 197: PM 3.2–4.0	Del Norte County
Patrick Creek Narrows Location 1	US 199: PM 20.4–20.7	Forest Service: Six Rivers National Forest
Patrick Creek Narrows Location 2	US 199: PM 23.9–24.3	Forest Service: Six Rivers National Forest
Patrick Creek Narrows Location 3	US 199: PM 25.5–25.7	Forest Service: Six Rivers National Forest
The Narrows	US 199: PM 22.7–23.0	Forest Service: Six Rivers National Forest
Washington Curve	US 199: PM 26.3–26.7	Forest Service: Six Rivers National Forest

Note: PM = post mile.

Del Norte County, located in the northwest corner of California, is largely rural. Most of the 1,230 square miles of land and water within Del Norte County's borders are in large tracts of rugged and remote public lands. The county's urban land uses are located mainly in communities along the US 101 corridor near the county's coastline and in small communities along US 199. Approximately 80% of the county's 644,990 acres is publicly owned, primarily by the Forest Service, National Park Service (NPS), and California Department of Parks and Recreation (DPR) (Sierra Institute for Community and Environment 2006).

Timberlands occupy about 320,000 acres within Del Norte County; farmlands account for another 13,400 acres (California Department of Finance 2007). Together, these two land uses account for approximately 52% of the land within the county.

Major Land Uses

As discussed in more detail in the following sections for the individual project locations, major land uses adjacent to the proposed truck route are varied, consisting of low-density residential and commercial uses in the unincorporated communities and rural undeveloped areas outside the communities. Del Norte County General Plan (Mintier & Associates et al. 2003) land use designations in the vicinity of the project sites are depicted in Figures 2.1.1-1 and 2.1.1-2.

The SR 197 portion of the proposed truck route is a 7-mile stretch of highway running north from its intersection with US 199 to its terminus at US 101 near the community of Fort Dick. SR 197 generally runs parallel to the Smith River on the east side of the river. Near the southern end of the route, land within Jedediah Smith Redwoods State Park is located along portions of the west side of the roadway, between the river and the roadway. Private land holdings are also located in several places along the west side of SR 197, and all the land along the east side of SR 197 is privately owned. Rural homes with driveways on SR 197 are located along both sides of the roadway, primarily in the lower part of the route. The Del Norte Golf Club is located along the east side of the roadway at PM 2.5. Ruby Van Deventer County Park is located along the west side of the roadway at PM 4.5.

The US 199 portion of the proposed truck route runs approximately 33 miles east from its intersection with SR 197 to the California/Oregon border and is part of the Smith River Scenic Byway. Except for a small portion of the highway near its intersection with SR 197, the entire route, which runs parallel to the Middle Fork Smith River, is located within the 305,000-acre Smith River National Recreation Area (NRA) within the Six Rivers National Forest. The Smith River is one of the largest Wild and Scenic River systems in the United States and one of the only remaining free-flowing river systems in California (California Department of Transportation 2006). The proximity of US 199 to the river and numerous turnouts along the roadway allow motorists to view deep green pools contrasted against whitewater rapids.

Although most of the US 199 portion of the proposed truck route is within the Smith River NRA, two unincorporated communities of fewer than 1,000 persons are located along the route: Hiouchi, located immediately east of Jedediah Smith Redwoods State Park at PM 5.7, and Gasquet, located at PM 13.0. Additionally, three Forest Service campgrounds are located along US 199 in the Smith River NRA east of Gasquet: the Grassy Flat, Panther Flat, and Patrick Creek Campgrounds.

The major land uses adjacent to proposed project improvements are described below, based on field observations. Particular focus is placed on identifying developed land uses that may be sensitive to increased highway use or construction activities.

Ruby 1

The Ruby 1 site is located on SR 197 at PM 4.5. The entrance to Ruby Van Deventer County Park is located on the west side of the roadway immediately adjacent to the site of the proposed roadway improvement. A parking lot (with 18 parking spaces) owned by the County is situated just inside the entrance to the park. A park road leads north from the parking lot to the park's campsites and day-use area. Ruby Van Deventer County Park offers 18 campsites and day-use sites, and provides direct access to the Smith River for swimming, kayaking, and seasonal trout

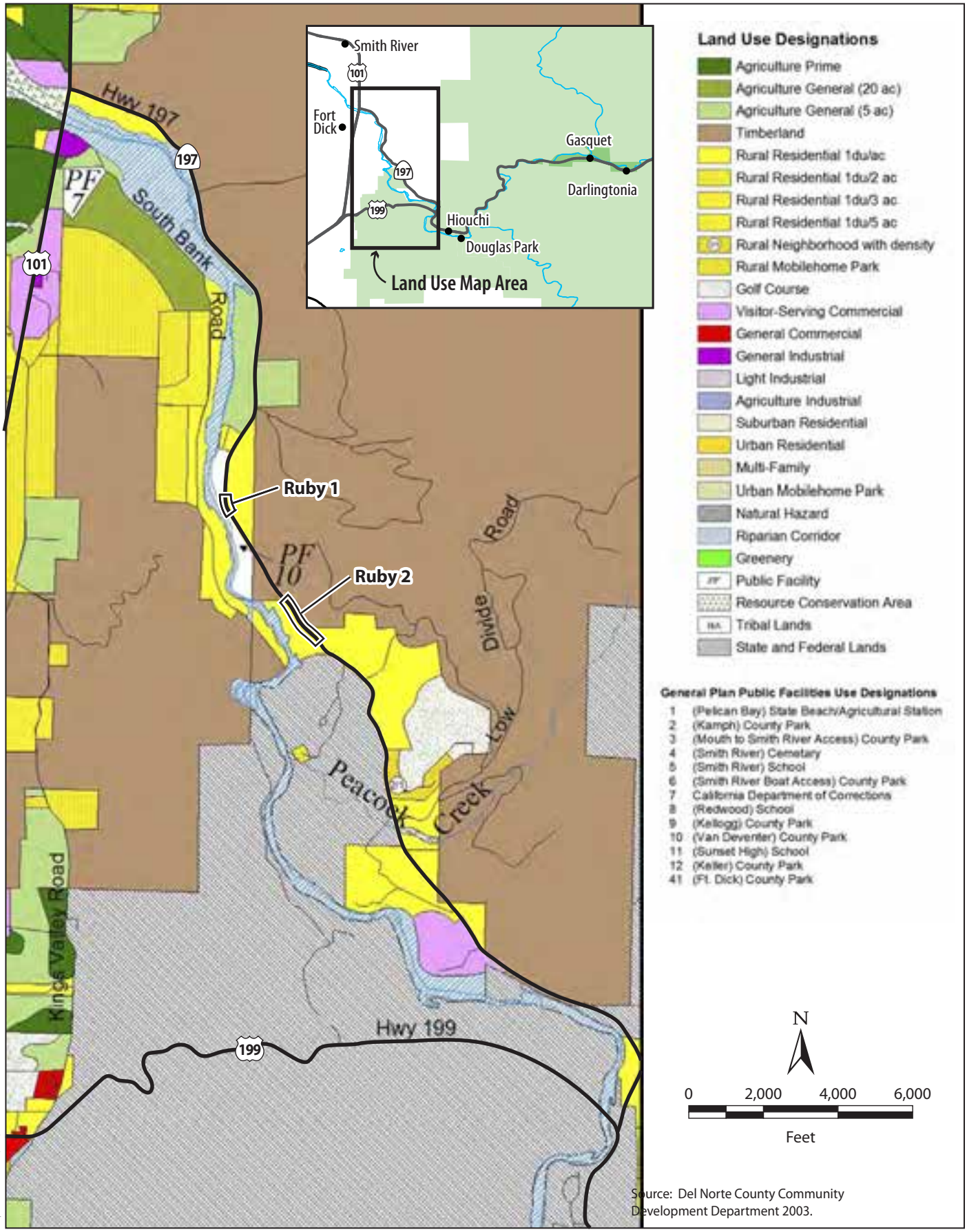


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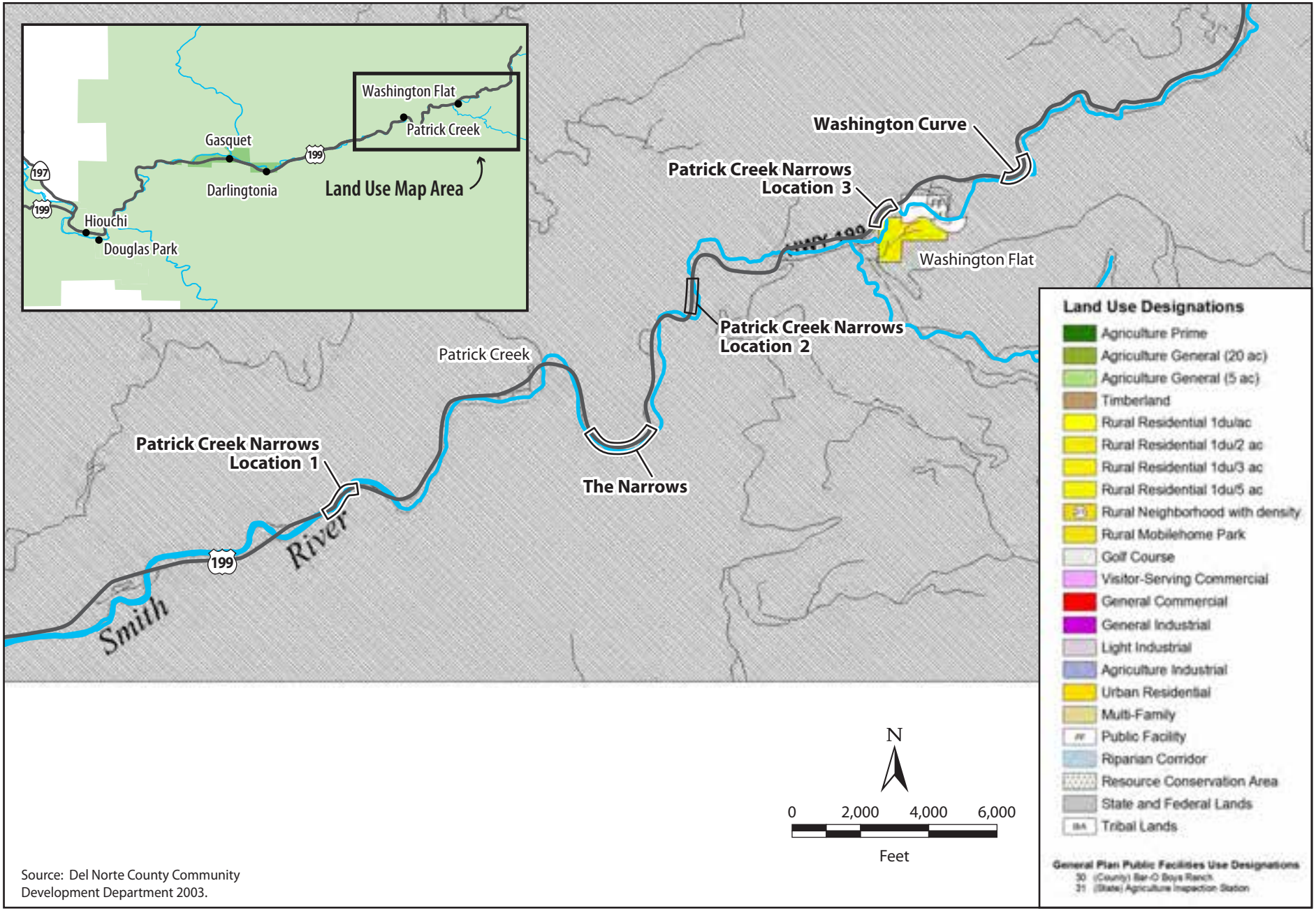
Figure 2.1.1-1
Del Norte County General Plan Land Use Map—
Highway 197



Source: Del Norte County Community Development Department 2003.

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Figure 2.1.1-2
Del Norte County General Plan Land Use Map—
Highway 199

and salmon fishing. The park's campsites are located between the roadway and the river, just north of the Ruby 1 site, with several situated very close to the roadway. A utility pole is located on the west side of the roadway, near the entrance to the park.

On the east side of the Ruby 1 site, a gravel quarry is located on a 14-acre private parcel (Assessor's Parcel Number [APN] 105-130-67). The entrance to this property is located about 0.2 mile north of the Ruby 1 site. Immediately north of this property is a 4.1-acre privately owned property (APN 105-130-57) that could be affected by the proposed project. Although no homes are located in the immediate vicinity of the Ruby 1 site, rural homes are situated along both sides of SR 197 farther north and south of the site. The potential impacts on the land uses adjacent to the proposed project are described below under the heading "Environmental Consequences."

Ruby 2

The Ruby 2 site is located on SR 197 from PM 3.2 to PM 4.0. Along this curved section of SR 197, the roadway is heavily wooded on its eastern side, with no apparent developed uses near the roadway. On the west side, several rural homes are situated between the roadway and the Smith River. The homes, which are set relatively far back from the roadway and are generally shielded by trees, have driveways onto SR 197. Within the Ruby 2 site, three utility poles are located along the roadway, with overhead utility lines crossing the roadway at about PM 3.85.

The properties along the west side of SR 197 that could be directly affected by the proposed project improvements are APNs 122-240-007 (1.2 acres), 122-240-006 (1.2 acres), 122-240-005 (1.0 acre), 122-240-004 (1.0 acre), 122-240-021 (1.8 acres), 122-240-020 (3.1 acres), and 122-240-001 (1.6 acres). All these properties are developed with single-family homes and have driveways on SR 197. Driveways to other properties and the approach to Kasper/Keener Road (a public road providing access to nearby properties) are also located within the project area (Figures 1-5a and 1-5b).

The properties along the east side of SR 197 that could be directly affected include APNs 122-040-079 (0.7 acre), 122-040-080 (22.0 acres), and 122-030-048 (a 568-acre parcel owned by Green Diamond Resource Company). Based on aerial photos and field observations, none of the properties appears to have homes.

The potential impacts on the developed land uses adjacent to the proposed project are described below under the heading "Environmental Consequences."

Patrick Creek Narrows Location 1

Patrick Creek Narrows Location 1 is located on US 199 from PM 20.4 to PM 20.7, in a remote location about 7 miles east of Gasquet and about 2 miles east of the Grassy Flat Campground. This site is located within the Smith River NRA within the Six Rivers National Forest. Within the project limits, US 199 runs along a narrow section cut into a rock face on the north side of the roadway, with the Middle Fork Smith River below the southeast side of the roadway. No developed land uses or utilities are located within the limits of Location 1. Land surrounding Location 1 is owned by the Federal government.

Patrick Creek Narrows Location 2

Located about 2 miles farther east than Location 1 on US 199, from PM 23.9 to PM 24.3, Patrick Creek Narrows Location 2 is situated in a rugged, remote part of the Smith River NRA. Within the project limits, the roadway crosses a narrow bridge that spans the Middle Fork Smith River, which runs well below the roadway. No developed land uses or utilities are located adjacent to or within the limits of Location 2. Land surrounding Location 2 is owned by the Federal government.

Patrick Creek Narrows Location 3

Patrick Creek Narrows Location 3 is located about 1.5 miles east of Location 2 on US 199, from PM 25.5 to PM 25.7. No developed land uses or utilities are located within the project limits, but at PM 25.5 a gated road leads downhill from the roadway to a residence about 250 feet southeast of the western end of the project limits. This home is visually shielded from the roadway by heavy vegetation and trees, as are other homes located adjacent to the south side of the roadway. Based on a review of an aerial photograph, at least three additional homes are located between the roadway and the Middle Fork Smith River. The homes are situated at least 600 feet from the roadway, with access to the homes apparently available from the roadway east of the project limits. Additionally, at PM 25.9 east of the project limits, the Bar-O Boys Ranch, a residential treatment facility for boys in the juvenile justice system, is situated south of the roadway and set well back from the roadway, near the river. No developed uses are located north of the roadway.

The properties that could be directly affected by construction of improvements at Patrick Creek Narrows Location 3 are APN 122-170-05, owned by the Federal government and located on the northwest side of US 199, and APN 122-290-08 (4.3 acres), a privately owned rural residential property on the southeast side of the roadway.

The Narrows

Like Patrick Creek Narrows Locations 1, 2, and 3, the Narrows site is located on US 199 in the rugged Smith River Canyon in the Smith River NRA. The Narrows site is situated between Patrick Creek Narrows Locations 1 and 2, from PM 22.7 to PM 23.0. This section of the roadway is bordered by a steep cliff face on the north and the Middle Fork Smith River below the roadway on the south. No developed land uses or utilities are located within or adjacent to the limits of the Narrows site. The Patrick Creek Lodge and Patrick Creek Campground, however, are located along US 199 about 0.5 mile west of the Narrows site and could be sensitive to project effects. Land surrounding the project site is owned by the Federal government.

Washington Curve

The Washington Curve site, from PM 26.3 to 26.7, is the easternmost improvement proposed for US 199. This site is located in a narrow part of the Smith River Canyon, with a steep rock section on the north and the Middle Fork Smith River below the roadway on the south. No developed land uses or utilities are located within or adjacent to the project limits, and no potentially sensitive developed land uses are nearby. Land surrounding the project site is owned by the Federal government.

Developable Land

Along SR 197, typical development patterns near the Ruby 1 and 2 sites are low-density and rural-residential in nature. As shown by Figure 2.1.1-1, the Del Norte County General Plan land use designations within 1 mile of the project locations are “Rural Residential—1 dwelling unit

per acre (RR-1/1)" and "Public Facility (PF)," which applies to Ruby Van Deventer County Park (Hooper pers. comm.). The RR-1/1 designation is intended to maintain the character of rural areas and minimize the public services required by smaller lot development (Mintier & Associates et al. 2003). Consistent with this policy, the homes located near the Ruby 1 and 2 sites are served by private services, such as on-site wells and septic systems, and by telephone and cable utilities. In addition, the residential parcels on the west side of SR 197 are adjacent to the Smith River and not conducive to high-density development because of riparian setbacks and other development constraints. According to the Del Norte County Planning Division, no additional residential construction projects or subdivisions are currently planned in the vicinity of the Ruby 1 and 2 sites (Hooper pers. comm.). Therefore, the potential for future residential or commercial development near the Ruby 1 and 2 sites is considered very limited. No additional development is likely to occur within the 11.2-acre Ruby Van Deventer County Park.

Developable land along the US 199 corridor is limited because of the steepness of the terrain within the Smith River Canyon. According to Goal 3.J.1 of the Del Norte County General Plan, development within the Smith River Canyon subarea is restricted to areas with less than 30% slope. Also, Goal 3.J.3 recognizes groundwater limitations within the canyon, which occur because of the rugged topography and geologic nature of the area (Mintier & Associates et al. 2003). Groundwater limitations limit residential or commercial development within the Smith River Canyon because the areas along the US 199 corridor are not served by a public water utility.

Additionally, with minor exceptions, most lands adjacent to the US 199 corridor are owned and managed by the Forest Service and are within the Six Rivers National Forest. Lands in this corridor are typically remote and undeveloped, and have limited public services. The Del Norte County General Plan land use designation for lands near the three project locations along US 199 is "State and Federal Lands" (Figure 2.1.1-2). This designation applies to state- and federally owned parks, forests, and/or recreation areas that have adopted management plans (Mintier & Associates et al. 2003). An exception to this designation is a small area located immediately southeast of Patrick Creek Narrows Location 3, which is designated as "Rural Residential" (Figure 2.1.1-2). The principal permitted use in areas with this designation is single-family residential, with residential development density ranging from one to five units per acre, depending on the physical conditions and limitations of an area (Mintier & Associates et al. 2003).

The primary existing land uses in the vicinity of Patrick Creek Narrows Locations 1, 2, and 3, the Narrows site, and the Washington Curve sites are primarily timber production or public/recreation access within the Smith River NRA (Hooper pers. comm.). According to the Del Norte County Planning Division, no known residential or commercial construction projects are currently planned in the vicinity of Patrick Creek Narrows Locations 1, 2, and 3, the Narrows site, or the Washington Curve site (Hooper pers. comm.).

Development Trends

Despite growth that occurred in Del Norte County around the time Pelican Bay State Prison was constructed and opened in the late 1980s, the county largely remains a rural, sparsely developed county. Most commercial and residential development within Del Norte County is centered along the US 101 corridor in the vicinity of Crescent City and along the county's coastline. The land use element of the Del Norte County General Plan provides numerous growth-management goals, objectives, and policies to guide future development throughout Del Norte County. They

emphasize planned growth within or adjacent to existing communities. For example, Goal 3.A states that the County should "clearly differentiate between the areas within Del Norte County appropriate for higher intensity urban services and land uses (i.e., high density residential, high density commercial and industrial) from areas where rural and resource uses should be continued" (Mintier & Associates et al. 2003). Policy 3.A.1 supports this goal by stating that Del Norte County "intends that urban boundaries are to guide new urban development within or contiguous to existing urban areas."

The Land Use Element also contains Policy 3.C.5, which states that the County "shall provide for the orderly outward expansion of new urban development so that it is contiguous with existing development and district boundaries, allows for the incremental expansion of infrastructure and public services, and minimizes impacts on the environment." Therefore, future development in Del Norte County will likely remain centered within and adjacent to the Crescent City urban services boundary and along the US 101 corridor. Rural, outlying areas of Del Norte County that are not served by public water or wastewater systems will likely continue to develop at lower densities per acre. No development will likely occur on state- or federally owned lands located throughout Del Norte County, such as the Six Rivers National Forest or Jedediah Smith Redwoods State Park.

Crescent City is the county seat of Del Norte County and the county's only incorporated city. Pelican Bay State Prison is a separate incorporated portion of Crescent City located 10 miles north of the city on Lake Earl Drive (Mintier & Associates et al. 2001). Crescent City proper covers approximately 1.4 square miles, or 900 acres. The Crescent City Planning Area (Planning Area) is an "area of influence" beyond the city limits, as shown on the land use diagram of the City of Crescent City General Plan (City of Crescent City 2001). Large tracts of developable land are somewhat limited within the Planning Area because it is generally surrounded by lands designated as natural resource areas. For example, the Planning Area is surrounded by Crescent Beach and Crescent City Harbor to the south; Jedediah Smith Redwoods State Park and part of Redwood National Park form the eastern boundary of the Planning Area; open space lands associated with Elk Creek divide the eastern portion of the Planning Area; and the Lake Earl Wildlife Area borders the Planning Area to the north.

Because of these geographic constraints, most existing residential and commercial development in Crescent City is located along the US 101 corridor and Lake Earl Drive. General industrial and single-family residential land uses also surround Elk Valley Road to the east. Future residential and commercial development within the Planning Area will most likely occur within these two corridors as well. However, because of the limited supply of land within the city limits and the Planning Area, most new growth and development would be accommodated by promoting infill of vacant and underutilized lots, intensification or reuse of land, or annexation of adjacent county lands (Mintier & Associates et al. 2001).

Crescent City and Del Norte County have defined an urban boundary line within the Planning Area that encompasses all land considered for future water and sewer service expansion, as well as future urban development and annexation. Because it is costly to provide infrastructure in low-density areas such as rural communities, extension of water and sewer service is generally prohibited outside this boundary by both jurisdictions. Therefore, future growth and development will likely occur within the urban boundary line or immediately adjacent to it.

Environmental Consequences

Permanent land use impacts evaluated in the following sections include direct and indirect conflicts with existing and planned land uses. Construction of the proposed project could directly affect existing or planned land uses in the proposed right-of-way by displacing existing or planned land uses. Indirect impacts associated with temporary construction-related effects and permanent changes in use of the proposed truck route also could occur in specific parts of the study area. These are discussed in Section 2.4, "Construction Impacts."

Conflicts with Existing Land Uses

A summary of the direct land use impacts of the proposed project for each project site and alternative is provided in Table 2.1.1-2. Refer to Chapter 1 for a description of the improvements proposed at each project location. Potential impacts on Wild and Scenic Rivers are discussed in Section 2.1.1.3. Potential impacts on parks and recreational facilities including Ruby Van Deventer County Park, Jedediah Smith Redwoods State Park, and Smith River NRA, are discussed in detail in the Section 2.1.1.4 and Appendix B.

Table 2.1.1-2. Summary of Direct Land Use Impacts of the Alternatives at the Project Sites

Project Site	Alternative	Primary Issues/Impacts
Ruby 1	–	• Right-of-way acquisition (east side): a 0.12-mile-long strip of land from privately owned APNs 105-130-67 (17,485 square feet) and 105-130-57 (403 square feet). • Temporary construction easement acquisition (west side): An estimated 5,576 square feet (APN105-130-22) would be outside the existing prescriptive easement and within the parking lot of Ruby Van Deventer County Park. • Relocation of two utility pole carrying telephone and cable television lines.
Ruby 2	Four-Foot Shoulders	• Right-of-way acquisition (east side): a strip of land from privately owned APNs 122-040-79 (4,763 square feet), 122-040-80 (122,839 square feet), and 122-030-48 (31,363 square feet). • Right-of-way acquisition (west side): a strip of land from privately owned APNs 122-240-07 (4,303 square feet), 122-240-06 (5,597 square feet), 122-240-05 (4,889 square feet), 122-240-04 (4,753 square feet), 122-240-21 (3,348 square feet), 122-240-20 (6,624 square feet), and 122-240-01 (11,761 square feet), including partial acquisition of driveway entrances to residential properties. • Relocation of two utility poles carrying telephone and cable television lines. • Potential relocation of mailboxes.
	Two-Foot Shoulders	• Right-of-way acquisition (east side): a strip of land from privately owned APNs 122-040-79 (3,566 square feet), 122-040-80 (108,029 square feet), and 122-030-48 (24,652 square feet). • Right-of-way acquisition (west side): a strip of land from privately owned APNs 122-240-07 (1,385 square feet), 122-240-06 (2,308 square feet), 122-240-05 (2,013 square feet), 122-240-04 (1,956 square feet), 122-240-21 (1,375 square feet), 122-240-20 (2,726 square feet), and 122-240-01 (4,761 square feet), including partial acquisition of driveway entrances to residential properties. • Relocation of one utility pole carrying telephone and cable television lines. • Potential relocation of mailboxes.

Project Site	Alternative	Primary Issues/Impacts
	Two-Foot Widening in Spot Locations (selected preferred alternative)	• Right-of-way acquisition (east side): a strip of land from privately owned APNs 122-040-79 (1,802 square feet), 122-040-80 (71,002 square feet), and 122-030-48 (36,155 square feet). • Right-of-way acquisition (west side): a strip of land from privately owned APNs 122-240-04 (2,155 square feet), 122-240-21 (2,650 square feet), and 122-240-20 (4,282 square feet), including partial acquisition of driveway entrances to residential properties. • Temporary construction easement acquisition (west side): strips of land from privately owned APNs 122-240-07 (1,002 square feet), 122-240-06 (1,338 square feet), 122-240-05 (440 square feet), and 122-240-01 (4,836). • Relocation of two utility poles carrying telephone and cable television lines. • Potential relocation of mailboxes.
Patrick Creek Narrows Location 1	–	• No acquisition of additional right-of-way or construction easements required; no direct land use impacts.
Patrick Creek Narrows Location 2	Upstream Bridge Replacement	• No acquisition of additional right-of-way or construction easements required.; no direct land use impacts on developed land uses.
	Downstream Bridge Replacement (selected preferred alternative)	• No acquisition of additional right-of-way or construction easements required; no direct land use impacts on developed land uses.
	Bridge Preservation with Upslope Retaining Wall	• No acquisition of additional right-of-way or construction easements required; no direct land use impacts on developed land uses.
Patrick Creek Narrows Location 3	–	• Right-of-way acquisition (south side): a strip of land from privately owned APN 122-290-08 (35,508 square feet).
The Narrows	–	• No acquisition of additional right-of-way or construction easements required; no direct land use impacts on developed land uses.
Washington Curve	Cut Slope (selected preferred alternative)	• No acquisition of additional right-of-way or construction easements required; no direct land use impacts.
	Retaining Wall	• No acquisition of additional right-of-way or construction easements required; no direct land use impacts.

Ruby 1

One alternative is being considered for the Ruby 1 site, which is located on SR 197 at PM 4.5 near the entrance to Ruby Van Deventer County Park.

On the east side of SR 197, widening would occur along an unused portion of a 13.6-acre privately owned parcel (APN 105-130-67) that is used as a gravel quarry and on the southwest corner of an adjacent 4.12-acre privately owned property (APN 105-130-57) (Figure 1-3). According to Department right-of-way estimates for the Ruby 1 site (Hayler pers. comm.), widening of the east shoulder would require acquisition of a strip of land totaling 17,485 square feet (sf) from APN 105-130-67, which represents less than 3% of the property. An estimated 403 sf of right-of-way would be acquired from APN 105-130-57, decreasing the size of this parcel by less than 1%. Construction of the improvements would not displace any current developed uses of these two properties, and it would not make use of the properties more difficult. The permanent right-of-way acquisitions from the two private properties would be relatively minor and would displace no developed uses on the properties.

All work on the west side of the highway would occur within the existing prescriptive right-of-way, except where the entrance to Ruby Van Deventer County Park would be modified to match the upgraded highway. An estimated three to four parking spaces (of a total of 18 spaces) would be temporarily displaced in the county-owned parking lot at the entrance to the park while modifications are occurring (Hayler pers. comm.; Church pers. comm.). The parking spaces would be displaced during the day for about three working days. An estimated 5,576 square feet of temporary construction easement from APN 105-130-22 would be outside the existing prescriptive easement and within the parking lot of Ruby Van Deventer County Park. The potential temporary impacts of this easement on the park and parking lot users are addressed in the Construction Impacts section for park and recreation facilities.

No driveways to properties are anticipated to be blocked by construction of improvements. Existing gravel pullouts would be used to stage equipment during construction (Figure 1-15).

Ruby 2

Three alternatives are being considered for the Ruby 2 site, which is located on SR 197 from PM 3.2 to 4.0. This site is situated from 0.03 to 0.81 mile south of Ruby Van Deventer County Park.

Existing gravel pullouts would be used to stage equipment during construction, as shown by Figure 1-15. No adverse land use impacts are anticipated to result from the use of these staging areas. As discussed in Chapter 1, the private road approaches would be widened and upgraded to current standards as part of project construction. The approach to Kasper/Keener Road (a public road providing access to nearby properties) would also be upgraded. In addition, mailboxes may need to be relocated to a new location at the intersection of SR 197 and Kasper/Keener Road.

Potential effects on access to properties caused by blockage of driveways during construction are discussed in Community Impacts section. Additional details of each alternative are discussed below.

Four-Foot Shoulders Alternative

The Four-Foot Shoulders Alternative for the Ruby 2 site would widen the roadway shoulders on both sides of SR 197 by 4 feet and increase the curve radii to a minimum of 400 feet (Figure 1-4a and 1-4b). Widening would improve the sight distance for residents coming out of their driveways, and service vehicles (garbage trucks, mail delivery, etc.) would have the width needed to pull off the roadway to conduct their business.

On the east side of SR 197, the Department (Hayler pers. comm.) estimates that widening would require acquisition of a strip of right-of-way, extending the existing right-of-way to 80 feet east of the existing roadway centerline, along the roadway frontage from three privately owned properties:

- 4,763 sf from APN 122-040-79, accounting for 16.3% of the 0.67-acre parcel
- 122,839 sf from APN 122-040-80, accounting for 12.8% of this 22.0-acre parcel
- 31,363 sf from APN 122-030-48, accounting for 0.1% of this 568-acre parcel

Based on field observations and aerial photographs of the Ruby 2 site, no developed uses are located along or near the affected portions of these three properties. Therefore, construction of the improvements would not displace any current uses of these properties, and it would not make use of the properties more difficult.

On the west side of SR 197, the Department (Hayler pers. comm.) estimates that widening would require acquisition of a strip of right-of-way, extending the existing right-of-way to 50 feet west of the existing roadway centerline, from seven privately owned rural residential properties:

- 4,303 sf from APN 122-240-07, accounting for 8.4% of the 1.17-acre parcel
- 5,597 sf from APN 122-240-06, accounting for 10.7% of the 1.2-acre parcel
- 4,889 sf from APN 122-240-05, accounting for 11.2% of the 1.0-acre parcel
- 4,753 sf from APN 122-240-04, accounting for 10.9% of the 1.0-acre parcel
- 3,348 sf from APN 122-240-21, accounting for 4.2% of the 1.81-acre parcel
- 6,624 sf from APN 122-240-20, accounting for 4.9% of the 3.09-acre parcel
- 11,761 sf from APN 122-240-01, accounting for 18.8% of the 1.6-acre parcel

The driveways into these seven properties all come directly off SR 197, so widening the roadway shoulder (by 4 feet under this alternative) would displace short segments of driveways, all of which are long and lead to homes near the backs of these seven parcels.

Although the acquisition of narrow strips of land, which would range from 4.2% to 18.8% of the affected parcels on the west side of the roadway, the loss of 4 feet of roadway frontage and driveway would have little apparent effect on the usability of these properties, and driveway connections to the highway would be improved. Aerial photographs and field observations indicate that no improvements on these properties other than segments of chain-link fencing and mailboxes on the west side of the road would be displaced by acquisition and relocated during construction.

Two-Foot Shoulders Alternative

The Two-Foot Shoulders Alternative for the Ruby 2 site would widen the roadway shoulders on both sides of SR 197 by 2 feet and increase the curve radii to a minimum of 400 feet (Figures 1-5a and 1-5b). The direct land use effects would be similar to those described for the Four-Foot Shoulders Alternative. However, under this alternative, acquisitions from private properties would be less than under the Four-Foot Shoulders Alternative. On the east side of SR 197, widening would require acquisition of a strip of right-of-way, extending the existing right-of-way to 60 feet east of the existing roadway centerline, along the roadway frontage from three privately owned properties:

- 3,566 sf from APN 122-040-79, accounting for 12.2% of the 0.67-acre parcel
- 108,029 sf from APN 122-040-80, accounting for 11.3% of this 22.0-acre parcel
- 24,652 sf from APN 122-030-48, accounting for 0.1% of this 568-acre parcel

Based on field observations and aerial photographs of the Ruby 2 site, no developed uses are located along or near the affected portions of these three properties. Therefore, construction of the improvements would not displace any current uses of these properties, and it would not make use of the properties more difficult.

On the west side of SR 197, the Department (Hayler pers. comm.) estimates that widening would require acquisition of a strip of right-of-way, extending the existing right-of-way to 40 feet west of the existing roadway centerline, from seven privately owned rural residential properties:

- 1,385 sf from APN 122-240-07, accounting for 2.7% of the 1.17-acre parcel
- 2,308 sf from APN 122-240-06, accounting for 4.4% of the 1.2-acre parcel
- 2,013 sf from APN 122-240-05, accounting for 4.6% of the 1.0-acre parcel
- 1,956 sf from APN 122-240-04, accounting for 4.5% of the 1.0-acre parcel
- 1,375 sf from APN 122-240-21, accounting for 1.7% of the 1.81-acre parcel
- 2,726 sf from APN 122-240-20, accounting for 2.0% of the 3.09-acre parcel
- 4,761 sf from APN 122-240-01, accounting for 6.8% of the 1.6-acre parcel

As with the Four-Foot Shoulders Alternative, widening the roadway shoulder by 2 feet would displace very short segments of the driveways, all of which are long and lead to homes near the backs of these parcels.

Although the acquisition of narrow strips of land, which would range from 1.7% to 6.8% of the affected parcels on the west side of the road, would be adverse for property owners, the loss of 2 feet of roadway frontage and driveway would have little apparent effect on the usability of these properties, and driveway connections to the highway would be improved. Aerial photographs and field observations indicate that no improvements other than segments of chain-link fencing and mailboxes on the properties on the west side of the road would be displaced by acquisition and relocated during construction.

Two-Foot Widening in Spot Locations Alternative

The Two-Foot Widening in Spot Locations Alternative for the Ruby 2 site would widen the SR 197 roadway shoulders by 2 feet at spot locations and increase the curve radii to a minimum of 400 feet (Figures 1-6a and 1-6b). The land use impacts on parcels adjacent to the roadway would be very similar to those described for the Two-Foot Shoulders Alternative, although permanent right-of-way acquisitions would involve fewer parcels on the west side of the roadway and the total amount of land acquired for right-of-way would be smaller. Acquisitions from affected parcels would be smaller for some parcels and slightly larger for others because of design differences and because widening would not occur along the entire length of the Ruby 2 site.

On the east side of SR 197, the Department (Hayler pers. comm.) estimates that widening would require acquisition of a strip of right-of-way, extending the existing right-of-way from 35 to 45 feet east of the existing roadway centerline, along the roadway frontage from three privately owned properties:

- 1,802 sf from APN 122-040-79, accounting for 6.2% of the 0.67-acre parcel
- 71,002 sf from APN 122-040-80, accounting for 7.4% of this 22.0-acre parcel
- 36,155 sf from APN 122-030-48, accounting for 0.1% of this 568-acre parcel

Based on field observations and aerial photographs of the Ruby 2 site, no developed uses are located along or near the affected portions of these three properties. Therefore, construction of the improvements would not displace any current uses of these properties, and it would not make use of the properties more difficult.

On the west side of SR 197, the Department (Hayler pers. comm.) anticipates that widening would require acquisition of a strip of right-of-way, extending the existing right-of-way from 35 to 45 feet west of the existing roadway centerline, from three privately owned rural residential properties:

- 2,155 sf from APN 122-240-04, accounting for 4.9% of the 1.0-acre parcel
- 2,650 sf from APN 122-240-21, accounting for 3.4% of the 1.81-acre parcel
- 4,282 sf from APN 122-240-20, accounting for 3.2% of the 3.09-acre parcel

As with the previously described Ruby 2 site alternatives, widening the roadway shoulder by 2 feet in spot locations would displace short segments of driveways on the west side of the road, all of which are long and lead to homes near the backs of these three parcels.

Although the acquisition of narrow strips of land, which would range from 3.2% to 4.9% of the affected parcels on the west side of the roadway, the loss of 2 feet of roadway frontage and driveway would have little apparent effect on the usability of these properties, and driveway connections to the highway would be improved. Aerial photographs and field observations indicate that no improvements on these properties other than mailboxes on the west side of the road would be displaced by acquisition and construction.

In addition to permanent right-of-way acquisitions on both sides of SR 197, the Department (Hayler pers. comm.) anticipates that widening would require the acquisition of temporary construction easements from four privately owned properties, all on the west side of SR 197:

- 1,002 sf from APN 122-240-07, accounting for 2.0% of the 1.17-acre parcel
- 1,338 sf from APN 122-240-06, accounting for 2.6% of the 1.2-acre parcel
- 440 sf from APN 122-240-05, accounting for 1.0% of the 1.0-acre parcel
- 4,836 sf from APN 122-240-01, accounting for 6.9% of the 1.6-acre parcel

All of these temporary construction easements would involve very narrow strips of land. Aerial photographs and field observations indicate that no improvements on these properties would be permanently displaced by the temporary use of these strips, indicating that the land use effects of acquisition of construction easements would be minor.

Patrick Creek Narrows Location 1

Patrick Creek Narrows Location 1, located on US 199 from PM 20.5 to 20.9, is in a remote location about 7 miles east of Gasquet and about 2 miles east of the Grassy Flat Campground. This project site is located within the Smith River NRA within the Six Rivers National Forest. Within the project limits, US 199 runs along a narrow section cut into a rock face on the north side of the highway, with the Middle Fork Smith River below the west side of the highway. No developed land uses or utilities are located within the limits of Patrick Creek Narrows Location 1. One alternative was considered for the site.

The proposed improvements at Patrick Creek Narrows Location 1 would widen the roadway to a minimum of two 12-foot lanes with 4-foot shoulders on both sides (Figure 1-7). A retaining wall along the river side of the road would also be constructed.

The Department holds an existing U.S. DOT easement from the Forest Service, including a 100-foot easement on the east side of US 199 and a 400-foot easement along the west side of the roadway where the retaining walls would be constructed. No additional right-of-way would need to be acquired. Because of the remote, rugged, and undeveloped nature of the Forest Service property located adjacent to Patrick Creek Narrows Location 1, no substantial land use impacts are anticipated to result from construction of improvements at this location, although ground disturbance would occur adjacent to the roadway. As shown by Figure 1-16, existing gravel pullouts would be used to stage equipment during construction. No adverse land use impacts are anticipated to result from the use of these staging areas, although minor effects on recreationists using the pullouts to access the Middle Fork Smith River may occur as described in the Construction Impacts section.

Construction of improvements would displace no current developed uses of land in the project limits, and it would not result in substantial effects on public access to the river or river-related recreation activities such as fishing or boating. Therefore, the land use impacts of the improvements under this alternative are anticipated to be minor.

Patrick Creek Narrows Location 2

Located farther east on US 199, with project limits from PM 23.92 to 24.24, Patrick Creek Narrows Location 2 is in a rugged, remote part of the Smith River NRA. Within the project limits, US 199 crosses the Middle Fork Smith River Bridge, a narrow bridge that spans the Middle Fork Smith River, which runs well below the highway. Other than the existing bridge, no developed land uses or utilities are located adjacent to or within the limits of Patrick Creek Narrows Location 2. No private business or residential structures or public recreation facilities exist at this location. Three alternatives were considered for Patrick Creek Narrows Location 2. After circulation of the DEIR/EA, review of public comments, and coordination with resource agencies, the Department selected the Downstream Bridge Replacement Alternative as the preferred alternative. Common features of all three alternatives include roadway and shoulder widening through the project limits. Existing gravel pullouts would be used to stage equipment during construction as shown in Figure 1-18, existing gravel pullouts would be used to stage equipment during construction. No adverse land use impacts are anticipated to result from the use of these staging areas, but use of potential staging areas on the river side of the roadway, such as the pullout at PM 23.96 (Figure 1-18), could reduce public access to the river while construction is occurring. No adverse land use impacts are anticipated to result from the use of

these staging areas, but use of potential staging areas on the river side of the roadway, such as the pullout at PM 23.96 (Figure 1-18), could reduce public access to the river while construction is occurring.

Under the Upstream Bridge Replacement Alternative for Patrick Creek Narrows Location 2, the Middle Fork Smith River Bridge would be replaced with a new bridge constructed at an alignment upstream of the existing bridge (Figure 1-8). Additionally, a 400-foot-long retaining wall would be constructed on the southwest (upstream) side of the proposed new bridge.

The U.S. DOT easement held by the Department at this location includes 100-foot easements on both sides of US 199. However, work beyond the existing easements would be required to construct the cut slope (approximately 20,476 square feet or 0.47 acre) within the Forest Service land (APN 122-170-04) in the vicinity of the Middle Fork Smith River Bridge (Figure 1-8). The Forest Service has preliminarily indicated that a permanent expansion of the easement would not be required. Work within these two relatively small, irregularly shaped pieces of undeveloped land would displace no existing land uses. Because of the rugged, undeveloped nature of area adjacent to this site, no impacts on developed land uses would result from construction of this alternative.

Construction of the Upstream Bridge Replacement Alternative would involve work possibly within the ordinary high-water mark (OHWM) of the Middle Fork Smith River but above the wetted channel. Details regarding the construction of the bridge replacement alternatives are described in Chapter 1. This work could affect recreational uses of the river, including boating and fishing, during parts of the three seasons anticipated for construction of improvements at this location. These potential effects on recreationists are discussed in the Parks and Recreation Facilities and Construction Impacts sections. Construction of improvements under this alternative would displace no current developed uses of land in the project limits.

The Downstream Bridge Replacement Alternative, the selected preferred alternative, for Patrick Creek Narrows Location 2 involves replacing the Middle Fork Smith River Bridge on a new alignment of US 199 downstream of the existing bridge location (Figure 1-9). This alternative also includes building a 200-foot-long retaining wall or a viaduct on the southeast (downstream) side of the new bridge. A 200-foot-long wall would also be needed along the cut slope north of the new bridge.

Work beyond the existing right-of-way would be similar to that described for the Upstream Bridge Replacement Alternative, with work within one small irregularly shaped section (approximately 14,375 square feet or 0.33 acre) of APN 122-170-04 (Forest Service). No impacts on developed land uses would result from construction of this alternative. This alternative could also involve work within the OHWM, but above the wetted channel, of the Middle Fork Smith River. This could result in temporary impacts on river recreationists. These potential effects are discussed in the Parks and Recreation Facilities and Construction Impacts sections. Construction of improvements under this alternative would displace no current developed uses of land in the project limits.

Implementation of the Bridge Preservation with Upslope Retaining Wall Alternative for Patrick Creek Narrows Location 2 avoids bridge replacement, but would require construction of a 400-foot-long retaining wall or rock bolting on the southwest (upstream) side of the existing bridge

(Figure 1-10). Required work beyond the existing right-of-way limits would be similar to that described for the Upstream Bridge Replacement Alternative, with work within two small irregularly shaped sections (a total of approximately 10,018 square feet or 0.23 acre) of APN 122-170-04 (Forest Service). Because of the remote, rugged, undeveloped nature of the Forest Service property located adjacent to Patrick Creek Narrows Location 2, no impacts on developed land uses are anticipated to result from construction of this alternative. Construction of improvements under this alternative would displace no current developed uses of land in the project limits and the land use impacts of the improvements at this site are anticipated to be minor. However, construction of this alternative could result in minor reductions in access to the river near the Patrick Creek Narrows Location 2 as discussed in the Parks and Recreation Facilities and Construction Impacts sections.

Patrick Creek Narrows Location 3

Patrick Creek Narrows Location 3 is located about 1.5 miles east of Patrick Creek Narrows Location 2 on US 199. The project limits of Patrick Creek Narrows Location 3 run from PM 25.5 to 25.65. Several rural residential properties are located southwest and southeast of the project limits of Patrick Creek Narrows Location 3, including APNs 122-290-08, 122-290-05, 122-290-03, 122-170-06, and 122-290-02. The homes on these parcels are visually shielded from the roadway by heavy vegetation and trees, and they are located well away from the project limits, between the roadway and the Middle Fork Smith River. No developed uses are located on the Forest Service land northwest of the project limits.

Only one alternative was considered at Patrick Creek Narrows Location 3. The proposed project would widen the shoulders of US 199 by 4 feet and improve the “S” curve that runs through the project limits (Figure 1-11).

The Department has already acquired most of the right-of-way needed for the Patrick Creek Narrows Location 3 improvements and the existing U.S. DOT easement is 100-feet along both sides of US 199 at this location. However, based on a review of Department right-of-way mapping for this site, two narrow strips of additional permanent right-of-way would need to be acquired from the 4.31-acre rural residential property that fronts the southwestern edge of the project limits. These two permanent acquisitions are estimated to total 9,055 square feet (0.21 acre). These permanent acquisitions and subsequent widening of the roadway shoulders would have little effect on the use of this property because the acquisition involves narrow strips of undeveloped land along the roadway and because the house on the property is set back from the southeast edge of the property by an estimated 250 feet. Additionally, construction activities could limit access to the driveway leading to this home, although access to side roads and residences would be maintained at all times.

All of the other homes adjacent to the project limits are located at least 650 feet from the roadway, and residents have access to these homes from US 199 northeast of the project limits. Access to these homes would be maintained during project construction.

As shown by Figure 1-18, existing gravel pullouts would be used to stage equipment during construction. No adverse land use impacts are anticipated to result from the use of these staging areas, although minor effects on recreationists using the pullouts to access the Middle Fork Smith River may occur, as discussed in the Parks and Recreation Facilities and Construction Impacts sections.

Construction of improvements at this site would displace no current developed uses of land in the project limits, and it would not affect any public access to the river or river-related recreation activities such as fishing or boating. Therefore, the land use impacts of the improvements at this site are anticipated to be minor.

The Narrows

Like the Patrick Creek Narrows locations, the Narrows site is located on US 199 in the rugged Smith River Canyon in the Smith River NRA. The Narrows site is situated between Patrick Creek Narrows Locations 1 and 2, with project limits ranging from PM 22.7 to 23.0. This section of the highway is bordered by a steep cliff face on the north and the Middle Fork Smith River below the highway on the south. No developed land uses are located within or adjacent to the limits of the Narrows site. One alternative, with two construction-method scenarios, was considered for the Narrows site. The land use effects of these two scenarios would be similar.

Proposed improvements at the Narrows site would primarily include widening the pavement up to 28 feet (12-foot lanes with up to 2-foot shoulders on both sides) (Figures 1-12a and 1-12b). In addition to the roadway widening, isolated outcrops of overhanging or loose rock above the excavation limits would be stabilized. Widening would be accomplished by cutting deeper into the existing cut slope. Widening toward the Smith River would not occur because of environmental concerns and the high cost of constructing a new retaining wall on the river side of the roadway.

As shown by Figure 1-18, existing gravel pullouts would be used to stage equipment during construction. No adverse land use impacts are anticipated to result from the use of these staging areas, although minor effects on recreationists using the pullouts to access the Middle Fork Smith River may occur as discussed in the Parks and Recreation Facilities and Construction Impacts sections.

The land adjacent to the project limits is under Forest Service ownership. Construction of the improvements at the Narrows site would occur within existing Department right-of-way easement, would displace no current uses of land in the project limits, and would not substantially affect public access to the river or river-related recreation activities such as fishing or boating. Therefore, the land use impacts of the improvements at the Narrows site are anticipated to be minor to none.

Washington Curve

The Washington Curve site, located at PM 26.3, is the easternmost US 199 site under the proposed project. This site is located in a narrow part of the Smith River Canyon, with a steep rock section on the north and the Middle Fork Smith River below the highway on the south. No developed land uses or utilities are located within or adjacent to the project limits, and no potentially sensitive developed land uses are nearby. Land surrounding the project limits is under Forest Service ownership. Two alternatives were considered at this site, the Cut Slope Alternative and the Retaining Wall Alternative.

Under the Cut Slope Alternative, improvements at the Washington Curve site would include construction of a new cut slope on the northwest (cut slope) side of the highway (Figure 1-13). The existing Department easement through the project limits extends 200 feet to the north and

150 feet south from the roadway centerline. All improvements would be constructed within this easement. As shown by Figure 1-18, existing gravel pullouts would be used to stage equipment during construction. No adverse land use impacts are anticipated to result from the use of these staging areas, although minor temporary effects on recreationists using the pullouts to access the Middle Fork Smith River may occur as discussed in the Parks and Recreation Facilities and Construction Impacts sections. Construction of improvements under this alternative would displace no current developed uses of land in the project limits, and it would not substantially affect any public access to the river or river-related recreation activities such as fishing or boating. Therefore, the land use impacts of the improvements under this alternative are anticipated to be minor to none.

Under the Retaining Wall Alternative for the Washington Curve site, a soil-nailed retaining wall would be constructed along the northwest (cut slope) side of the highway to provide additional roadway width (Figure 1-14). The wall would be approximately 800 feet long. All improvements would be constructed within the existing Department easement. As shown by Figure 1-18, existing gravel pullouts would be used to stage equipment during construction. No adverse land use impacts are anticipated to result from the use of these staging areas, although minor temporary effects on recreationists using the pullouts to access the Middle Fork Smith River may occur, see the discussion in the Parks and Recreation Facilities and Construction Impacts sections. Construction of improvements under this alternative would displace no current developed uses of land in the project limits, and it would not substantially affect any public access to the river or river-related recreation activities such as fishing or boating. Therefore, the land use impacts of the improvements under this alternative are anticipated to be minor to none.

Conflicts with Planned Land Uses

According to the Del Norte County Planning Division, no additional residential construction projects or subdivisions are currently planned in the vicinity of any of the proposed improvements (Hooper pers. comm.). Therefore, the potential for future residential or commercial development near the project sites is considered very limited. The proposed project would not conflict with planned land uses in the vicinity of the proposed improvements.

Avoidance, Minimization, and/or Mitigation Measures

Widen and Upgrade Private Road Approaches at Ruby 2 Site

The private road approaches to residential properties affected by improvements at the Ruby 2 site would be widened and upgraded to current standards as part of the proposed project. As part of the widening of SR 197 and reconstruction of private road approaches, any mailboxes, fencing, signage, or landscaping (including ornamental trees) displaced by the proposed project on affected residential properties would be replaced in coordination with property owners.

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

Affected Environment

Land use planning in the study area is governed by the Crescent City General Plan, Del Norte County General Plan, and Smith River National Recreation Area, Smith River Management Plan Addendum (U.S. Forest Service 1992). Local coastal programs administered under the California

Coastal Act of 1976 (Coastal Act) also govern land use planning in certain parts of Del Norte County. There are portions of land along the coastline of Del Norte County and Crescent City are included in the California Coastal Zone, although none of the proposed project improvements is located within or near the California Coastal Zone. Additional land use planning is conducted as part of management of Jedediah Smith Redwoods State Park, which is discussed in *Park and Recreation Facilities*. Regional transportation planning for the study area is generally conducted by the Del Norte Local Transportation Commission. Management of the Smith River Scenic Byway is conducted by the Forest Service.

Del Norte County

All seven project locations are located in unincorporated Del Norte County. Land use and development within the unincorporated areas of Del Norte County are guided by the Del Norte County General Plan. The County's first general plan was adopted in 1976 and was periodically updated and amended. In 1997, the County began a comprehensive update and revision of the general plan, which resulted in the current Del Norte County General Plan, adopted by the Del Norte County Board of Supervisors in 2003. Minor amendments to some general plan land use designations have occurred since 2003.

For purposes of Del Norte County General Plan policy development, Del Norte County is divided into five planning subareas: the Crescent City, Smith River, Fort Dick/Kings Valley, Smith River Canyon, and the Klamath Planning Subareas (Mintier & Associates et al. 2003). The two project locations on SR 197—the Ruby 1 and 2 sites—are within the Smith River Planning Subarea. The project locations on US 199—Patrick Creek Narrows (Locations 1 to 3), the Narrows, and Washington Curve site—are all within the Smith River Canyon Planning Subarea.

The "Land Use and Community Development" chapter of the Del Norte County General Plan policy document describes the land use designations that appear on the plan's land use diagram. This chapter also outlines the legally required standards of density and intensity for these land use designations. Section 2.1.6, "Traffic and Transportation/Pedestrian and Bicycle Facilities," describes the proposed circulation system and the street classification system. Relevant policies contained in the Del Norte County General Plan and related elements are described and evaluated in the Environmental Consequences section.

In 2006, the Del Norte County Board of Supervisors approved the Comprehensive Economic Development Strategy, Del Norte County, California, 2006–2008 (CEDS) (Del Norte County 2006), which was prepared with extensive community participation. The CEDS is guided by the following vision statement:

> To develop a sustainable economic base by retaining, expanding and attracting new business by balancing the needs of both the business and residential communities while considering the effects of economic development on the environment of our unique Redwoods and coastal community.

According to the CEDS, the goals and objectives for Del Norte County result from an analysis of the area's development potential and problems. They provide a framework for public and private decision-making, and they serve as the basis for the formulation of an action plan. The CEDS

includes five key goals. The first two economic goals (and associated strategies) in the CEDS are tied directly to transportation:

- **Goal 1:** Make critical improvements to local infrastructure.
  - **Strategy:** Promote and support improvements of SR 197 and US 199, the community's key link to Interstate 5, through coordination with Del Norte Local Transportation Commission and state legislators representing the area.
- **Goal 2:** Promote the successful expansion of the tourism industry.
  - **Strategy:** Encourage outside marketing of local products and the region by implementing tourism-related businesses and enterprises and by encouraging the export of local products.
  - **Strategy:** Advocate for continued Highway 199 and 197 improvements.

The three remaining key goals of the CED are listed below:

- Provide direct support for business retention and expansion.
- Enhance interagency and intergovernmental communication.
- Participate in the development of a comprehensive employee support system as a way of ensuring that employees thrive and businesses flourish.

Crescent City

Land use planning in the Crescent City portion of the study area is governed by the Crescent City General Plan. This plan contains policies that guide growth in Crescent City and includes land use plans for the city.

The general plan was last revised and updated in 2001, and no substantial amendments or technical updates have occurred since that time. The Crescent City General Plan consists of two documents: the background report and policy document. The background report inventories and analyzes existing land use conditions and development trends in Crescent City. It also provides background information and technical data used to produce the policy document. The policy document is the formal policy of Crescent City for land use, development, and environmental quality. It includes goals, policies, standards, implementation programs, quantified objectives, a land use diagram, and circulation diagrams (Mintier & Associates et al. 2001). Relevant policies contained in the Crescent City General Plan and related elements are described and evaluated in Environmental Consequences of this section.

Six Rivers National Forest/Smith River National Recreation Area

The Six Rivers National Forest encompasses more than 1 million acres of land in four counties in northern California (Del Norte, Humboldt, Trinity and Siskiyou). The northernmost section of the Six Rivers National Forest is designated as the Smith River National Recreation Area. The Smith River NRA was established by the United States Congress in the Smith River National Recreation Area Act of 1990 (Public Law 101-162). The Smith River NRA was established "for the purposes of ensuring the preservation, protection, enhancement, and interpretation for present and future generations of the Smith River watershed's outstanding Wild and Scenic Rivers, ecological diversity, and recreation opportunities while providing for

the wise use and sustained productivity of its natural resources." The Smith River National Recreation Area Management Plan, also adopted in 1990, guides overall land management activities throughout the 300,000-acre Smith River NRA. The management plan is also incorporated in its entirety into the Six Rivers National Forest Land and Resource Management Plan (U.S. Forest Service 1995).

The Smith River National Recreation Area Management Plan provides for a broad range of recreation uses and interpretive services and facilities throughout the Smith River NRA. The plan outlines public recreation access for such activities as camping, hiking, hunting, and fishing. Programs for improved anadromous fisheries and water quality are outlined in the plan, as well as timber harvest management activities in specific areas. As stated in the Smith River National Recreation Area Act, "careful development and utilization at mutually compatible levels of recreation, fisheries, and timber resources on public lands will ensure the continuation of the Smith River watershed's historic role as a significant contributor to the region's local economy" (Public Law 101-162). All five project locations along US 199 are adjacent to Forest Service lands within the Smith River NRA. These lands are all managed under the Smith River National Recreation Area Management Plan.

Within the Smith River National Recreation Area Management Plan, there are eight management areas, and the project locations along US 199 are within Middle Fork–Highway 199 Management Area 3, where the management emphasis is on "maintaining wildlife values and providing for a full range of recreation uses, with particular emphasis on the scenic and recreation values associated with the Smith River, old growth redwoods, and California State Highway 199." Middle Fork–Highway 199 Management Area 3 encompasses 38,400 acres and is the most heavily visited area within the Smith River NRA.

There are specific areas within the Smith River NRA designated and developed for recreation use by the Forest Service that are located within a 0.5-mile radius of the project locations, including the Middle Fork Smith River, Sandy Beach, the Patrick Creek Campground, the Patrick Creek Trail, and the Middle Fork Smith River Access Trails. These recreational facilities are discussed in the Park and Recreational Facilities section.

Del Norte Local Transportation Commission

The Del Norte Local Transportation Commission provides regional transportation planning services to the study area. These services include preparation and adoption of the regional transportation plan (RTP) and regional transportation improvement program (RTIP) for Del Norte County. The primary goal of the RTP is to promote a coordinated, balanced regional transportation system that considers all modes of transportation and sources of funding. The 2008 RTIP, adopted by the commission in 2008, provides details on programs and expenditures on road improvements that will occur during the 2008–2009 fiscal year. In addition to the RTIP, the commission's overall work program is prepared annually to identify and focus the next year's transportation planning tasks. These tasks are to be fulfilled in accordance with the policies and goals of the RTP.

According to the adopted RTIP (Del Norte Local Transportation Commission 2008):

> The community is requesting STAA route access from Del Norte to Interstate 5 be fully funded. This project on US Highway 199 (PPNO 1047) Realignment and Widening at Patrick Creek Narrows, has been selected as the #1 priority by the DNLTC. According to Caltrans, this project will provide STAA route access and complete a crucial trucking link between the entire north coast, Del Norte County and Interstate 5. The cost of the project exceeds the maximum available shares for the 2008 STIP cycle. Therefore, the DNLTC requests advancing STIP shares to fund this priority project for the community, the northwestern gateway into Oregon.

Additionally, the RTIP includes the following goals:

- Highways, Streets and Roads Goal: To maintain and improve the highway system and the system of major local streets and roads to meet regional and interregional needs. This includes specifically continuing State highway development and improvements, particularly for US Highways 101 and 199, and SR 197. In addition, it includes planning to accommodate long (STAA) trucks on SR 197 and US 199.
- Goods Movement (Maritime and Truck) Goal: Support the development of a viable goods movement truck corridor via SR 197/US 199, and continued development of Crescent City Harbor to facilitate maritime goods movement.

Smith River Scenic Byway

The Smith River Scenic Byway, which is 33 miles long, is the shortest route in the 10-route Forest Service Scenic Byway Network. The byway, which is managed by Forest Service District Ranger, encompasses spectacular views of majestic redwood forests and the jade green waters of the crystal-clear Smith River. There is the ancient redwood grove of Jedediah Smith Redwoods State Park where the byway begins, named after the famous mountain man and explorer said to be the first European to come to California overland. In a subtle change in scenery, redwoods and rolling hills are replaced with Douglas fir–covered ridges and steep canyons. The Middle and South Forks of the Smith River come together at an area known as the "Forks." The Smith River is the purest river in California and one of the only remaining free-flowing river systems in the state. Its unique, light green color is the result of exceptionally clean, sediment-free water flowing over a smooth granite river bottom. The closeness of the highway to the river and numerous turnouts along the route allow motorists to view deep green pools contrasted against whitewater rapids. The route continues to parallel the Middle Fork Smith River. Two notable geographic sights along the way are the gigantic, rounded boulders of the "Gorge," just north of the Forks, and a section of steep, moss-covered river canyon north of Patrick Creek called the "Narrows." Winter brings heavy rains and a number of cascading waterfalls along the route. The area is a haven for birds and birdwatchers. The Smith River Scenic Byway officially ends at Collier Tunnel at the edge of the Smith River Watershed just short of the California/Oregon state line (California Department of Transportation 2006).

Environmental Consequences

The following sections provide an assessment of the proposed project's consistency with plans and policies adopted by Del Norte County and the Del Norte Local Transportation Commission. Only policies with direct relevance to the project were included in the consistency analysis. The Crescent City General Plan (City of Crescent City 2001) was reviewed to identify policies

directly relevant to the proposed project; however, no policies with direct relevance to the proposed project were identified. Crescent City General Plan policies that may be relevant to the growth-inducement effects of the proposed project are discussed in the Growth section.

Del Norte County General Plan Consistency

The Del Norte County General Plan (Del Norte County 2003) was reviewed to identify policies directly relevant to the proposed project. Overall, the proposed project is consistent with the Del Norte County General Plan. The consistency of the proposed project with specific relevant policies is discussed below.

- Transportation and Circulation Goal 8.A. To plan for the long-range planning and development of Del Norte County's State Highway system to ensure the safe and efficient movement of people and goods.

The purpose of the proposed project is to improve spot locations on SR 197 and US 199 in Del Norte County so that two STAA trucks passing in opposite directions can be accommodated. The need for the project stems from the need for compliance with federal and state legislation and regional programs, plans, and policies regarding STAA truck access. Additionally, the project is needed because spot locations on SR 197 and US 199 currently have sub-standard curves; no, or substandard, shoulders along the traveled way; and narrow lanes. This restricts STAA truck access along the SR 197–US 199 corridor. These conditions have been shown to result in STAA trucks offtracking into the oncoming traffic lane at the seven proposed project locations. Safety-enhancing improvements, including wider lanes, wider shoulders, longer radius curves, and enhanced sight distances, are needed at the seven locations to provide a roadway that is easier for STAA trucks to traverse. These improvements would benefit all users and allow STAA trucks and other large vehicles to negotiate curves along the SR 197–US 199 corridor without offtracking into the oncoming traffic lane at the seven locations. Therefore, the proposed project would be consistent with Del Norte County's long-range planning goal to ensure the safe and efficient movement of people and goods throughout Del Norte County.

- Transportation and Circulation Policy 8.A.3. The County shall continue to actively encourage Caltrans and the Regional Transportation Planning Agency to develop facilities for improved access into the County via US 101 and US 199.

The proposed project would be consistent with this policy. The proposed improvements along US 199 are designed specifically to improve access into Del Norte County for STAA trucks and other vehicles traveling to and from Oregon. Safety improvements at Patrick Creek Narrows Locations 1, 2, and 3 and the Narrows and Washington Curve sites along the US 199 corridor would improve narrow lane conditions, limited or negligible shoulders, short-radius curves, and limited sight distances.

- Transportation and Circulation Policy 8.A.4. The County shall encourage Caltrans to continue to keep Highway 197 (North Bank Road), connecting Highways 199 and 101, available at all times.

The proposed project would be consistent with this policy. The two proposed improvements along SR 197 (North Bank Road), at the Ruby 1 and 2 sites, would not require the full closure of

SR 197 at any time over the construction period. Therefore, connectivity of SR 197 with US 199 and US 101 would be maintained at all times.

- Transportation and Circulation Policy 8.A.6. The County shall encourage the Office of Emergency Services to review alternative emergency access in the event of temporary closure of Highways 101 or 199.

Construction of the improvements at Patrick Creek Narrows Locations 1, 2, and 3 and the Washington Curve site could require the temporary closure of US 199, with temporary daytime closures anticipated to last a maximum of up to 1 hour at the Patrick Creek Narrows locations and possibly longer nighttime closures to occur at the Washington Curve site. The Department will notify the Office of Emergency Services about the closures. Construction Contractors would be required by the Department to expedite the passage of emergency service vehicles through work zones at all times. Additionally, the TMPs for each project site would require that emergency service providers (e.g., sheriff, fire, Office of Emergency Services, and ambulance services) be given at least 1 week of notice before US 199 is closed during construction. This would facilitate consideration of alternative emergency access measures included in Section 2.4.2, "Land Use," and the access measures in the Avoidance, Minimization, and/or Mitigation Measures portion of Sections 2.4.3, "Community Impacts," 2.4.4 "Utilities/Emergency Services," and 2.4.5, "Traffic and Transportation/Pedestrian and Bicycle Facilities." Therefore, the proposed project would be consistent with Transportation and Circulation Policy 8.A.6.

- Transportation and Circulation Policy 8.A.11. The County shall encourage Caltrans and the RTPA to provide for a Level of Service (LOS) of D or better on State highways within the county.

According to the traffic analysis prepared for the proposed project (Fehr & Peers 2010), all analyzed segments of SR 197, US 199, and US 101 would operate at LOS C or better under existing with-project conditions. Under future (2030) with-project conditions, all highway segments would operate at LOS D or better. Therefore, the proposed project is consistent with this policy.

Del Norte Local Transportation Commission Regional Transportation Improvement Program Consistency

Policies contained in the Del Norte Local Transportation Commission's 2008 Regional Transportation Improvement Program for Del Norte County (RTIP) (Del Norte Local Transportation Commission 2008) were reviewed to identify policies directly relevant to the proposed project. The consistency of the proposed project with relevant policies is discussed below.

- Highways, Streets and Roads Goal: To maintain and improve the highway system and the system of major local streets and roads to meet regional and interregional needs. This includes specifically continuing State highway development and improvements, particularly for US Highways 101 and 199, and SR 197. In addition, it includes planning to accommodate long (STAA) trucks on SR 197 and US 199.

The build alternatives for the proposed project would be consistent with this policy. The purpose of the proposed project is to improve spot locations on SR 197 and US 199 in Del Norte County so that two STAA trucks passing in opposite directions can be accommodated. Therefore, the proposed project would improve SR 197 and US 199 to meet regional and interregional transportation needs. The No Build Alternative would not be consistent with this policy because it would not accommodate long (STAA) trucks on SR 197 and US 199.

- Goods Movement (Maritime and Truck) Goal: Support the development of a viable goods movement truck corridor via SR 197/US 199, and continued development of Crescent City Harbor to facilitate maritime goods movement. Specifically, this includes the regional transportation agency partnering with Caltrans to achieve the necessary improvements to SR 197 and US 199 to create a viable trade corridor.

The proposed project would be consistent with this policy. The proposed project supports the development of viable goods movement truck corridors along SR 197 and US 199. The Del Norte Local Transportation Commission, which is the regional transportation agency, is currently partnering with the Department to achieve the necessary improvements to SR 197 and US 199 to create a viable trade corridor.

Avoidance, Minimization, and/or Mitigation Measures

Overall, the proposed project is consistent with all local and regional plans and policies, and no long-term measures are necessary. Implementation of the access- and circulation-related minimization measures in Sections 2.4.3, 2.4.4, and 2.4.5 would minimize effects of the temporary closures of US 199 during construction.

Implementation of the minimization measures in Sections 2.4.2, 2.4.3, 2.4.4, and 2.4.5, which call for the TMPs for each project site to require emergency service providers (e.g., sheriff, fire, Office of Emergency Services, and ambulance services) to be given at least 1 week of notice before US 199 is closed during construction, would ensure that the project would be consistent with Transportation and Circulation Policy 8.A.6.

2.1.1.3 Wild and Scenic Rivers

Regulatory Setting

Projects affecting Wild and Scenic Rivers are subject to the National Wild and Scenic Rivers Act (16 USC 1271) and the California Wild and Scenic Rivers Act (Public Resources Code Section 5093.50 et seq.).

There are three possible types of Wild and Scenic designations:

- Wild: undeveloped, with river access by trail only
- Scenic: undeveloped, with occasional river access by road
- Recreational: some development is allowed, with road access

Section 7 of the National Wild and Scenic Rivers Act directs federal agencies to protect the free-flowing condition and other values of designated rivers. Specifically, federal agencies are prohibited from assisting in the construction of any water resources project that would have a direct and adverse effect on a designated river. Determinations are made by the river-administering agency. Construction or reconstruction of bridges and other roadway projects are included in the list of water resources projects that could affect a designated river (National Wild and Scenic Rivers 2004).

Section 4(f) of the Department of Transportation Act of 1966, applies to portions of Wild and Scenic Rivers that are publicly owned and designated recreational. See Appendix B of the EA/EIR for additional information on Section 4(f).

Affected Environment

The Smith River is part of the National Wild and Scenic Rivers System, a federal system created by Congress to recognize and protect rivers across the country. More than 300 miles of the Smith River system are designated as a Wild and Scenic River, a longer stretch than any other river in the United States. The Smith River is also undammed for its entire length, making it the only major river system in California without dams. Of the 325.4 miles of Wild and Scenic River designation along the Smith River, 78 miles are wild, 31 miles are scenic, and 216.4 miles are classified as recreational. The Smith River Wild and Scenic River System was designated in January 1981 and redesignated in November 1990 with creation of the Smith River NRA (National Wild and Scenic Rivers 2009).

The Ruby 1 and 2 sites are within 0.25 mile of a portion of the Smith River that is designated as recreational under the federal Wild and Scenic Rivers Act. The Wild and Scenic Rivers Act defines recreational rivers as "those rivers or segments of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past." The primary value for which the Smith River was federally designated is its "outstanding, remarkable" anadromous fishery; secondary factors of the designation are its notable recreational and scenic values (U.S. Forest Service 2005). Within the Six Rivers National Forest, Wild and Scenic Rivers are managed by the Forest Service. Outside of Six Rivers National Forest jurisdiction, Wild and Scenic Rivers are managed by the NPS.

The Smith River Wild and Scenic River System is also part of the California Wild and Scenic Rivers System. The main stem of the Smith River is federally designated as recreational. In addition, it is a state-designated recreational river to its mouth at the Pacific Ocean, as defined in California Public Resources Code (PRC) Sections 5093.54 et seq. The California Resources Agency is responsible for coordinating activities of state agencies that may affect state-designated rivers.

The proposed project locations on US 199, including Patrick Creek Narrows Locations 1, 2, and 3; the Narrows; and Washington Curve site, are within 0.25 mile of the portion of the Middle Fork Smith River that is federally and state designated as recreational, from its confluence with Knopki Creek to its confluence with the South Fork Smith River.

Within the project area, the main stem of the Smith River parallels SR 197, and the Middle Fork Smith River borders the project area along US 199 (Figure 1-1). In addition, the following tributaries in the project area are also designated as part of the Wild and Scenic Rivers System:

- Monkey Creek (recreational) from its headwaters in the northeast quadrant of Section 12 T18N R3E, as depicted on the 1951 U.S. Geological Survey (USGS) 15-degree Gasquet topographic map, to its confluence with the Middle Fork Smith River.
- Patrick Creek (recreational) from the junction of the east and west forks of Patrick Creek to the confluence with the Middle Fork Smith River.

- Kelly Creek (scenic) from its source in Section 32 T17N R3E, as depicted on 1951 USGS 15-degree Gasquet topographic map to the confluence with the Middle Fork Smith River.

In addition, the Siskiyou Fork Smith River is federally and state-designated as a recreational river from its confluence with the South Siskiyou Fork Smith River to its confluence with the Middle Fork Smith River.

A variety of recreational opportunities currently exist throughout the project area, including whitewater rafting and kayaking, bird watching, fishing, hunting, camping, and trails for hiking, horseback riding, mountain biking swimming, naturalist pursuits, and photography.

Within the project area, SR 197 parallels the north bank of the Smith River in a northwest–southeast direction. The roadway is separated from the river by vegetation and coast redwood forest. Ruby Van Deventer County Park and Jedediah Smith Redwoods State Park are both located west of SR 197 and are access points to the river for recreation opportunities in the vicinity. Ruby Van Deventer County Park is located near PM 4.5 along SR 197 and the main access to Jedediah Smith Redwoods State Park is from US 199.

US 199 winds through the canyon of the Middle Fork Smith River in a southwest-northeast direction, providing access for recreational opportunities along the river. The canyon has steep cliffs, rocky outcrops, dense Douglas-fir forest and dramatic views of the Middle Fork Smith River. US 199 is the primary access route to recreational opportunities along the Middle Fork Smith River within the Smith River NRA. The river can be accessed from multiple locations on US 199, including paved and unpaved pullouts with no developed amenities. Designated and developed recreation areas on US 199 also provide access to the river and are located within a 0.5-mile radius of the project locations, including Sandy Beach at PM 20.9, the Patrick Creek Campground and Patrick Creek Trail at PM 22.0, and two river access trails, the Eagle Eye Mine Trail at PM 23.1 and Cedar Rustic Trail at PM 23.5.

Environmental Consequences

Designated recreational river segments allow for transportation facilities, such as SR 197 and US 199. When the Smith River Wild and Scenic River System was designated, both SR 197 and US 199 were existing transportation facilities that provided access to the river. Construction activities in the bed or on the banks of a designated Wild and Scenic River (below the OHWM for that river), requires review under Section 7 of the National Wild and Scenic Rivers Act and consultation with the river managing agency. The OHWM is an important limit because permanent construction below the OHWM could adversely affect the values for which the river was designated. The river managing agency along SR 197 is the National Park Service, and along US 199 it is the National Forest Service.

Smith River (Main Stem)

The main stem of the Smith River is located within a 0.5-mile radius of two project locations, the Ruby 1 and 2 sites (Figures 1-1, 1-3 through 1-6b). Proposed improvements at both locations include widening the roadway and increasing the curve radii. The Ruby 1 site is located closest to the river at Ruby Van Deventer County Park, but no construction activities would take place on the banks of the river, 50 feet or more west of the roadway. The Ruby 2 site is located 200 feet or more from the river.

The proposed project does not involve construction in the bed or on the banks of the main stem of the Smith River (below the OHWM), and would not alter the free-flowing nature of the river. Implementation of the proposed project would not affect the recreational use or access to the river and would not have the potential to alter the river segment's ability to meet the recreational criteria it now holds. The proposed project at the Ruby 1 or 2 sites is not considered to be a water resources project subject to review under Section 7 of the Wild and Scenic Rivers Act.

Middle Fork Smith River

Proposed improvements at the project locations are adjacent to the Middle Fork Smith River. The roadway is located above the river and the distance to the river ranges from 50 feet to more than 100 feet, as shown on Figures 1-7 through 1-14.

Construction at Patrick Creek Narrows Locations 1 and 3, the Narrows, and Washington Curve sites on US 199 does not involve construction in the bed or on the banks of the river (below the OHWM), and would not alter the free-flowing nature of the Middle Fork Smith River. Proposed improvements at this location are not considered water resources projects subject to review under Section 7 of the Wild and Scenic Rivers Act. In August 2005, the Department received correspondence from the Forest Service regarding proposed improvements at the Narrows site that concluded that the proposed project at this location would not have a direct or adverse effect on the values for which the river was designated (U.S. Forest Service 2005). In addition, the letter stated that any change in scope of the project would require notifying the Forest Service (2005). This letter is included in Chapter 4 of the EIR/EA.

Proposed improvements to the Middle Fork Smith River Bridge at Patrick Creek Narrows Location 2, where the roadway spans the river, would include replacement of the existing bridge with selection of the preferred alternative, the Downstream Bridge Replacement Alternative. Three alternatives for improvements were considered at this location: the Upstream Bridge Replacement (Figure 1-8), Downstream Bridge Replacement (Figure 1-9), and Bridge Preservation with Upslope Retaining Wall Alternatives (Figure 1-10). As mentioned previously, the Department selected the Downstream Bridge Replacement Alternative as the preferred alternative. Refer to the project description in Chapter 1 for complete descriptions of the build alternatives at this location.

Free flowing nature of the Middle Fork Smith River: Under the Downstream Bridge Replacement Alternative, a new bridge would be constructed on an alignment downstream of the existing bridge. The new bridge would be constructed first, before removal of the existing bridge. The new abutments would be located along the edge of the river bank and outside the OHWM (California Department of Transportation 2010). Therefore, no permanent structures would be placed within the river channel that would alter the free-flowing nature of the river.

However, during construction of the Downstream Bridge Replacement Alternative, work above the wetted channel but within the OHWM of the Middle Fork Smith River could be required to construct the proposed improvements. The temporary structures required for the bridge replacement alternative are discussed in Section 2.4.2.2, "Wild and Scenic Rivers."

The Bridge Preservation with Upslope Retaining Wall Alternative, which was not selected as the preferred alternative, would not require in-water work. This alternative would retain the existing bridge but would realign the roadway on either end of the bridge to allow large trucks to cross. In

addition, this alternative would require construction of a retaining wall or rock bolting on the southwest (hill) side of the existing bridge. This alternative would not preclude future bridge replacement and would not alter the free flowing nature of the river.

Alteration of the setting of the Middle Fork Smith River: Improvements proposed at this location will include replacing the existing bridge, an element of the existing conditions for travelers on US 199 and on the river. In addition, excavation of cut slopes and construction of retaining walls and rock fall barriers would occur. These elements also exist throughout the roadway corridor along the river. Aesthetic treatments would be incorporated into the retaining wall's design to minimize the wall's effects. Trees and vegetation would also be removed and disturbed areas would be revegetated, as described in the Visual/Aesthetics and Plant Species sections. Implementation of additional measures included in the Visual/Aesthetics and Plant Species sections in Chapter 2 would reduce and minimize potential impacts on the setting of the river.

Anadromous fish: Impacts on anadromous fish are anticipated during bridge replacement, as discussed in the Animal Species section in Chapter 2. Implementation of measures included in the Animal Species section in Chapter 2 would avoid and minimize potential impacts on the salmonids and their Critical Habitat and Essential Fish Habitat to the greatest extent practicable during project construction. These temporary impacts are not expected to alter the river segment's ability to maintain the "outstanding remarkable" value for the anadromous fishery it now holds.

Recreational designation of the Middle Fork Smith River: No impacts to the Middle Fork Smith River affecting its designation would occur. During construction at Patrick Creek Narrows Location 2, recreationists would be subject to periodic exclusion from or delays in using limited segments of the construction zone for safety reasons while bridge replacement and demolition work was occurring. Otherwise, recreation activities on the river would continue. The river may be temporarily diverted at the bridge, but it would allow for continued recreational use of the river upstream and/or downstream of bridge construction. Recreation opportunities along the river would resume unabated once construction at the Patrick Creek Narrows Location 2 has been completed, and would not alter the river segment's ability to meet the recreational designation it now holds. Temporary impacts on recreation use of the river that may result from bridge replacement activities associated with construction are discussed in detail in Section 2.4.2.2, "Wild and Scenic Rivers."

No Build (No Action) Alternative

No improvements or widening would occur at any of the seven project locations. However, some of the improvements could occur individually at the project locations to reduce continual maintenance problems or improve safety. This alternative would not alter the free-flowing nature of the Smith River Wild and Scenic River System and would not have the potential to alter the river's ability to meet the recreational designation it now holds.

Wild and Scenic Rivers Act Coordination

Coordination with the NPS, as required by the Wild and Scenic Rivers Act, has been initiated and completed with regard to the proposed improvements at the two project locations along SR

197. A letter of concurrence was provided by the NPS in February 2010 and is included in Chapter 4 of the EIR/EA.

Coordination with the Forest Service as required by the Wild and Scenic Rivers Act was initiated with regard to the proposed improvements at the project locations along US 199. A letter was prepared and submitted by the Department (see Chapter 4 of the draft EIR/EA). Because the Middle Fork Smith River Bridge may be replaced and require work within the OHWM, though above the wetted channel, it is anticipated that an evaluation under the Wild and Scenic Rivers Act may be required. After the Forest Service had an opportunity to review the DEIR/EA and the coordination letter, the agency provided a letter of concurrence stating that the proposed project would not have a permanent adverse effect on the free-flowing characteristics of the Middle Fork Smith River and it would not alter the ability of the river to meet the Recreational designation it now holds.

Coordination under the California Wild and Scenic Rivers Act is typically initiated between the Department and the California Department of Fish and Wildlife during the notification and permitting process, under Section 1602 of the California Fish and Game Code, if work on culverts or watercourses is required. If no such work is required, the Department coordinates directly with the California Resources Agency during the final design phase of the proposed project.

Avoidance, Minimization and/or Mitigation Measures

No long-term measures are proposed to address the Smith River regarding its federal and state designation as Recreational under the Wild and Scenic Rivers Act. The proposed project does not involve construction in the bed or on the banks of the main stem of the Smith River (below the OHWM) at Ruby 1 or Ruby 2 and would not alter the free-flowing nature of the river. Further, implementation of the proposed project would not affect the recreational use or access to the river and would not have the potential to alter the river segment's ability to meet the Recreational criteria it now holds.

Construction at Patrick Creek Narrows Locations 1 and 3, the Narrows, and Washington Curve sites on US 199 does not involve construction in the bed or on the banks of the Middle Fork Smith River (below the OHWM) and would not alter the free-flowing nature of the Middle Fork Smith River.

Proposed improvements to the Middle Fork Smith River Bridge at Patrick Creek Narrows Location 2, where the roadway spans the river, would include replacement of the existing bridge on a downstream alignment, with the selection of the preferred alternative. This could require work below the OHWM but above the wetted channel and result in temporary construction impacts. However, no permanent structures would be placed within the wetted channel of the river, and the project would not alter the free-flowing nature or recreational use of the river. None of the three proposed build alternatives, including the selected preferred alternative, would permanently alter the free-flowing nature of the river or alter the river segment's ability to meet the Recreational designation it now holds; therefore, no long-term measures are proposed to address the Middle Fork Smith River component of the Smith River Wild and Scenic River System. Implementation of additional mitigation and minimization measures discussed in the DEIR/EA and FEIR/EA Section 2.4, "Construction Impacts" would minimize temporary effects on recreational use of the river.

Implementation of measures included in the "Animal Species" (DEIR/EA and FEIR/EA Section 2.3.4.4) would avoid and minimize potential impacts on the salmonids and their Critical Habitat and Essential Fish Habitat to the greatest extent practicable during project construction.

Implementation of additional measures included in the "Visual/Aesthetics" (Section 2.1.6.4) and "Plant Species" (Section 2.3.3.4) of the DEIR/EA and FEIR/EA would reduce and minimize potential impacts on the setting of the river.

2.1.1.4 Parks and Recreational Facilities

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 USC 303, declares that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." See Appendix B for additional information on Section 4(f).

Section 4(f) De Minimis Use

Under 49 USC 303(d), which is applicable to all USDOT programs and projects, and under Title 23, USC, § 138(b), which contains an identical provision applicable only to the Federal Highway Administration or the Department under its assumption of responsibility pursuant to 23 U.S.C. 327, the Department may determine, if certain conditions are met, that a project would have only a *de minimis* impact on a property protected by Section 4(f) of the U.S. Department of Transportation Act of 1966. With respect to publicly owned parks, recreation areas, and wildlife and waterfowl refuges, the Department, as assigned, may make such a finding only if it is determined that the project would not adversely affect the activities, features, and attributes of the 4(f) resource. If this is the case, the requirements of Section 4(f) are considered satisfied (49 USC 303[d][1][A]).

This project would require construction that could affect four recreation resources within 0.5 mile of the project area (Figure 2.1.1-3). The recreation resources are listed below, along with property owner/manager, in the order in which they occur along SR 197 from north to south and along US 199 from west to east. They are also described in detail in the "Affected Environment" section below.

- Ruby Van Deventer County Park, owned by Del Norte County
- Jedediah Smith Redwoods State Park, managed cooperatively by the NPS and California DPR
- Smith River Wild and Scenic River System, managed by the Forest Service where adjacent to Forest Service land, and managed by the NPS on SR 197 and US 199 where land is not owned by the Forest Service
- Smith River NRA within the Six Rivers National Forest, managed by the Forest Service, and including the following designated and developed recreation sites:
  - Sandy Beach
  - Patrick Creek Campground and Patrick Creek Trail

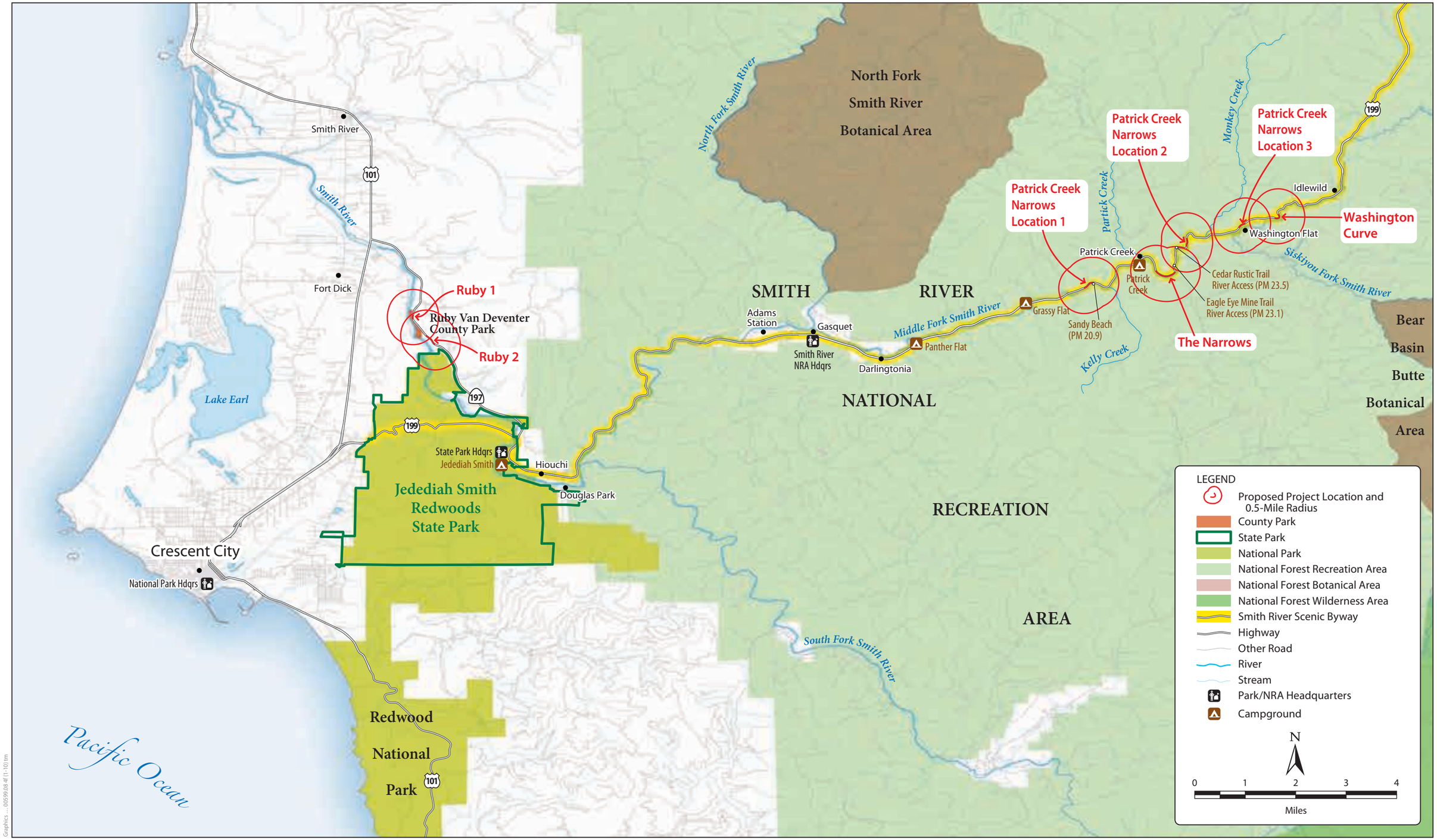

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Figure 2.1.1-3
Proposed Project Locations and 0.5 Mile Radius

– Middle Fork Smith River Access Trails

Under 49 USC 303(d), the Department has preliminarily determined that the proposed project would result in a *de minimis* impact on the Smith River NRA for purposes of Section 4(f) of the U.S. Department of Transportation Act of 1966 (see Appendix B for a detailed Section 4(f) evaluation). The Department may make such a finding only if the project will have no adverse effect on the activities, features, and attributes of the Smith River NRA and only if the official with jurisdiction concurs with the *de minimis* finding.

No recreational trails or bikeways were identified within 0.5 mile of the proposed project, except for the Patrick Creek Trail located near the Patrick Creek Campground. The park and recreational areas described in this section include all neighborhood, city, regional, state, and federal recreational resources in the project area.

Affected Environment

Ruby Van Deventer County Park

Ruby Van Deventer County Park is one of three County-owned and -operated parks in Del Norte County. The entrance to the 11.6-acre park is located at PM 4.5 on SR 197 (4705 North Bank Road). The heavily wooded park is situated on the banks of the Smith River west of SR 197, within 0.5 mile of the Ruby 1 site. The park provides 18 public campsites and one group picnic area. The park is open year-round and offers swimming, boating, and fishing opportunities along the banks of the Smith River. A County-owned parking lot with 18 parking spaces is situated just off SR 197, between the entrance to Ruby Van Deventer County Park and the roadway. The western side of the parking lot also provides access to the banks of the Smith River. This parking lot also has access to the banks of the Smith River and is occasionally used as a drift boat put-in. Although no developed boat ramp is provided at this location, recreationists are able to drive boat trailers to the Smith River shoreline at this location (Fulton pers. comm.). Access to the river for recreational activities is available along the banks of the river within the park.

Jedediah Smith Redwoods State Park

Established in 1929, the 10,000-acre Jedediah Smith Redwoods State Park is located 9 miles east of Crescent City. US 199 meanders through the park for about 4 miles, between the western boundary of the park near Valley Road and the eastern boundary of the park at the Hiouchi Bridge near the US 199/SR 197 intersection. This park, along with Prairie Creek Redwoods State Park, Del Norte Coast Redwoods State Park, and Redwood National Park, are managed cooperatively by the NPS and DPR. Their combined 105,516 acres of parkland are designated as Redwood National and State Parks, and contain 36% of California's old-growth redwood forest (California Department of Parks and Recreation 2009). The old-growth redwood forests within Redwood National Park, which includes Jedediah Smith Redwoods State Park, are designated as a world heritage site and international biosphere reserve (UNESCO World Heritage Centre 2009).

Jedediah Smith Redwoods State Park has more than 20 miles of hiking and nature trails that meander through the redwood forest, including the popular Stout Grove Trail, Boy Scout Tree Trail, and Mill Creek Trail (Baselt 2009). Both the Smith River and Mill Creek flow through the park, providing river access and fishing opportunities. The park provides more than 106

recreational vehicle and tent camping sites, with developed camping amenities at each campsite. The park's peak visitor season is Memorial Day through Labor Day. A visitor center is located on Kings Valley Road at the eastern boundary of the park. Summer interpretive programs include guided walks and hikes throughout the park, as well as evening campfire lectures on nature and historical subjects (California Department of Parks and Recreation 2009). The "Jammin' at Jed" all-day music festival is held at the park in mid-September each year.

Smith River Wild and Scenic River System

As described above, the Smith River is designated as recreational under the National Wild and Scenic Rivers System as well as the California Wild and Scenic Rivers System. The Middle Fork Smith River is federally and state-designated as recreational from its confluence with Knopki Creek to its confluence with the South Fork Smith River. Segments of the Smith River Wild and Scenic River System within the vicinity of the proposed project are designated recreational. Within the project area, the main stem of the Smith River parallels SR 197, and the Middle Fork Smith River borders the project area along US 199 (Figure 2.1.1-3). A variety of recreational opportunities are available along the river system including whitewater rafting and kayaking, fishing, camping, swimming, naturalist pursuits, and photography.

Within the project area, Ruby Van Deventer County Park and Jedediah Smith Redwoods State Park provide access points to the main stem segment of the Smith River for recreation opportunities.

US 199 is the primary access to recreation opportunities along the Middle Fork Smith River within the Smith River NRA. The river can be accessed from multiple locations on US 199, including paved and unpaved pullouts with no developed amenities. Designated and developed recreation areas on US 199 also provide access to the river including Sandy Beach at PM 20.9, the Patrick Creek Campground and Patrick Creek Trail at PM 22.0, and two river access trails, the Eagle Eye Mine Trail at PM 23.1 and Cedar Rustic Trail at PM 23.5.

Smith River National Recreation Area

Almost the entire length of US 199 in Del Norte County is located within the Smith River NRA, generally from Hiouchi to the Oregon border. The Smith River NRA is the northernmost section of the Six Rivers National Forest, managed by the Forest Service. The 300,000-acre Smith River NRA was established by the United States Congress in 1990 to protect the Smith River watershed and to provide exceptional opportunities for a wide range of recreational activities. Today, a variety of recreational opportunities exist throughout the Smith River NRA, including whitewater rafting and kayaking, bird watching, fishing, hunting, and camping, along with trails for hiking, horseback riding, mountain biking, and off-highway vehicle use. There are 65 miles of designated trails in the Smith River NRA for hiking, backpacking, and equestrian use. Off-highway vehicle use is limited to designated routes only and the dry season (normally May through October).

Three Forest Service campgrounds are located along US 199 near the project locations: the Panther Flat, Grassy Flat, and Patrick Creek Campgrounds (Figure 2.1.1-3). The Panther Flat Campground, with 39 developed campsites, is located immediately adjacent to the Middle Fork Smith River, 2.5 miles east of Gasquet on US 199, at PM 16.75. The Grassy Flat Campground, with 19 campsites, is located 5 miles east of Gasquet on US 199, at PM 18.87. The Patrick Creek Campground is located 8 miles east of Gasquet on US 199, at PM 22. The campground is located

directly across from the historic Patrick Creek Lodge and includes 13 campsites. The campground amenities include the Patrick Creek Trail, a short (0.2-mile) paved universal-access trail from the Patrick Creek Lodge to the Patrick Creek Campground via an under-the-bridge route. The trail has four interpretive stops and a barrier-free fishing platform (U.S. Forest Service 2009). Rustic camping in undeveloped areas is also available within most of the forest unless specifically prohibited. Rustic camping is free of charge in areas at least 0.25 mile from developed sites.

Sandy Beach is a day-use river access area located at PM 20.9 on US 199. The location is demarcated by a small sign and accessed from a paved pullout on US 199. A short trail leads to a swimming area on the Middle Fork Smith River. The beach is located more than 1,500 feet southeast of the proposed project on the banks of the Middle Fork Smith River. Amenities at Sandy Beach include three picnic tables and a pit toilet (Pass pers. comm.).

Two informal river access trails are located near the project locations along US 199: the Eagle Eye Mine Trail at PM 23.1 and the Cedar Rustic Trail at PM 23.5. These informal trails are not actively managed by the Forest Service (Pass pers. comm.). These trails provide access to the Middle Fork Smith River, mainly for seasonal recreation fishing. The Eagle Eye Mine Trail is used to access a swimming and summer fishing area on the Middle Fork Smith River. There are no developed improvements at this location. The Cedar Rustic Trail leads to an old campground that is no longer used and provides access to the river (Pass pers. comm.).

Environmental Consequences

Potential impacts on parks and recreation facilities are discussed below. These resources were also evaluated relative to the requirements of Section 4(f); refer to Appendix B in the DEIR/EA and FEIR/EA for a detailed discussion on the resources evaluated relative to Section 4(f). Concurrence letters are in Chapter 4 of the FEIR/EA.

Ruby 1 and 2

Ruby Van Deventer County Park is located on the west side of SR 197 immediately adjacent to the southbound lane at the Ruby 1 site. Improvements at this site would occur within the existing prescriptive right-of-way, except at the entrance to the park where a temporary construction easement would be required. The construction easement would be necessary to modify the entrance to match the improved roadway elevation. Access to the park would be maintained at all times during construction. The campground and day-use areas would be available for use by recreationists, and there would not be any physical changes to these facilities. Potential temporary construction-related impacts and the construction easement are discussed in the Construction Impacts section.

The northern boundary of the Jedediah Smith Redwoods State Park is approximately 300 feet south of the Ruby 2 site (Figure 2.1.1-3). However, no construction activities at the Ruby 2 site would occur on state-owned parklands, and the proposed project would not require acquisition of right-of-way from the parklands on either a temporary or permanent basis. Access from SR 197 to the northern portion of the park is via dirt roads and leads to private in-holdings within the park (California Department of Parks and Recreation 2009). There are no public trails, campgrounds, or other park facilities located within 1 mile of the Ruby 2 site. There would be no impacts on Jedediah Smith Redwoods State Park.

The main stem of the Smith River is located within a 0.5-mile radius of the Ruby 1 and 2 sites (Figure 2.1.1-3). The Ruby 1 site is located closest to the river at Ruby Van Deventer County Park, but no construction activities would take place on the banks of the river, 50 feet or more west of the roadway. The Ruby 2 site is located 200 feet or more from the river. As described, access to the river from Ruby Van Deventer County Park and Jedediah Smith Redwoods State Park would not be affected. There would be no impacts on the main stem segment of the Smith River.

Patrick Creek Narrows Location 1

The pullout used to access Sandy Beach is located near the eastern terminus of Patrick Creek Narrows Location 1 at PM 20.9. A short trail leads to a swimming area on the Middle Fork Smith River more than 1,500 feet from the proposed project at this location. However, no construction activities or staging areas for Patrick Creek Narrows Location 1 would be located on the paved pullout used to access the beach. Access to the beach area would not change, and parking in the paved pullout would be maintained at all times during construction. Recreationists would still be able to use the amenities at the beach, and there would not be any physical changes to the amenities or beach. Temporary construction-related impacts could occur at Sandy Beach (see DEIR/EA and FEIR/EA Section 2.4, "Construction Impacts").

Traffic delays and queues could affect recreationists traveling to the Smith River NRA recreation sites on or accessed from US 199 during the construction seasons; see the discussion provided below under *Section 4(f) De Minimis Use* and in Section 2.4, "Construction Impacts."

A retaining wall would be constructed in the fill slope below the roadway, in the existing rock armored bank, which is located on the river side of the roadway near the access point to the beach. This would increase the visual presence of the roadway from the beach. However, aesthetic treatments of the wall would be implemented to minimize the wall's visual intrusion by using construction materials with pattern, texture, and color similar to that which exists in the area and using low-sheen and non-reflective surface materials to reduce the potential for glare. These measures are included in the visual impact assessment (ICF International 2010d) and Section 2.1.6.4, "Visual/Aesthetics," of the DEIR/EA and FEIR/EA and are summarized in Section B.5 of Appendix B. Construction of a retaining wall would change the existing views toward the roadway for recreationists on the beach but would not change the overall visual features of the scenic views of the river or canyon. Retaining walls are existing elements of the setting in the narrow Middle Fork Smith River canyon. This increase in the visual presence of the roadway at the beach would not interfere with the recreational use or enjoyment of the beach.

Patrick Creek Narrows Location 2

Two alternatives proposed at Patrick Creek Narrows Location 2 may require work beyond the existing right-of-way in the vicinity of the Middle Fork Smith River Bridge. The existing right-of-way easement at this location is 100 feet left and right of the centerline (Trott 2010), and work beyond the easement would be necessary at the top of the rock cut slope, as shown in Figures 1-8 to 1-10. This area is an existing rock face and no Forest Service recreation facilities or other developed land uses are located in this area. The steepness of the rock face makes it unsuitable for any development. There would be no work beyond the right-of-way easement for the selected

preferred alternative, the Downstream Bridge Replacement Alternative. The area of work beyond the right-of-way easement is shown below for all three original build alternatives.

- The Upstream Bridge Replacement Alternative would require work in approximately 0.47 acre.
- The Downstream Bridge Replacement Alternative (selected preferred alternative) would not require work outside the right-of-way.
- The Bridge Preservation with Upslope Retaining Wall Alternative would require work in approximately 0.23 acre.

The Section 4(f) use is discussed further in the Section 4(f) De Minimis Use section below and in Appendix B.

The Cedar Rustic Trail is located at PM 23.5, more than 2,000 feet west of Patrick Creek Narrows Location 2. This informal river access trail is not designated as recreational trail or actively managed by the Forest Service for recreation. The river trail leads to an old campground that is no longer used, and no other developed land uses exist at this site. No construction activities or staging areas would occur at this location, and access to the river would be maintained. There would be no impacts on this river access trail.

The closest access to the Middle Fork Smith River in the vicinity of this project location is from the Cedar Rustic Trail, used for seasonal fishing. There are no other designated river access trails in this area, and there are no beaches along this segment of the river. Access from informal pullouts along US 199 and Cedar Rustic Trail would be maintained. However, during construction at Patrick Creek Narrows Location 2, recreationists would be excluded from the construction zone within the project limits for safety reasons while construction is in progress. Construction would occur during the summer and fall seasons during low river flow conditions. Recreation activities on the river outside the project limits or construction season would not be affected. Potential temporary construction-related impacts on the river are discussed in the Construction Impacts section.

Traffic delays and queues could affect recreationists during the construction seasons; see the discussion provided below under *Section 4(f) De Minimis Use* and in Section 2.4, “Construction Impacts” in the DEIR/EA and FEIR/EA.

Patrick Creek Narrows Location 3

There are no recreational facilities in the vicinity of the proposed project at this location. Informal access to the Middle Fork Smith River from pullouts on US 199 would be maintained and no permanent impacts on recreational use of the river are expected. Traffic delays and queues could affect recreationists during the construction seasons; see the discussion provided below under *Section 4(f) De Minimis Use* and in DEIR/EA and FEIR/EA Section 2.4, “Construction Impacts.”

The Narrows

Of the three Forest Service campgrounds are located along the US 199, the Patrick Creek Campground is the only one situated in the immediate vicinity of one of the project locations. The campground and Patrick Creek Trail are located more than 0.5 mile north and west of the Narrows site. Although no construction would occur on the Patrick Creek Campground property

or the Patrick Creek Trail, temporary construction impacts on the campground and trail could occur, including intermittent noise impacts from blasting activities and traffic delays during road closures associated with blasting activities. Access to the campground or trail would not change and would be maintained during construction. Campers would still be able to use all the amenities within the Patrick Creek Campground, and there would not be any physical changes to the campground. In addition, the trail and day-use areas would be available for use by recreationists, and there would not be any physical changes to these facilities. Temporary construction-related impacts could occur at the Patrick Creek Campground and the Patrick Creek Trail (see Section 2.4, "Construction Impacts").

The Eagle Eye Mine Trail, an informal river access trail, is located at PM 23.1, more than 500 feet east of the terminus of the Narrows site at PM 23.0. There are no developed land uses at this site. The potential staging area located at PM 23.15 is more than 250 feet east of the access trail. No construction activities are proposed at this location, and access would be maintained to the river trail. There would be no impacts on this river access trail.

Informal access to the Middle Fork Smith River from pullouts on US 199 would be maintained and no permanent impacts on recreational use of the river are expected. Temporary construction-related impacts could affect recreationists during blasting at this location (see Section 2.4, "Construction Impacts").

Traffic delays and queues could affect recreationists during the construction seasons; see the discussion provided below under *Section 4(f) De Minimis Use* and in Section 2.4, "Construction Impacts."

Washington Curve

There are no parks or recreational facilities in the vicinity of the proposed project at this location and there would be no permanent impacts. Informal access to the Middle Fork Smith River from pullouts on US 199 would be maintained and no permanent impacts on recreational use of the river are expected. Traffic delays and queues could affect recreationists during the construction seasons (see the following discussion under *Section 4(f) De Minimis Use* and in Section 2.4, "Construction Impacts").

Section 4(f) De Minimis Use

As discussed above, the selected preferred alternative proposed at Patrick Creek Narrows Location 2 may require work beyond the existing right-of-way in the vicinity of the Middle Fork Smith River Bridge. As described in the Section 4(f) evaluation (Appendix B), construction of the cut slope would occur in an area measuring between 0.23 and 0.47 acre in the Smith River NRA, constituting a Section 4(f) use. This land is located west of the existing right-of-way at the top of the rock face, and there are no recreational or developed facilities located on the land. No resources protected under Section 4(f), excluding the land itself, would be affected. The inability to restore the excavated rock cut slope to a condition that would be at least as good as the condition that existed prior to the project would result in a Section 4(f) use of the Smith River NRA. However, excavation of the 0.23 to 0.47 acres of rock cut slope would not result in a permanent adverse effect on any of the recreation areas within the Smith River NRA. Therefore, the Department has determined this action would meet the requirements for a *de minimis* impact. There would be no change in ownership of the land; the Forest Service has preliminarily

indicated that the Department will not need to request a permanent expansion for the existing easement. The Forest Service concurred with the Department's *de minimis* finding for adverse effects on features and attributes of the Smith River NRA (see Section 4.4).

Construction of the proposed work at the five locations on US 199 is anticipated to take place over a period of 4 years, mainly during the summer and fall seasons, but with a possible extension into the winter season during the fourth year. Traffic delays would occur at multiple locations and could be inconvenient for all travelers on US 199 during all three construction years. These delays would interfere with public access to the Smith River NRA recreation sites on or accessed from US 199, including day-use areas, campgrounds, trailheads, and Middle Fork Smith River access points. The Department has preliminarily determined that the delay in access to recreation areas within the Smith River NRA would be inconvenient enough to visitors that it would not meet the criteria for a temporary occupancy. Instead, it would constitute a Section 4(f) use and would meet the requirements for a *de minimis* impact. There would be no change in ownership of the land. The Department may make such a finding only if the project will have no adverse effect on the activities, features, and attributes of the Smith River NRA and only if the Forest Service concurs with the *de minimis* finding. The Department has designed the project to protect the activities, features, and attributes of the Smith River NRA and has been coordinating with the Forest Service to ensure that the project would have no adverse effects after including measures to minimize harm. Measures to minimize harm are described in Appendix B and in Section 2.4.2.3 under Avoidance, Minimization, and/or Mitigation Measures. After completion of the public and agency review process for the draft EIR/EA, the Department requested concurrence from the Forest Service on the *de minimis* finding on the Smith River NRA.

A letter to the Forest Service requesting concurrence with the *de minimis* impact finding was submitted by the Department (see Chapter 4, "Comments and Coordination"). In addition, the public had an opportunity to review and comment on the effects of the proposed project on the parks and recreational facilities during the public review period. Refer to Appendix B for a detailed discussion on this finding. The Forest Service submitted a concurrence letter in April 2012, stating that the delay in access to recreational areas on US 199 and the inability to restore the excavated rock cut slope fully at Patrick Creek Narrows Location 2 would meet the requirements of a *de minimis* impact (see Chapter 4 in the FEIR/EA). The *de minimis* impact is not considered an adverse use because it would not affect protected activities, features, or attributes that are eligible for protection under Section 4(f) at the Smith River NRA. The letter also concurred that the proposed bridge replacement activities could interrupt recreational activities during a portion of construction; therefore, the bridge replacement is considered a temporary occupancy of the Middle Fork Smith River. The letter also concurred that the proposed improvements would not require a Section 4(f) use of areas designated for recreation by the Forest Service and located within a 0.5-mile radius of the five project sites, including Sandy Beach, Patrick Creek Campground, Patrick Creek Trail, and the Middle Fork Smith River Access Trails, on either a temporary or permanent basis.

No Build (No Action) Alternative

No improvements or widening would occur at any of the seven project locations and there would be no impacts on parks or recreational facilities.

Avoidance, Minimization, and/or Mitigation Measures

There would be no direct impacts on parks or recreational facilities. There are no developed land uses in this area and no long-term measures are necessary.

2.1.2 Growth

2.1.2.1 Regulatory Setting

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

CEQA also requires the analysis of a project's potential to induce growth. CEQA Guidelines, Section 15126.2(d), require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

It is not assumed that growth in an area is fundamentally beneficial, detrimental, or of little significance to the environment. If the analysis determines that a project is growth-inducing, the next question is whether that growth is consistent with an approved general plan or community plan or whether it may cause any adverse effects on the environment, such as conversion of open space to developed uses, increased demand on community and public services and infrastructure, degradation of air and water quality, or degradation or loss of plant and wildlife habitat.

This section provides an analysis of the potential growth-inducement impacts of the proposed project on the area most likely to be affected by the project, which is anticipated to be western Del Norte County and, to a lesser extent, Humboldt County. The proposed project would provide STAA access to the east, connecting US 101 north of Crescent City to the I-5 corridor at Grants Pass.

The analysis of the proposed project's potential to influence growth is based on the growth-inducement analysis prepared for this project and documented in the Community Impact Assessment technical report (Trott 2010).

2.1.2.2 Affected Environment

A transportation improvement, such as the proposed project, would be considered growth-inducing if it would cause economic or population increases greater than what is planned by the local agency without the project. If the improvement would cause new development and an influx of residents, as well as an increase to the economic strength in an area, it may be growth-inducing.

Overview of Regional Economy

The economy of Del Norte County has long been shaped by its location and wealth of natural resources. Located roughly halfway between the major urban centers of San Francisco and Portland, Oregon, Del Norte County is more than 300 miles and a 6-hour drive from either city. Major roadway access to the county is limited to US 101 (north and south) and US 199 (east and west), which are windy and slow in places. That said, Del Norte County's natural resources, including its timber, coastal fishery, and recreational resources, have long contributed to the county's economy. Similar to other counties along the North Coast, logging and commercial fishing were the primary economic activities throughout much of the last century. Consistent with regional trends, both of these sectors have declined over the past 35 years because of several factors, resulting in substantial job losses in both sectors.

The combination of declines in timber harvesting, lumber production, and commercial fishing resulted in impacts on other sectors of Del Norte County's economy. For example, during the mid-1980s, 164 businesses in the region failed. These negative economic trends led to high unemployment, low incomes, and high poverty rates. By the late 1980s, unemployment in the county had reached 20%.

The Del Norte County economy received a major boost in 1989 when Pelican Bay State Prison opened north of Crescent City (it was later annexed to Crescent City). The prison currently employs a staff of 1,548, including 1,056 custody staff and 492 support staff (California Department of Corrections and Rehabilitation 2008), and accounts for about 18% of the county's employment (Del Norte County Board of Supervisors 2006).

Although wood-product manufacturing, timber harvesting, and commercial fishing remain important parts of Del Norte County's economy, the county has been transitioning from a resource production–based economy to a more diverse economy based on niche agricultural production and travel and tourism. Tourism has become an increasingly important part of Del Norte County's economy. The county has a number of visitor attractions, including several state and national parks, wilderness areas, and coastal-access areas. Tourism creates more jobs than any other private-sector industry in the county (Del Norte County Board of Supervisors 2006).

From a retail and services perspective, Del Norte County's economic center is the Crescent City area, which is where much of the county's population resides and where all of the significant retailers are located, including Wal-Mart, Ace Hardware, and Home Depot stores. To the south and east, the county is effectively isolated from other population centers and retail outlets by distance and large areas of forest and parkland. For example, the population concentrations around Eureka and Arcata in Humboldt County are 75 miles or more to the south on US 101, which is a two-lane highway for much of that distance, resulting in longer driving times than would be indicated by the distance alone. The Eureka area has a much broader range of retail outlets than Del Norte County, including a relatively new Target, two Kmart stores, a WinCo, automobile dealerships, and a small, enclosed mall.

Population

Del Norte County is the northernmost coastal county in California, bordered on the south and east by Humboldt and Siskiyou Counties, respectively; on the north by Oregon's Curry County;

and on the west by 37 miles of Pacific Ocean coastline. The county is mostly rural, with a population density of 29.2 persons per square mile. Excluding the population in group quarters (e.g., Pelican Bay State Prison), the county's population density is 25.3 persons per square mile, compared to a statewide population density of 217.2 persons per square mile.

With an estimated 2008 population of 29,419, Del Norte County is California's 11th-least-populous county. Much of Del Norte County's population lives in the Crescent City area and other communities along the US 101 corridor, which traverses the county north–south near the coastline.

Population growth in Del Norte County has been slow to moderate over recent decades. Between 1990 and 2008, the county grew by about 6,000 persons, or about 25% (Table 2.1.2-1). By comparison, the statewide population increased 28% over the same period. Although this comparison suggests a reasonably healthy growth rate within Del Norte County over the past 18 years, much of the county's growth during this period is attributable to the construction and operation of Pelican Bay State Prison.

Factors Influencing Growth and Development Trends in the Region

Growth rates and patterns are influenced by various local, regional, state, and national forces that reflect ongoing social, economic, physical, and technological changes. Although the county's growth rate has been relatively slow, it has experienced growth related to an influx of retirees, drawn by the county's beauty and outdoor recreational opportunities and by its relatively moderately priced real estate (Sierra Institute for Community and Environment 2006). With California's aging population, this trend is expected to continue in the future.

Ultimately, the amount and location of population growth and economic development that occurs is controlled to a large extent by local and county governments through zoning in Del Norte and Humboldt Counties. Transportation infrastructure is one component of the overall infrastructure that serves to accommodate planned growth in the region.

The primary intent of the proposed project is to make improvements to the proposed STAA route on SR 197 and US 199 in Del Norte County so that the route can be classified as part of the STAA network of truck routes, removing the remaining trucking restrictions in the county. A secondary purpose is to enhance safety on the route for nonmotorized traffic and automobiles, trucks, and other large vehicles using the route. The proposed improvements are consistent with local plans and policies. Del Norte County's adopted comprehensive economic development strategy (Del Norte County Board of Supervisors 2006) calls for improvements to SR 197 and US 199 as part of achieving the goal of making critical improvements to infrastructure. Improvements to accommodate STAA trucks on SR 197 and US 199 are also part of the adopted RTIP (Del Norte Transportation Commission 2008). Finally, the proposed project is consistent with Policy 8.A.3 of the *Del Norte County General Plan*, which calls for Del Norte County to "actively encourage Caltrans and the Regional Transportation Planning Agency to develop facilities for improved access into the county via Highway 101 and 199" in support of the goal to "ensure the safe and efficient movement of people and goods" (Mintier & Associates et al. 2003).

Table 2.1.2-1. Existing and Projected Populations of Crescent City, Del Norte County, and California

Area	1990 Census Population	2000 Census		2008 Estimated		2030 Projected		2050 Projected	
		Population	Change 1990–2000	Population	Change 2000–2008	Population	Change 2008–2030	Population	Change 2030–2050
Crescent City	4,380	7,397[a]	68.9%	7,683[b]	3.9%	NA	NA	NA	NA
Rest of county	19,080	20,112	5.4%	21,736	8.1%	NA	NA	NA	NA
Del Norte County	23,460	27,507[a]	17.3%	29,419[b]	7.0%	42,420	44.2%	56,220	32.5%
California	29,758,200	33,873,100	13.8%	38,049,500	12.3%	49,240,900	29.4%	59,507,900	20.9%

Sources: California Department of Finance 2007, 2008.

Notes:

NA = not available.

[a] Includes about 3,300 persons who were incarcerated in Pelican Bay State Prison in 2000. Excluding these persons, in 2000, Crescent City's population would have been about 4,100, and Del Norte County's population would have been about 24,200.

[b] Includes about 3,460 persons who were incarcerated in Pelican Bay State Prison in 2008. Excluding these persons, in 2008, Crescent City's population would have been about 4,220, and Del Norte County's population would have been about 25,960.

Given that the primary purpose of the proposed project is to remove remaining trucking restrictions in Del Norte County, an anticipated outcome of the of the project is that it will promote and encourage economic growth by providing a more efficient, less costly way to move goods and people into and out of the county. From an economic development perspective, the need and desire for improved STAA truck access for North Coast counties are not only identified in the local plans and policies mentioned previously, but also are documented in several reports. For example, an assessment of where to direct transportation investments to stimulate economic development in areas of California with high poverty and unemployment (Cambridge Systematics 2003) reached the following conclusions regarding STAA truck-access issues in Humboldt County, and these findings, discussed in more detail under "Economic Impacts," would also apply to Del Norte County, as discussed in the parenthetical note following each bulleted conclusion: The trucking industry is shifting primarily to STAA trucks, and most of the big trucking companies do not have equipment that can operate on roads into Humboldt County. (Note: This is also true for STAA trucks attempting to enter Del Norte County from the south and east because STAA trucks currently are not allowed on US 101 from the south and US 199 from the east).

- The use of non-STAA (shorter) trucks requires businesses to incur extra costs associated with transferring goods between non-STAA trucks and STAA trucks. In addition, many businesses must maintain higher inventories because of port access, erratic deliveries, and damage during transfers. (Note: According to a study of the economic effects of limited STAA access to the North Coast region from the south [Gallo 2008], these effects apply to some businesses in both Humboldt and Del Norte counties. Effects on businesses in Del Norte County are discussed under "Economic Impacts.")
- The cost of trucking is an issue not only for manufacturing, but also for local residents in the way that it affects the cost of living. Some local residents view transportation costs as an additional tax on businesses and consumers. Local economic development planners estimate that Humboldt County businesses and residents pay about 10% to 15% more for goods as a result of poor truck access. (Note: Because Del Norte County has similar limitations on STAA truck access, transportation-related effects on prices for Del Norte County residents and businesses would be similar to those faced by Humboldt County residents and businesses. This issue is discussed in more detail under "Economic Impacts.")

The Del Norte Local Transportation Commission (2007) conducted a similar study about STAA route status for the SR 197–US 199 corridor. The commission stated that:

> Creating a viable trade corridor in Del Norte County will have qualitative as well as quantitative benefits for county residents. Improved transportation will lead to more and better-paying jobs, increased retail opportunities, and lower cost of goods. An improved economic situation will, in turn, increase the county's tax base, resulting in better schools and services.

In addition, according to a Department (2006) STAA vehicle accessibility study of SR 197 and US 199 in Del Norte County:

> [l]ocal businesses that haul extra-legal loads have complained that these restrictions greatly increase their costs, and threaten their economic viability. … Reclassification of Route 199 to a STAA route, after widening and geometric improvements have been made, will alter the

> economic landscape in Del Norte County and beyond by allowing more goods to enter and depart at a reduced cost per unit. Reducing the restrictions on extra-legal loads for Route 199 will allow haulers to traverse the entire route without having to set up traffic control in the Narrows.

As these studies and reports clearly suggest, providing STAA access to Del Norte County is anticipated to improve economic conditions within the county, thereby fostering economic growth that could lead to population and housing growth. By making improvements to achieve STAA status for the SR 197–US 199 corridor, the proposed project could induce growth by reducing the transportation costs for hauling goods into and out of Del Norte County, thereby providing a benefit to businesses.

The expansion of existing businesses or creation of new businesses in the region would generate new employment opportunities, potentially drawing new residents to the area, resulting in population and housing growth. This growth would represent a growth-inducement effect of the proposed project; however, the potential for this growth is limited by a number of factors. The inaccessibility of the North Coast region to longer trucks is not the only existing constraint on business development in the region. Economic activity and subsequent growth in Del Norte and Humboldt Counties would still be limited to some extent by distance to markets, with or without the proposed project.

In addition to a lack of direct access to the interstate-highway system, some other constraints on growth in Del Norte County may also include the distance from major population centers, the lack of a completed four-lane highway running north–south or east–west, limited air transportation service, unreliable and inadequate rail service, a shortage of labor in some occupations, lack of diversity of tourist attractions and visitor activities, and a perception of the area by outsiders as remote.

The potential for development specifically within the project corridor along SR 197 and US 199 is limited by the steepness of the terrain within the Smith River Canyon, groundwater limitations within the canyon, and the extent of national forest land.

In addition to these constraints, other self-perpetuating barriers to economic development exist, particularly in Del Norte County. Chief among these are a small consumer market, slow population growth, high unemployment, and relatively low incomes, which limit the county's current and future purchasing power. The proposed project, while allowing for some potential economic benefits to accrue in the area through increasing shipping efficiency, would not remove the other obstacles, which generally act as growth constraints within Del Norte and Humboldt Counties.

In all cases, the question is not whether the proposed project would generate some growth in Del Norte County and potentially in Humboldt County, but whether the amount of growth would be substantial, potentially resulting in disorderly development and population growth that would be inconsistent with the general plans of local agencies that could result in physical environmental changes caused by the economic or social changes. These issues are assessed in the following subsection.

2.1.2.3 Environmental Consequences

Although it is acknowledged that implementation of the proposed project would likely lead to some economic growth in the region, the amount of growth that would be generated is anticipated to be small (as discussed under "Potential to Influence Population and Economic Growth") and would occur gradually because of the other constraints on growth, as discussed above. The proposed project would not create a new or shorter route for hauling goods into and out of Del Norte County because truckers driving California Legal trucks are already using the route for hauling goods. Rather, the proposed project would reduce the cost of using the route because haulers who use STAA trucks would no longer need to transfer cargo to shorter trucks before using US 199 or would no longer need to use a longer route to reach Del Norte County. Creating an STAA truck linkage to I-5 would improve Del Norte County's competitive position relative to other regions. As discussed under "Potential to Influence Population and Economic Growth," the removal of STAA restrictions along the SR 197–US 199 corridor would foster a small amount of economic and population growth but would not directly or indirectly encourage unplanned growth or greatly hasten planned growth.

Potential to Influence Population and Economic Growth

An assessment of the potential to influence economic growth was conducted, based largely on a survey of businesses in the region that rely on the roadway system to transport goods into and out of the region. The survey was conducted by Fehr & Peers (2010) for the project's traffic study. As part of this survey, businesses were asked whether creating STAA access along the SR 197–US 199 corridor would likely result in business expansion and employment growth. According to survey responses, about 20% of the 37 surveyed businesses stated they would consider expanding operations and adding employees in the near term directly in response to the proposed improvements. The remaining firms (80%) that responded reported that STAA truck access and lower transportation costs would be unlikely to result in substantial business expansion or the creation of new jobs.

For the businesses that participated in the survey, the results indicate that providing STAA truck access on SR 197 and US 199 could result in the creation, in the near term, of 30 or more jobs in Del Norte County and 43 jobs in Humboldt County—a 0.3% increase in employment in Del Norte County and 0.1% increase in Humboldt County compared to existing employment levels. (An additional 18 jobs are anticipated to be added in Brookings in Curry County, Oregon.) Annual personal income related to this expansion of economic activity could total an estimated $4 million ($1.4 million in Del Norte County and $2.6 million in Humboldt County). The number of jobs that could be indirectly generated in other business throughout the regional economy is not known. The creation of new jobs could draw workers to the two counties, potentially resulting in population and housing growth. Given the region's relatively high unemployment rate, many of the new jobs could be filled by current residents of the local area. The possibility exists, however, that all jobs could be filled by new residents. Table 2.1.2-2 summarizes potential population effects based on the upper-range assumption that all new jobs would be filled by workers migrating to the two-county region.

Table 2.1.2-2. Estimated Employment and Upper-Range Population Growth Generated by the Proposed Project

Job Location	New Jobs[a]	Average Population Per Household[b]	Estimated Population Increase	Percentage Increase over 2008 Population[c]
Del Norte County	30	2.608	78	0.3%
Humboldt County	43	2.349	101	0.1%
Total	**73**	**NA**	**179**	**0.1%[d]**

Notes:
NA = not applicable.
[a] Estimated based on business survey in Fehr & Peers (2010).
[b] Source: California Department of Finance 2009.
[c] Based on estimated populations of 29,420 in Del Norte County and 132,180 in Humboldt County at the beginning of 2008 (California Department of Finance 2009).
[d] Represents the percentage increase in the population of the two-county area from estimated project-related population growth, relative to the 2008 population of the area. As the table indicates, the relative project-related population growth solely within Del Norte County would be higher, at 0.3% of the county's 2008 population.

The estimated upper-range population growth resulting from potential near-term business expansion is 78 for Del Norte County and 101 for Humboldt County. For both counties, the population increase would be less than 0.3% compared to 2008 population levels, and across the two counties the increase would be about 0.1% of the 2008 population. Even if the proposed project generates additional employment in other businesses not included in the survey and induces secondary growth in other parts of the economy, the resulting population growth would be relatively minor in the context of existing populations in the two counties. In the long term (i.e., 20 years), as more trucking and shipping businesses switch to STAA trucks in response to aging fleets and clean air requirements, more growth related to improved STAA access could occur, but that growth would likely be gradual, spread over several years.

According to population projections prepared by the California Department of Finance (2007), Del Norte County's population will grow from 29,420 in 2008 to 42,400 by 2030. In Humboldt County, the population is projected to grow from 132,180 in 2008 to 142,220 in 2030. On a percentage basis, the population growth generated by the project would represent only 0.6% of the projected growth in Del Norte County and about 1.0% of the projected growth in Humboldt County. Therefore, project-related growth is well within the growth levels anticipated to occur in the two counties over the next 20 years. Additionally, construction and operation of the proposed project alone, while potentially lifting one constraint to economic growth by reducing transportation costs, would not be likely to be a major factor for many new businesses selecting Del Norte County or Humboldt County as a place of business given comparable choices of locations in other areas. Economic activity and subsequent growth in Del Norte and Humboldt Counties will continue to face challenges in the form of distance to markets and small local market areas, with or without the proposed project. Future growth in the area will be influenced predominately by land and housing costs, zoning, public sentiment, and political climate.

Any expansion of existing industry within the area or entry of new businesses to the area that may be induced by the proposed project will remain subject to land use controls dictated by the natural and political environment. County and local governments will continue to use local plans and regulations to encourage or discourage growth in their communities as they see appropriate. For example, according to Policy 3.A.4 of the *Del Norte County General Plan*, "[t]he county

shall concentrate most new growth within existing communities, emphasizing infill development, intensified use of existing development, and expanded services." Under this policy, any new growth generated by the proposed project would be concentrated in established communities, such as Crescent City, under existing community plans, limiting the potential for adverse environmental impacts to result from the growth. Any changes to these local land use and growth plans or regulations would involve substantial public review and input. Removal of STAA access restrictions on the SR 197–US 199 corridor has been called for by all relevant local planning documents. Therefore, the proposed project is not expected to influence or alter planned development patterns in the study area, and no substantially adverse growth-related indirect effects are expected.

In conclusion, the removal of STAA restrictions along the SR 197–US 199 corridor would foster a small amount of economic and population growth but would not directly or indirectly encourage unplanned growth or greatly hasten planned growth. The proposed project would reduce transportation costs and improve safety for both commercial and local traffic, but no direct changes in land use would result from the proposed project. Therefore, the proposed project, on its own, is not expected to result in substantially adverse impacts as a result of induced growth in Del Norte County or Humboldt County.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no construction, and therefore no economic and/or population growth leading to growth-inducing activities.

2.1.2.4 Avoidance, Minimization, and/or Mitigation Measures

No long-term measures are necessary because the proposed project, on its own, is not expected to result in substantially adverse impacts as a result of induced growth in Del Norte County or Humboldt County.

2.1.3 Community Impacts

The community impacts section includes analysis of community character and cohesion, relocations, and Environmental Justice.

2.1.3.1 Community Character and Cohesion

Regulatory Setting

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

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

Affected Environment

This section describes the demographic characteristics of Del Norte County and the communities that may be affected by the proposed project, including Crescent City, Hiouchi, and Gasquet/Patrick Creek. It should be noted that no tribal reservations or rancherias are located along the SR 197–US 199 corridor or near the proposed project improvements. (The nearest tribal community is the Elk Valley Rancheria, located east of Crescent City.) As a result, the proposed project is not anticipated to affect tribal communities. Therefore, no demographic data is presented for tribal communities.

Del Norte County Demographic Characteristics

Del Norte County is the northernmost coastal county in California, bordered on the south and east by Humboldt and Siskiyou Counties, respectively; on the north by Oregon's Curry County; and on the west by 37 miles of Pacific Ocean coastline. The county is mostly rural, with a population density of 29.2 persons per square mile. Excluding the population in group quarters (e.g., Pelican Bay State Prison), the county's population density is 25.3 persons per square mile, compared to a statewide population density of 217.2 persons per square mile.

With an estimated 2008 population of 29,419, Del Norte County is California's 11th least-populous county. Much of Del Norte County's population lives in the Crescent City area and other communities along the US 101 corridor, which traverses the county north-south near the coastline.

Growth in Del Norte County has been moderate over recent decades. Between 1990 and 2008, the county grew by about 6,000 persons, or about 25% (Table 2.1.3-1). By comparison, the statewide population increased 28% over the same period. Although this comparison suggests a reasonably healthy growth rate within Del Norte County over the past 18 years, much of the county's growth during this period is attributable to the construction and operation of Pelican Bay State Prison. Excluding the Pelican Bay State Prison inmate population, Del Norte County's population increased by about 2,500 persons between 1990 and 2008, or 11%. This increase represents an average annual growth rate of 0.6% since 1990, a rate that is about half the 1.5% statewide growth rate.

According to population projections prepared by the California Department of Finance (2007), Del Norte County's population will grow to 42,420 by 2030, representing an increase of 44% over the county's 2008 population. The 2.0% average annual growth rate suggested by this projection exceeds the 1.3% rate projected for California over the same time period (Table 2.1.3-1). According to Policy 3.A.4 of the *Del Norte County General Plan*, "[t]he county shall concentrate most new growth within existing communities emphasizing infill development, intensified use of existing development, and expanded services."

Table 2.1.3-1. Existing and Projected Populations of Crescent City, Del Norte County, and California

Area	1990 Census Population	2000 Census		2008 Estimated		2030 Projected		2050 Projected	
		Population	Change 1990–2000	Population	Change 2000–2008	Population	Change 2008–2030	Population	Change 2030–2050
Crescent City	4,380	7,397a	68.9%	7,683b	3.9%	NA	NA	NA	NA
Rest of county	19,080	20,112	5.4%	21,736	8.1%	NA	NA	NA	NA
Del Norte County	23,460	27,507a	17.3%	29,419b	7.0%	42,420	44.2%	56,220	32.5%
California	29,758,200	33,873,100	13.8%	38,049,500	12.3%	49,240,900	29.4%	59,507,900	20.9%

Sources: California Department of Finance 2007, 2008.

Notes:

NA = not available.

[a] Includes about 3,300 persons who were incarcerated in Pelican Bay State Prison in 2000. Excluding these persons, in 2000, Crescent City's population would have been about 4,100 and Del Norte County's population would have been about 24,200.

[b] Includes about 3,460 persons who were incarcerated in Pelican Bay State Prison in 2008. Excluding these persons, in 2008, Crescent City's population would have been about 4,220 and Del Norte County's population would have been about 25,960.

The median age of Del Norte County's population was 36.4, compared with 33.3 statewide, in 2000 (Table 2.1.3-2). Over the 2005–2007 period, residents 65 years old or more accounted for 13.6% of the county's population, which exceeded the 10.8% of residents statewide (U.S. Census Bureau 2008). Retirees who have moved into the county in recent years often benefit the regional economy by bringing with them non-local sources of income, such as transfer payments and retirement income. These residents often tend to identify more with environmental conservation values than with the utilitarian values associated with the county's traditional resource extraction and management activities (Sierra Institute for Community and Environment 2006).

Compared with the statewide population, Del Norte County's population is less ethnically diverse, with a higher percentage of white persons and a much lower percentage of persons of Hispanic descent. Almost 80% of the county's 2000 population was white, compared to about 60% in the state. Conversely, only about 14% of the county's population was Hispanic in 2000, substantially lower than the 32% share of the statewide population. In general, ethnic minorities represent smaller proportions of the population relative to their proportions in the statewide population. The lone exception is Del Norte County's American Indian/Alaska Native population, which represents more than 6% of the county's population, compared to 1% statewide.

Income in Del Norte County is substantially lower than elsewhere in California. According to the 2000 U.S. Census, income per capita in Del Norte County was $14,570, compared to $22,710 statewide (Table 2.1.3-2). In 2006, the county ranked 55th out of California's 57 counties in personal income per capita, at $22,640 (U.S. Bureau of Economic Analysis 2008). Not only does Del Norte County experience lower income levels, but it also lags the state in recent growth of income per capita. Between 1999 and 2006, nominal personal income per capita in California increased by 74%, while income grew by 55% in Del Norte County.

Table 2.1.3-2. Demographic Characteristics of Study Area Communities, Del Norte County, and California in 2000

Characteristic	Hiouchi Area[a]	Gasquet Area[b]	Crescent City[c]	Del Norte County	California
Population	852	870	7,397	27,507	33,871,648
Median age	47.2	40.0	32.1	36.4	33.3
Race					
White	93.0%	86.7%	78.5%	78.9%	59.5%
Black	0.0%	0.5%	0.8%	4.3%	6.7%
Asian	0.0%	0.5%	4.8%	2.3%	10.9%
American Indian or Alaska native	3.3%	3.3%	6.8%	6.4%	1.0%
Some other race alone	1.4%	2.2%	4.3%	3.9%	17.1%
Two or more races	2.3%	6.8%	4.8%	4.1%	4.7%
Hispanic (of any race)	3.3%	4.3%	9.0%	13.9%	32.4%
Average household size (persons per household)	2.28	2.31	2.40	2.58	2.87
Housing					
Total housing units	459	450	1,754	10,434	12,214,549
Vacant housing units	18.5%	20.4%	10.0%	12.1%	5.8%
Owner-occupied housing units	82.1%	67.9%	32.8%	63.8%	56.9%
Renter-occupied housing units	17.9%	32.1%	67.2%	36.2%	43.1%
Median value of owner-occupied units	$213,300	$123,100	$87,600	$121,100	$211,500
Median gross rent	$533	$522	$434	$519	$747
Civilian labor force	NA	NA	1,398	10,029	15,829,202
Percent unemployed	NA	NA	6.5%	4.9%	4.3%
Income					
Median household income (1999)	$36,250	$22,315	$20,133	$29,642	$47,493
Income per capita (1999)	$24,564	$12,407	$12,833	$14,573	$22,711
Percent below the poverty level	12.5%	27.7%	34.6%	20.2%	14.2%

Source: U.S. Census Bureau 2002.

Notes:

NA = not available.

[a] Represents data for Census Tract 2.02, Block Group 4, which encompasses a large area that includes Hiouchi.

[b] Represents data for Census Tract 2.02, Block Group 3, which encompasses a large area that includes Gasquet and Patrick Creek.

[c] The population for Crescent City includes those residing in group quarters, including those incarcerated in Pelican Bay State Prison; demographic data excludes the characteristics of those residents.

In terms of median household income, Del Norte County also lags behind statewide income levels. Del Norte County's median household income was 38% lower than the statewide level during the 2000 U.S. Census. By 2007, Del Norte County's median household income had increased to $37,400, but was still 38% lower than California's $59,950 median household income (City-Data.com 2008).

Related to Del Norte County's relatively low income levels, the county has a higher poverty rate than California as a whole. During the 2000 U.S. Census, 20.2% of the county's residents were living below the federal poverty limit, which is substantially higher than the 14.2% rate statewide. By 2007, Del Norte County's poverty rate had improved slightly to 19.1%, but it was still much higher than the statewide rate of 13.0% (U.S. Census Bureau 2008).

At the beginning of 2008, Del Norte County's housing stock totaled an estimated 11,100 housing units, including 6,758 single-family units (61%), 1,383 multifamily units (12%), and 2,959 mobile homes (27%). The growth of the county's housing stock has been relatively slow since 2000, increasing by about 670 units over the past 8 years, about 83 units per year. An estimated 12.1% of the county's housing units were vacant in 2008, a relatively high rate that may reflect a large number of seasonal housing units within the county (California Department of Finance 2008). This vacancy rate is virtually the same as the 12.1% rate found during the 2000 U.S. Census (Table 2.1.3-2). At that time, about 45% of the county's vacant housing units were being used for seasonal, recreational, or occasional use.

Crescent City Demographic Characteristics

Crescent City is Del Norte County's largest community and only incorporated city. As such, Crescent City is the county's business, services, and government center. The city is located along US 101, about 12 miles southwest of the nearest project site (Ruby 2).

Population growth within Crescent City has been flat or declining in recent years. The city's non-prison population stood at 4,380 in 1990, but declined to 4,100 in 2000 before rising to 4,220 in 2008 (Table 2.1.3-2). Compared to the rest of Del Norte County, Crescent City's population is relatively young. According to the 2000 U.S. Census, residents of Crescent City averaged 32.1 years of age, compared to 36.4 years countywide.

Including about 3,460 inmates incarcerated in Pelican Bay State Prison, which is within the city limits, Crescent City's population stood at an estimated 7,683 at the beginning of 2008 (California Department of Finance 2008). In addition to the population residing within the city limits, a relatively large population resides immediately north and east of Crescent City that is functionally part of Crescent City. The estimated population of the larger Crescent City area is 17,200, excluding the prison population (LSC Transportation Consultants 2008). This population represents two-thirds of Del Norte County's non-prison population.

The population of Crescent City, excluding the prison population, is projected to increase to about 7,480 by the end of the city's 2020 general plan timeframe (J. Laurence Mintier & Associates et al. 2001). This increase would represent an average annual growth rate of 6.4%, which is much higher than the growth that has occurred over recent decades. According to the *Crescent City General Plan*, Crescent City has a very limited land supply. Future growth will need to be accommodated by promoting infill of vacant and underutilized lots, intensifying or reusing land, and annexing county land (J. Laurence Mintier & Associates et al. 2001).

The ethnic characteristics of Crescent City are similar to Del Norte County, with whites accounting for nearly 79% of the population. Except Hispanics and American Indians/Alaska Natives, who make up 9% and 7% of the population, respectively, no ethnic minority group accounts for more than 5% of Crescent City's population.

In general, incomes of Crescent City residents are low, even compared to Del Norte County as a whole. During the 2000 U.S. Census, Crescent City had a median household income of $20,130, 32% lower than median income countywide and 58% lower than median income in California (Table 2.1.3-2). Crescent City's income per capita of $12,800 also was substantially lower than incomes per capita in Del Norte County ($14,600) and California ($22,700). By 2007, Crescent

City's median household income had increased to an estimated $25,100, but it still lagged substantially behind the estimated median income in Del Norte County ($37,400) and California ($59,950) (City-Data.com 2008). In 2000, the poverty level in Crescent City—34.6%—was substantially higher than the countywide rate of 20.2%. Current poverty statistics are unavailable for Crescent City, but given the city's low income levels, it is reasonable to assume that the city's poverty rate exceeds the current estimated 19.1% rate countywide.

In 2008, Crescent City had an estimated housing stock of 1,845 housing units, including 994 single-family units (54%), 817 multifamily units (44%), and 34 mobile homes (2%) (California Department of Finance 2008). The city's housing stock has increased by only 91 units since 2000. Unlike the rest of Del Norte County, Crescent City's housing stock is largely composed of rental housing, with two-thirds of the city's housing units occupied by renters in 2000. Less than one-third of the city's housing units were owner-occupied in 2000, an ownership rate about 50% lower than throughout the county. Crescent City had a housing vacancy rate estimated at about 10% at the beginning of 2008, slightly lower than the countywide rate of 12% (California Department of Finance 2008). Housing costs in Crescent City are relatively low. In 2000, the median value of an owner-occupied home in Crescent City was $87,600, compared to $121,100 countywide and $211,500 in California (Table 2.1.3-2).

Communities along the Proposed Truck Route Demographic Characteristics

Communities along the proposed truck route include Hiouchi and Gasquet, both northeast of Crescent City along the US 199 portion of the proposed project. Patrick Creek, situated farther along this route traveling northeast, is generally not considered a community separate from Gasquet, but is home to the private Patrick Creek Lodge and the Forest Service's Patrick Creek Campground. Hiouchi and Gasquet are both unincorporated. Therefore, the demographics presented for these communities are based on 2000 U.S. Census data available for larger areas (census block groups) in which the communities are located.

Hiouchi. Hiouchi is a rural-residential community situated along visitor-serving US 199 in a river valley about 12 miles northeast of Crescent City. The unincorporated community is adjacent to Jedediah Smith Redwoods State Park in a bend of the Middle Fork Smith River, a designated Wild and Scenic River. The boundary of the Smith River NRA is immediately east of Hiouchi. Visitor and traveler services available in Hiouchi include a combination service station/grocery store/deli/storage facility, a café, a motel, and a recreational-vehicle park. A Redwood National and State Parks information center is also located in Hiouchi.

Hiouchi is located in Census Tract 2.02, Block Group 4 (Figure 2.1.3-1), an area that encompasses the community and a much larger area in south-central Del Norte County. The population and demographic information presented below generally includes data for this larger area.

According to the 2000 U.S. Census, the Hiouchi area had a population of 852 in 2000, representing 3% of Del Norte County's population. The area's 2008 population has been estimated at 915 (LSC Transportation Consultants 2008), but this estimate assumes that the population of the Hiouchi area has increased at the same rate as the countywide population (7.4%), as estimated by the California Department of Finance. According to another source, Hiouchi reportedly has a population of about 750 (National Park Service n.d.).

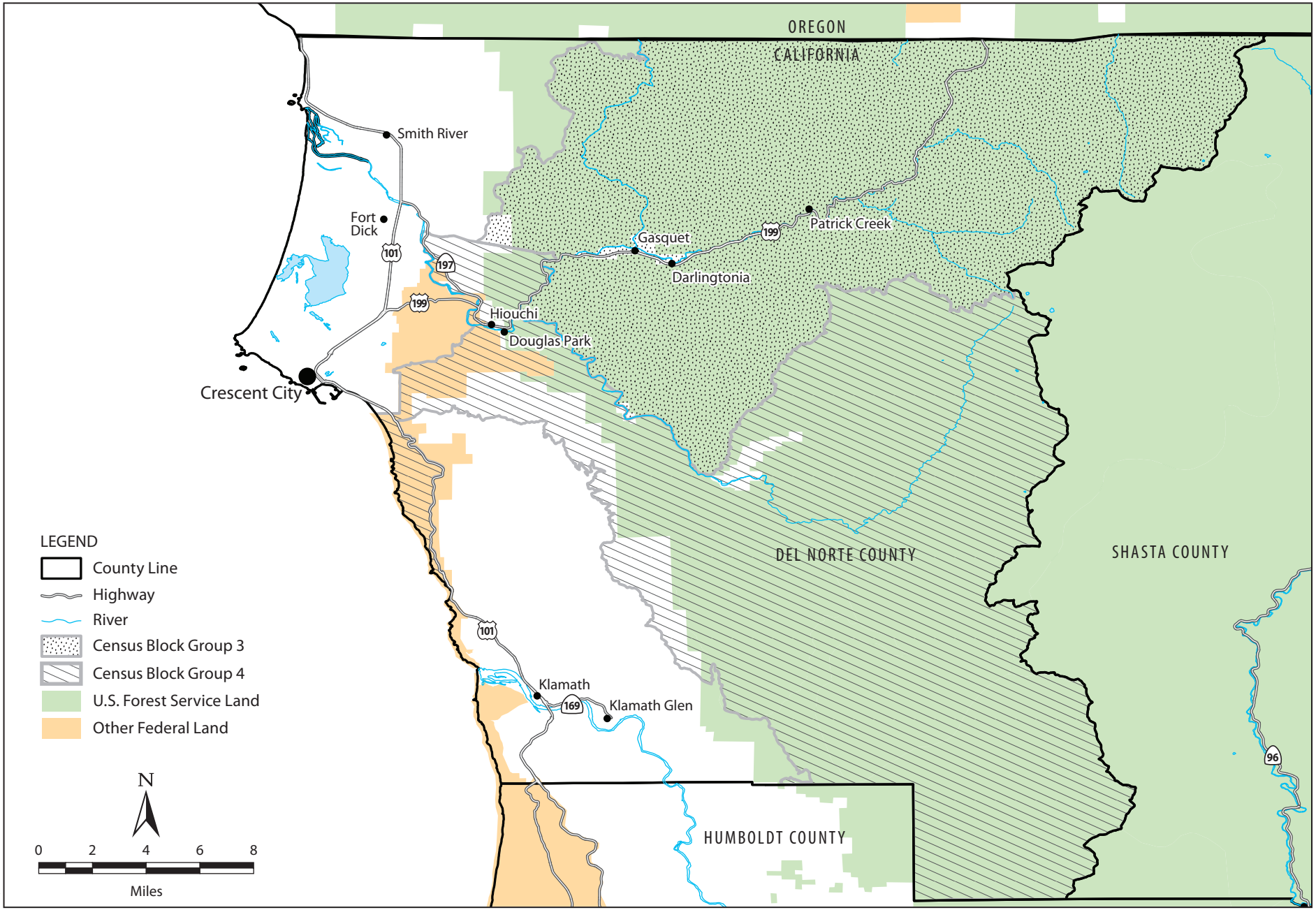

Figure 2.1.3-1
Census Block Groups 3 and 4,
Census Tract 2.02, Del Norte County

The median age of Hiouchi's population is 47.2 years, which is much older than the median age of the countywide population (36.4 years) and statewide population (33.3 years) (Table 2.1.3-2). This suggests a large retirement-age population residing in the Hiouchi area. Population statistics showing that almost 20% of the area's population is 65 years old or more, compared to 12% countywide, supports this conclusion (LSC Transportation Consultants 2008).

Hiouchi area is much less ethnically diverse than Del Norte County and California. Whites make up 93% of the Hiouchi area's population, compared to 79% countywide and 60% statewide. The only ethnic groups of any notable size include American Indian/Alaskan Natives and Hispanics, both slightly more than 3% of the Hiouchi area's population. The relative size of these ethnic groups in the Hiouchi area's population is still much smaller than within Del Norte County or California.

In the Hiouchi area, the household incomes and incomes per capita are higher than elsewhere in Del Norte County. In 1999, Hiouchi's median household income was $36,250, 22% higher than countywide median income, but 24% lower than statewide median income (Table 2.1.3-2). Income per capita in Hiouchi, however, was higher than in both Del Norte and California in 1999. The Hiouchi area's relatively high income levels have resulted in lower poverty rates among its residents. During the 2000 U.S. Census, only 12.5% of Hiouchi area residents were living below the federal poverty threshold, compared to 20.2% countywide and 14.2% statewide (Table 2.1.3-2).

In 2000, more than 82% of the Hiouchi area's occupied housing was occupied by owners, suggesting a stable community with relatively few renters. The median value of the area's owner-occupied housing ($213,300) was substantially higher than in Del Norte County as a whole ($121,100) and exceeded the median value statewide ($211,500) (Table 2.1.3-2).

Although 2000 U.S. Census data indicates that the Hiouchi area offers relatively few rental housing units, the area had a relatively high vacancy rate (18.5%) in 2000, almost twice as high as the countywide vacancy rate, likely because the area has a large number of seasonal or recreational housing units. According to the 2000 U.S. Census, 10.4% of the Hiouchi area's housing units were used for seasonal or recreational purposes in 2000.

Gasquet. Gasquet is an unincorporated rural community located on US 199, 18 miles northeast of Crescent City and 22 miles southwest of the Oregon border. The community is situated at the confluence of the North Fork Smith River and Middle Fork Smith River and is within the Smith River NRA, administered by the Six Rivers National Forest. The visitor center and headquarters of the recreation area are located in Gasquet. Gasquet is predominantly a residential community in a mountain-like setting, with homes located on both sides of US 199. It provides a small number of commercial and retail services, including a market, café, motel, ice-cream stand, and craft shop. The community also includes a church, elementary school (K–5), volunteer fire department, post office, American Legion hall, forest ranger station, and community council. A small airstrip for private aircraft is also available nearby. Like Hiouchi, 6 miles to the southwest, the Gasquet area is popular with recreationists, offering visitors opportunities for birdwatching, swimming, hiking, camping, rafting, kayaking, and world-class salmon and steelhead fishing. Gasquet is also home to the popular Gasquet Raft Races, held in the peak of summer each year.

Gasquet is located in Census Tract 2.02, Block Group 3 (Figure 2.1.3-1), an area that encompasses Gasquet and Patrick Creek, as well as a much larger area in north-central Del Norte County. The population and demographic information presented below generally represents this larger area.

In 2000, the population of the Gasquet area, which includes the larger area within Census Tract 2.02, Block Group 3, stood at 870 (Table 2.1.3-2). Within the smaller ZIP code area that encompasses Gasquet, the population was 514 in 2000. The area's 2008 population has been estimated at 934 (LSC Transportation Consultants 2008), but this estimate assumes that the population of the Gasquet area has increased at the same rate as the countywide population (7.4%), as estimated by the California Department of Finance. According to another source (Fizber.com 2008), the community of Gasquet alone reportedly has a current population of about 515. The average age of Gasquet area residents was 40.0 years in 2000, slightly older than Del Norte County (36.4 years), but substantially younger than in the Hiouchi area (47.2 years). About 13% of Gasquet-area residents were 65 years old or more in 2000, about the same as countywide.

The ethnicity of the Gasquet area's population is similar to that of Hiouchi, characterized predominantly by whites. About 87% of the Gasquet area's population was white in 2000. Compared to the ethnicity of Del Norte County as a whole, the Gasquet area is less diverse, with no individual ethnic group accounting for more than 5% of the population. The largest ethnic group, Hispanics, accounts for about 4% of the Gasquet area's population, compared to 13.9% countywide.

From an income perspective, the Gasquet area is more similar to Crescent City than to Hiouchi. The area's median household income of $22,300 during the 2000 U.S. Census was about the same as in Crescent City ($20,100), but about 38% lower than in Hiouchi. The Gasquet area's median household income was 53% lower than the statewide level. Income-per-capita patterns are similar, with income per capita in the Gasquet area similar to that in Crescent City but lower than in Hiouchi, Del Norte County, and California. During the 2000 U.S. Census, nearly 28% of the Gasquet area's population lived below the federal poverty level (Table 2.1.3-2). This poverty rate is much higher than in Hiouchi (13%) and Del Norte County as a whole (20%), but lower than in Crescent City (35%).

The housing characteristics of the Gasquet area are similar to those throughout Del Norte County, with about two-thirds of the area's housing occupied by homeowners and about one-third occupied by renters (Table 2.1.3-2). In Gasquet, housing opportunities are also provided by the Gasquet Mobile Home Park, with 58 lots. Of the Gasquet area's 450 housing units, about 20% were vacant in 2000, indicating a relatively high vacancy rate, but about half of those vacant units may have been seasonal or recreational units, according to 2000 U.S. Census data. In 2000, the median value of an owner-occupied housing unit was $123,100, about the same as countywide, but substantially lower than in the Hiouchi area ($213,300).

Labor Force and Employment

An overview of the regional and local economy is presented in Section 2.1.2 "Growth." Growth of Del Norte County's labor force has been slow, mirroring the growth rate of the county's population. Del Norte County's civilian labor force grew from 9,700 in 1990 to 11,670 in 2008,

an increase of fewer than 2,000 over 18 years, or an average annual growth rate of just over 1.0%. According to local-level labor force estimates prepared by the California Employment Development Department (2009a), about 40% of the county's labor force resides in the Crescent City area, which includes the City of Crescent City, the Crescent City North Census Data Place, and the Bertsch-Oceanview Census Data Place. No local-level estimates are available for other areas of the county.

Considering the long-term decline in natural resource–related industries along the North Coast and Del Norte County's reliance on seasonal tourism and recreation, it is not surprising that Del Norte County and Crescent City suffer from chronically high unemployment. Unemployment in the county has been higher than throughout California in each of the last 18 years, although the difference in unemployment rates has narrowed in recent years. In 2008, unemployment in Del Norte County averaged 8.9%, compared to 7.2% in California. By the end of 2008, unemployment in the county had reached 10.2%, still higher than the statewide rate of 9.1%. Unemployment in Crescent City, which is typically higher than elsewhere in Del Norte County, reached an estimated 12.7% in December 2008 (California Employment Development Department 2009a).

Growth in employment within industries in Del Norte County has also been slow in recent years, especially since the late 1990s. For example, between 1996 and 2003 employment actually declined by 50 jobs, falling from 7,780 to 7,730. Employment has rebounded slightly since 2003, reaching 8,630 jobs in 2008. Even with this growth, however, annual employment growth in Del Norte County has averaged only 1.3% since 1990.

Government, including Pelican Bay State Prison, is by far Del Norte County's largest employment sector, accounting for 3,940 jobs, or 46% of employment within the county, in 2008. The prison alone accounted for 18% of total employment in the county. Besides government, key employment sectors include trade, transportation, and utilities (1,290 jobs, 15% of total county employment), educational and health services (1,170 jobs, 14%), and leisure and hospitality services (870 jobs, 10%).

Major employers in Del Norte County are listed in Table 2.1.3-3. As discussed previously, Pelican Bay State Prison is by far the county's largest employer, with 1,548 employees. In addition to the prison's contribution to employment in the county, this list emphasizes the importance of government to the county's economy; 15 of the county's 25 largest employers are in the local, state, and federal government sectors, including schools, county government service providers, parks, and the Yurok Tribe. Healthcare providers are key employers in the Crescent City area, and casinos are key employers in the Crescent City and Smith River areas. Major retail employers, including Wal-Mart, Home Depot, Safeway, and Ray's Food Place, are grouped in the greater Crescent City area. Building-material producer Hambro Forest Products is the only manufacturer on the list of major employers. Large agricultural employers include Palmer Westbrook and Itzen Bulb Farm, both in the Smith River area.

Table 2.1.3-3. Major Employers in Del Norte County in 2008

Employer Name	Location	Industry	Employment Size Class
Pelican Bay State Prison	Crescent City	State government: corrections	1,548
Sutter Coast Hospital	Crescent City	Hospitals	250–499
Crescent City Nursing and Rehab	Crescent City	Nursing and convalescent homes	100–249
Del Norte County Social Services	Crescent City	County government: social/human services	100–249
Elk Valley Casino	Crescent City	Casinos	100–249
Lucky 7 Casino	Smith River	Casinos	100–249
Yurok Tribe	Klamath	Indian reservations and tribes	100–249
Hambro Forest Products	Crescent City	Building materials	100–249
Home Depot	Crescent City	Home centers	100–249
Wal-Mart	Crescent City	Department stores	100–249
Ray's Food Place	Crescent City	Grocers: retail	50–99
Safeway	Crescent City	Grocers: retail	50–99
Bess Maxwell Elementary School	Crescent City	Schools	50–99
Community School	Crescent City	Schools	50–99
Crescent Elk Middle School	Crescent City	Schools	50–99
Del Norte County Unified School District	Crescent City	Schools	50–99
Joe Hamilton Elementary School	Crescent City	Schools	50–99
Margaret Keating Elementary School	Crescent City	Schools	50–99
Mary Peacock Elementary School	Crescent City	Schools	50–99
Redwood Elementary School	Crescent City	Schools	50–99
Del Norte High School	Crescent City	Schools	NA
College of the Redwoods	Crescent City	Schools: universities/colleges	50–99
Del Norte County Sheriff's Department	Crescent City	Sheriff	50–99
Redwood National Park	Crescent City	Parks	50–99
Palmer Westbrook	Smith River	Agricultural products	NA
Itzen Bulb Farm	Smith River	Seeds and bulbs: wholesale	NA

Sources: California Employment Development Department 2009b; California Department of Corrections and Rehabilitation 2008.

Environmental Consequences

Population and Employment Effects

Implementation of the proposed project would have no direct impact on population levels or demographic characteristics within the study area. As discussed in the "Growth" (Section 2.1.2) analysis of this document, removal of STAA trucking restrictions on the SR 197–US 199 corridor could indirectly generate a small number of new jobs in the study area as businesses expand operations in response to improved STAA truck access and lower transportation costs. The increase in employment and resulting migration of workers and their families to the study area to fill jobs are anticipated to be gradual and minor in the context of the current and projected future populations of Del Norte County. Section 2.1.2 "Growth" contains a detailed discussion of the potential population and economic growth effects of the proposed project.

Community Cohesion Effects

According to Department guidelines for conducting CIAs (California Department of Transportation 1997), community cohesion is the degree to which residents have a "sense of belonging" to their neighborhood; a level of commitment of the residents to the community; or a strong attachment to neighbors, groups, or institutions, usually because of continued association over time. Communities are often delineated by physical barriers such as major roadways or large open space areas.

Cohesive communities are indicated by specific social characteristics such as long average lengths of residency, home ownership, frequent personal contact, ethnic homogeneity, high levels of community activity, and shared goals. Transportation projects may divide cohesive neighborhoods when the projects act as physical barriers or are perceived as psychological barriers by residents. A transportation project perceived as a physical or psychological barrier may isolate one portion of a homogeneous neighborhood (California Department of Transportation 1997).

Cohesive communities located along the proposed STAA truck route include Hiouchi and Gasquet, both situated along US 199. Although they are small and rural in character, both communities are stable, with home ownership rates higher than elsewhere in the county.

US 199, with existing average daily traffic of 4,675 vehicles, includes 467 heavy trucks, that already pass through these communities, effectively serving as a barrier that separates parts of the communities located on opposite sides of the highway. The proposed project, however, could increase the sense of separation between the portions of the community located north and south of the highway by generating more heavy-truck traffic, potentially discouraging pedestrians, bicycles, and vehicles from crossing the highway.

As discussed in the traffic analysis prepared for the proposed project (Fehr & Peers 2010), the traffic impacts of the proposed improvements under existing conditions are expected to be small, with heavy-truck traffic increasing by an average of 17 one-way truck trips per day and the proportion of total traffic consisting of heavy trucks increasing from 10.0% to 10.3% along the segment of US 199 between SR 197 and Gasquet. Under future (2030) with-project conditions, an additional 92 one-way heavy-truck trips are projected along the STAA route, with the percentage of total average daily trips attributable to heavy-truck traffic increasing slightly, from 10.0% to 11.4%, along US 199 between SR 197 and Gasquet. Additionally, the traffic analysis indicates no substantial adverse impacts on the roadway, transit, bicycle, or pedestrian systems or their operation within the study area. Traffic would generally travel at free-flow speeds on US 199 through Hiouchi and Gasquet. Based on the anticipated small increase in heavy-truck traffic through these communities under with-project conditions, the existing barrier between parts of these communities created by US 199 would not change appreciably.

In conclusion, effects on community cohesion are not expected to be substantial under the proposed project because US 199 already separates existing neighborhoods on both sides of the highway, and the increase in truck traffic through these communities resulting from the project's removal of STAA trucking restrictions would be minor.

Beneficial Permanent Operational Access and Circulation Effects

The permanent effects of the proposed project on existing and future (2030) access and circulation characteristics in the study area were evaluated as part of the traffic report prepared for the proposed project (Fehr & Peers 2010). As discussed in the traffic report and as summarized in this section, the permanent effects of improvements to SR 197 and US 199, including roadway widening and improving the sight distance at several locations, are anticipated to be beneficial.

As discussed in Section 2.1.5 "Utilities" the opening of an STAA-accessible route along US 199 and SR 197 will substantially decrease travel times, including for some businesses, and may ultimately reduce shipping costs for some businesses, including some trucking firms, producers, and retailers. When the project improvements are completed, STAA trucks traveling on US 199 must use SR 197 to US 101 and still will not travel along US 199 through Jedediah Smith Redwoods State Park west of the junction of SR 197 and US 199. California Legal trucks will still be permitted to travel on this segment of US 199. In addition to providing better access for STAA trucks, the project improvements are expected to ease travel for motorists along the corridor and improve safety within the project limits.

Although the project improvements would improve access for STAA trucks, the proposed project is not expected to substantially increase truck volumes on US 199, SR 197, or US 101. The proposed project on US 199 and SR 197 is expected to increase the number of trucks on the proposed STAA route by approximately 17 trucks per day under existing conditions and 92 trucks per day under future (2030) conditions (Table 4-2 in the draft *197/199 Safe STAA Access Project Community Impact Assessment*). Although the project is expected to attract additional trucks to US 199 and SR 197, the increase in truck traffic will not have a substantially negative impact on traffic operations, transit operations, or the bicycle/pedestrian environment (Fehr & Peers 2010).

Traffic operations on the study area roadway segments are primarily described by LOS. LOS is a qualitative measure of traffic flow conditions that varies from LOS A (least congestion) to LOS F (most congestion). The results of the traffic analysis indicate that no substantial negative impacts on the LOS of roadways within the study area would result from the proposed project. All roadway segments on US 101, US 199, and SR 197 included in the traffic analysis are anticipated to operate at or better than their selected concept LOS under both existing and future (2030) conditions. Traffic is expected to continue to travel at free-flow speeds on all study roadways (Fehr & Peers 2010).

The proposed project is not expected to have an effect on the transit system in Del Norte County. Similarly, the project improvements are not expected to have an effect on the pedestrian system, but the shoulder widening and improved sight distance should make bicycle travel more comfortable on the corridors. (Note: Because of safety concerns, bicycle riders rarely use the SR 197–US 199 route, except in Gasquet, Hiouchi, or the vicinity of Jedediah Smith Redwoods State Park.)

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, no improvements or widening would occur at any of the seven project locations and there would be no effect on community cohesion or character.

Avoidance, Minimization, and/or Mitigation Measures

No long-term additional measures are required because effects on community cohesion are not expected to be substantial under the proposed project because US 199 already separates existing neighborhoods on both sides of the highway, and the increase in truck traffic through these communities resulting from the project's removal of STAA trucking restrictions would be minor.

2.1.3.2 Relocations and Real Property Acquisitions

Regulatory Setting

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

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq.). Please see Appendix C for a copy of the Department's Title VI Policy Statement.

Affected Environment

The proposed project would not result in the displacement of any residential or nonresidential buildings, and therefore there would not be any need for relocations. The project would require narrow strip acquisitions from two privately owned parcels at the Ruby 1 site, narrow strip acquisitions from six to 10 (depending on the alternative selected [six acquisitions with the selected preferred alternative]) private parcels at the Ruby 2 site for right-of-way acquisition on SR 197, and a partial acquisition from a private parcel at Patrick Creek Narrows Location 3. See Section 2.1.1 "Land Use" for a discussion of these properties.

Environmental Consequences

See Section 2.1.1 "Land Use" for a discussion of the land use impacts associated with the property acquisitions for the construction of the Ruby 1, Ruby 2, and Patrick Creek Narrows Location 3 site improvements. No relocations would be required.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, no improvements or widening would occur at any of the seven project locations and acquisition of property would not be required.

Avoidance, Minimization, and/or Mitigation Measures

See Section 2.1.1 "Land Use" for a discussion of the avoidance, minimization, and mitigation measures associated with land use impacts associated with the property acquisitions for the construction of the Ruby 1, Ruby 2, and Patrick Creek Narrows Location 3 site improvements.

2.1.3.3 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2009, this was $22,050 for a family of four.

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

Affected Environment

Environmental justice refers to the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The President's Council on Environmental Quality's *Draft Guidance for Environmental Justice* (1996) indicates that environmental justice concerns may arise from impacts on the natural or physical environment, such as human health or ecological impacts on minority and low-income populations, or from related social or economic impacts. (California Department of Transportation 1997).

Table 2.1.3-2 shows the demographic characteristics of the Hiouchi and Gasquet areas, the two areas that would be most affected by roadway improvements, including the construction and operational (post-construction) impacts of the project. An evaluation of the 2000 U.S. Census data indicates that these areas contain lower percentages of minority populations than Del Norte County and California as a whole. In the Hiouchi area, 7.0% of the population is minority; in the Gasquet area, 13.3% of the population is minority. Both percentages are much lower than the countywide level of 21.2% and the statewide level of 40.5%. This data suggests that no large concentrations of minority populations reside in parts of the study area that could be adversely affected by the project. It should also be noted that no tribal reservations or rancherias are located along the SR 197–US 199 corridor or near the proposed project improvements. The nearest tribal community is the Elk Valley Rancheria, located east of Crescent City. Based on the 2000 U.S. Census data, income per capita in the Hiouchi area is higher than Del Norte County and California as a whole. As a result, poverty rates are lower in Hiouchi than throughout Del Norte County and California. Conversely, in the Gasquet area, income per capita is lower and poverty rates are higher than in Del Norte County and California as a whole. This data suggests that concentrations of low-income populations reside in the Gasquet area. Under EO 12898, these populations could be sensitive to disproportionately adverse impacts potentially resulting from the project.

Environmental Consequences

According to the California Business, Transportation and Housing Agency and California Environmental Protection Agency (2007), the communities adjacent to the state's goods-movement corridors have endured a disproportionate share of the impacts from a system that provides statewide and nationwide benefits. As part of the public input provided during plan development, many residents and community representatives shared that their top concern was protecting public health and reducing the air pollution and health effects associated with goods movement–related air pollution. To address that concern, the ARB has developed the *Emission Reduction Plan for Ports and Goods Movement in California* (2006). Based on public input, the ARB has designed the plan to reduce both existing air pollution and health impacts and expected increases in air pollution and health impacts resulting from growth in goods movement. The ARB has already started implementing the plan. In addition to air pollution and associated health effects, potential community impacts include truck traffic, noise, lights, and visual blight.

For adverse environmental justice effects to result from the proposed project, two conditions need to exist. First, minority or low-income populations need to reside in parts of the study area that would be adversely affected by the project. Second, any adverse impacts would need to fall disproportionately on minority or low-income populations, rather than proportionately on all populations affected by the project.

From a project construction perspective, none of the project sites is located near Gasquet, greatly diminishing the potential for short-term disproportionate air quality, noise, and other construction-related environmental impacts on low-income residents in Gasquet. From a project operations (postconstruction) perspective, increases in heavy truck traffic along US 199 could result in decreased air quality and increased traffic, noise, lights, and visual blight in areas of Gasquet adjacent to US 199.

As discussed under "Indirect Land Use," the magnitude of potential operational impacts on residents resulting from creation of an STAA truck route on SR 197 and US 199 would be directly related to the increase in heavy-truck traffic along the route resulting from the project. Potential changes in heavy-truck traffic were evaluated in the traffic analysis prepared for the proposed project (Fehr & Peers 2010). See Section 2.1.6 "Transportation and Traffic" for estimated changes in with-project truck traffic under existing and projected future (2030) conditions.

Under existing conditions, heavy-truck traffic along the proposed STAA truck route is estimated to increase by only 17 one-way truck trips on an average day. This would represent a minor increase in heavy-truck trips, with the proportion of total traffic consisting of heavy trucks increasing from 10.0% to 10.3% along the segment of US 199 between SR 197 and Gasquet. Under future (2030) with-project conditions, an additional 92 one-way heavy-truck trips are projected along the STAA route, with the percentage of total average daily trips attributable to heavy-truck traffic increasing slightly, from 10.0% to 11.4%, along US 199 between SR 197 and Gasquet.

The traffic analysis concludes that removal of STAA trucking restrictions would lead to minimal increases in existing and projected truck trips along the SR 197/US 199 route, indicating that increases in truck emissions and noise, and resulting effects on the health and aesthetics on low-

income populations in Gasquet, would also be minimal. Additionally, these minor impacts would be shared proportionally by all residents adjacent to the proposed STAA truck route, not just those residing in Gasquet. As mentioned previously, the ARB has already started to implement an emissions reduction plan for goods movement in California. Although this statewide plan contains no elements specific to Del Norte County or the SR 197–US 199 corridor, implementation of plan strategies through 2020 should help to reduce the small incremental increase in localized truck-related pollutants resulting from removal of STAA trucking restrictions on the proposed STAA route.

For these reasons, none of the proposed project alternatives would cause disproportionately high and adverse human health and environmental effects on minority and low-income residents of the study area, therefore, this project is not subject to the provisions of EO 12898.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, no improvements or widening would occur at any of the seven project locations. Therefore, no disproportionately high or adverse human health or environmental effects on minority and low-income residents of the study area would occur.

Avoidance, Minimization, and/or Mitigation Measures

No substantial environmental justice effects are anticipated to result from the proposed project. Therefore, no measures to reduce impacts are proposed. Based on the above discussion and analysis, none of the proposed project alternatives would cause disproportionately high and adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice.

2.1.4 Utilities/Emergency Services

2.1.4.1 Affected Environment

This section is based on the Community Impact Assessment technical report prepared for the proposed project (Trott 2010).

Public Safety

Law enforcement services in the vicinity of the project locations are provided by the Del Norte County Sheriff's Department, California Highway Patrol (CHP), and Forest Service Six Rivers National Forest rangers. The Del Norte County Sheriff's Department provides primary law enforcement services throughout the project area from its facility in Crescent City. The CHP Northern Division provides secondary law enforcement services from its facility in Crescent City (Hablitzel pers. comm.). In addition, there is a year-round Forest Service ranger stationed in Gasquet who is assigned to law enforcement duties in the Six Rivers National Forest. Seasonal rangers are also assigned to the Six Rivers National Forest during summer (Athey pers. comm.).

The Smith River Fire Department, Gasquet Volunteer Fire Department, California Department of Forestry and Fire Protection (CAL FIRE), and Forest Service all provide fire protection services in the vicinity of the project locations. The Smith River Fire Department responds to calls along the SR 197 corridor from its facility in Smith River. CAL FIRE also responds to calls along the

SR 197 corridor from its facility on US 101 in Crescent City. Both the Gasquet Volunteer Fire Department and Forest Service units respond to calls along the US 199 corridor (Morrison pers. comm.). The Gasquet Volunteer Fire Department responds to calls from 100 Firehouse Road in Gasquet; the Forest Service also dispatches two fire engines from this location (Gibbons pers. comm.).

Emergency Medical Services

In addition to the law enforcement and fire protection services discussed above, emergency medical services are available to residents of the study area at Sutter Coast Hospital in Crescent City. Del Norte Ambulance Ground and Air Service, a private ambulance service, provides ground and air ambulance transportation services from its facility on Moorehead Road in Crescent City (Chase pers. comm.). Along the US 199 corridor, only one small landing strip, Ward Field Airport in Gasquet, is available that can accommodate fixed-wing aircraft; therefore, helicopters provide the preferred air ambulance transportation method in the area served by US 199 (Tweed pers. comm.). Although there are no designated helipads situated along the US 199 corridor, helicopters are able to land at the airport in Gasquet and at several large roadway pullouts along US 199. One of the largest such pullouts is at the Department maintenance station at Idlewild, east of the Washington Curve site (Tweed pers. comm.). Other air ambulance service providers in the Del Norte County area include Mercy Flights based in Medford, Oregon; PHI Air Medical Group based in Redding; and the CHP helicopter based in Redding. Patients can be transported by helicopter to Sutter Coast Hospital in Crescent City; Three Rivers Hospital in Grants Pass, Oregon; or two additional hospitals in Redding.

Utilities

Within the areas that could be directly affected by construction of the proposed project, utilities are located only within the Ruby 1 and 2 sites. Within the limits of the Ruby 1 site on SR 197, one utility pole carrying telephone and cable lines (Verizon and Charter Cable, respectively) are located adjacent to the roadway and will be in conflict with proposed construction. Similarly, utility poles carrying telephone and cable lines situated along SR 197 within the limits of the Ruby 2 site would be in conflict with proposed construction. The number of poles in conflict with proposed construction varies for each alternative at the Ruby 2 location. The Two-Foot Shoulders Alternative has one pole in conflict. The Four-Foot Shoulders Alternative has two poles in conflict. Two-Foot Widening in Spot Locations Alternative has two utility poles in conflict. No utilities are located within the project limits of Patrick Creek Narrows Locations 1, 2, and 3; the Narrows site; or the Washington Curve site.

2.1.4.2 Environmental Consequences

This section describes the potential impacts of the proposed project on law enforcement, fire protection, and other emergency service providers. It also discusses potential impacts on utilities. Except for post-project beneficial operational effects on public service providers, all potential adverse impacts would be related to construction activities. These potential impacts would vary by project site, and are discussed in Section 2.4, “Construction Impacts,” under “Utilities/Emergency Services.”

Beneficial Effect on Law Enforcement, Fire, and Emergency Service Providers

Under operational (post-construction) conditions, the proposed project could benefit the provision of public services in the study area, including law enforcement, fire, and emergency services, because existing emergency service provider routes would be enhanced by project improvements, including roadway widening and improved sight distances in places along SR 197 and US 199. In addition, the project improvements would improve roadway safety along the SR 197–US 199 corridor, which could reduce traffic accidents and related calls for emergency services.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no beneficial operational effect as a result of the enhanced routes from project improvements. In addition, there would be no construction of the project and, therefore, no potential for delays or interference with law enforcement, fire, or other emergency service providers during construction.

2.1.4.3 Avoidance, Minimization, and/or Mitigation Measures

No long term mitigation measures are necessary. Measures necessary during project construction are detailed in Section 2.4 under "Utilities/Emergency Services."

2.1.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.1.5.1 Regulatory Setting

Federal Regulations

The Federal government regulates commercial motor vehicles (CMVs). The Federal-Aid Highway Act of 1956 established a maximum vehicle width of 96 inches for CMVs on the interstate highway system. The Federal-Aid Highway Act of 1976 increased the allowable width for buses to 102 inches (2.6 meters). The STAA extended the same width requirement of 102 inches to commercial trucks. The STAA also regulates the length of CMVs, establishing minimum length standards for most commercial truck tractors/semi-trailers and for twin trailers pulled behind a truck tractor. There is no vehicle height requirement for CMVs. Therefore, states may set their own height restrictions. Most height limits range from 13.5 to 14 feet, with exceptions granted for lower clearance on particular roads (Federal Highway Administration 2004).

The STAA applied federal width and length limits for trucks to the National Network (NN) of highways, which includes the interstate system and other designated highways that, on June 1, 1991, were a part of the Federal-Aid Primary System in effect at that time (Federal Highway Administration 2004).

State Regulations

The California Vehicle Code establishes a separate standard for CMVs in the state. In general, California Legal trucks are shorter than STAA trucks. While STAA trucks are restricted to the National Network, California Legal trucks can legally traverse all state highways and most local roads without restriction or special escort. However, there are many advisory routes that California Legal trucks may be advised against using depending on their kingpin-to-rear-axle (KPRA) length.

The Department's *Guide for the Preparation of Traffic Impact Studies* (2002) establishes the target level of service (LOS) at the transition between LOS C and D on state highway facilities. If an existing state highway facility operates at less than the target LOS, the existing measure of effectiveness should be maintained. The Department's LOS threshold applies to state highway intersections, interchange ramp terminal intersections, freeway segments, and freeway ramp junction or weaving sections.

Local Regulations

The Del Norte Local Transportation Commission adopts the regional transportation plan (RTP) and regional transportation improvement program (RTIP) for Del Norte County. These documents identify and prioritize transportation needs for the county, and establish a foundation for funding the prioritized needs.

The 2007 RTP defines the mobility conditions, needs, and actions necessary for a coordinated and balanced regional transportation system in Del Norte County. The 2007 RTP is based on the existing transportation system and describes the development needs for all transportation modes that operate in Del Norte County. The 2007 RTP was prepared and implemented at the direction of the Del Norte Local Transportation Commission, consistent with state law and the provisions of the California Transportation Commission's most current *California Regional Transportation Plan Guidelines*.

The goals, policies, and objectives of the 2007 RTP promote the improvement of SR 197 and US-199. For example, Objective 1 under Policy 5.D.3 states:

- Support planning for, and implementation of, improvements necessary to upgrade State Route 197 and US Highway 199 from "Red Route" to "STAA Route" status.

Also, Policy 5.E.4 under "Goods Movement" states:

- Using the Del Norte LTC document "Achieving STAA Route Status for the US Highway 199 and Route 199 Corridor" as a framework, act as a supporting partner with Caltrans to achieve necessary improvements to US Highway 199 and Route 197 and create a viable trade corridor.

Del Norte County is required under the California Planning and Zoning Law to adopt a general plan for its long-term development. General plans must address a variety of issues, including land use, circulation, conservation, and housing. Section 8, "Transportation and Circulation," of the *Del Norte County General Plan 2000–2020* (adopted 2003) includes policies supportive of the RTP and its proposed improvements to SR 197 and US 199.

SR 197 and US 199 Classifications

SR 197 is a state highway classified by the Department's 1998 Interregional Transportation Strategic Plan (ITSP) as a "high emphasis" route. SR 197 is designated as a "modified brown" route, which indicates that it has frequent restricted passing areas and very high vehicle demand. SR 197 has a posted speed limit of 45 miles per hour (mph). Similar to US 199, sharp curves and limited shoulder widths have prompted the Department to discourage travel by trucks with a KPRA length of 30 feet or more.

US 199 is a federal highway classified by the ITSP as a "high emphasis" route. US 199 is designated as a "red" route, which indicates that extra-legal loads (i.e., loads that are overweight and/or oversized) must obtain special permits and be accompanied by California Highway Patrol escorts. From PM 4.37 to PM 19.99, US 199 is also designated as a "modified brown" route. Additionally, the Department has posted an advisory discouraging travel for trucks with a KPRA length of more than 30 feet. US 199 has posted speed limits between 35 and 65 mph.

2.1.5.2 Affected Environment

The following discussion is based on the traffic analysis prepared for the project (Fehr & Peers 2010). Sources cited by Fehr & Peers in its report are indicated as necessary. The transportation study area consists of US 101 from Crescent City to the California/Oregon state line, SR 197 from US 101 to the intersection with US 199, and US 199 from US 101 to the California/Oregon state line.

Major Roadways in the Study Area

SR 197 is a northwest-southeast two-lane highway that serves as connector road between US 199 and US 101 north of Crescent City. Similar to US 199, sharp curves and limited shoulder widths restrict access to STAA trucks and have prompted the Department to discourage travel by trucks with a KPRA length of 30 feet or more. SR 197 is the designated route for the movement of extralegal truck loads between US 101 and the SR 197/US 199 intersection because it avoids traversing Jedediah Smith Redwoods State Park (located along the westernmost segment of US 199 between US 101 and the SR 197/US 199 intersection) and therefore minimizes impacts on the park and associated environmental resources. Sharp curvilinear sections of SR 197 have limited sight distances, narrow to nonexistent shoulders, and large redwood trees and stumps at the edge of the pavement or travel lane. SR 197, also known as North Bank Road, primarily serves regional and interregional traffic, providing access to homes and public recreational facilities along the Smith River, including Ruby Van Deventer County Park, which provides river access. The existing average daily traffic (ADT) on SR 197 is 1,800 vehicles per day (vpd). Heavy trucks make up 15% of this total.

US 199 is a northeast-southwest federal highway that connects US 101 in California to I-5 in Oregon. Sharp horizontal curves, narrow to nonexistent shoulders, and limited sight distances tend to restrict the travel of STAA trucks on US-199. Highway attributes that characterize this area include cliffs, rocky outcrops, dramatic views of the Middle Fork Smith River, and a tightly curved alignment. Although US 199 has a posted speed limit between 35 and 65 mph, prevailing speeds are below the posted speed limit on many sections. The existing ADT and heavy-truck percentages along US 199 are (rounded to the nearest 100) 3,700 vpd and 13% heavy trucks west of the SR 197 junction), 4,700 vpd and 10% heavy trucks east of the SR 197 junction, and 2,800 vpd and 17% heavy trucks at the California/Oregon state line. US 199 passes through the small, unincorporated communities of (west to east) Gasquet, Patrick Creek, and Elk Valley between Crescent City and the state line.

US 101, which is outside the project limits, is a north-south federal highway that extends nearly the entire length of the west coast of the United States**.** In the study area, US 101 functions as a principal highway providing access to the Oregon coast to the north and Eureka to the south. In the study area, US 101 ranges in width from two to four lanes and traverses flat to rolling and

mountainous terrain. The existing ADT and heavy-truck percentages along US 101 are (rounded to the nearest 100) 9,400 vpd and 13% heavy trucks south of the US 199 junction and 7,300 vpd and 13% heavy trucks north of the SR 197 junction.

Existing Transit Facilities and Services

No transit currently serves the SR 197–US 199 corridor. Bus transit service in the transportation study area is provided by Redwood Coast Transit (RCT). RCT operates several routes in Crescent City and other unincorporated areas of the county along US 101. RCT operates both fixed-route service and dial-a-ride service. The Smith River/Arcata route provides connection to Amtrak train and Greyhound bus service. The dial-a-ride service is currently limited to the Crescent City area. The Consolidated Transportation Service Agency (CTSA) provides transportation services within Del Norte County and to Eureka for clients of the Del Norte Association for Developmental Services (DNADS). The service is generally limited to DNADS-sponsored programs, appointments, and work sites. The CTSA also services the Hiouchi area and provides transportation for senior citizens in the Crescent City area and along US 101.

Existing Bicycle and Pedestrian Facilities

Bicycle facilities exist throughout Del Norte County. The locations of existing bicycle facilities are shown on Figure 2.1.5-1. Parts of US 101 in Del Norte County are designated as the Pacific Coast Bike Route and have marked bicycle lanes. However, bicyclists are permitted to use all roads in the area. US 199 has 0- to 8-foot shoulders throughout the study area. Only the first 3 miles of SR 197 north of US 199 have paved shoulders. On US 199, approximately 1 mile of roadway through Gasquet has designated bicycle lanes in both directions.

According to the 2007 RTP, there are no pedestrian facilities along SR 197, US 199, or US 101 in the study area. Most pedestrian facilities in the county are located in downtown Crescent City.

Field observations indicated some bicycle travel along the US 101 and US 199 corridors. The field-observed bicycle travel on US 199 was concentrated in Gasquet. Pedestrian activity was only observed in the urban areas and within Redwood National Park.

Existing Traffic Operations

Existing traffic operations were analyzed under 2008 conditions based on field-collected data, including traffic counts, geometrics, and traffic controls. The operations analysis included peak-hour LOS results for roadway segments. Traffic counts were conducted Monday through Sunday. The peak-hour traffic volumes were determined by finding the highest-volume AM (before noon) and PM (after noon) hours between Tuesday and Thursday for weekday analysis and between Friday and Sunday for weekend analysis. No unusual events (e.g., collisions) occurred during data collection that might have affected traffic counts, so the data is representative of weekday travel in the study area.

The study roadways have low traffic volumes with substantial capacity for future growth. Traffic generally flows at free-flow speeds on all study roadways. While all the study roadway segments operate at an acceptable LOS, the segments of SR 197 and US 199 where the roadway improvements are proposed have collision rates (Fatal + Injury collision rate and Total collision rate) that are generally higher than the average rate for similar facilities in California. The only locations with a lower collision rate compared to the statewide average for similar facilities are

Ruby 1 (for both Fatal + Injury and Total collision rates compared to the statewide average for similar facilities in California), Patrick Creek Narrows Location 3 (it has a higher Fatal + Injury collision rate but a lower Total collision rate compared to the statewide average for similar facilities in California), and the Narrows (it has a lower Fatal + Injury collision rate but a higher Total collision rate compared to the statewide average for similar facilities in CA). Collision rates and related information are provided in Section 1.2.2.2, "Corridor Collision Rates," in Chapter 1.

Figure 2.1.5-2 shows the existing roadway network, including functional classifications and number of travel lanes. Figures 2.1.5-3 and 2.1.5-4 show the existing overall traffic and truck volumes and LOS for the AM and PM peak hours on weekdays and weekends, respectively. This information was used with the 2008 daily traffic count estimates and LOS capacity thresholds contained in Tables 2.1.5-1 and 2.1.5-2 to determine the existing daily LOS for each study roadway segment.

Table 2.1.5-1. Two-Lane Highway Level of Service Descriptions

Level of Service	Class I		Class II
	Percent Time Spent Following	Average Travel Speed (mph)	Percent Time Spent Following
A	0 to 35	>55	0 to 40
B	>35 to 50	>50 to 55	>40 to 55
C	>50 to 65	>45 to 50	>55 to 70
D	>65 to 80	>40 to 45	>70 to 85
E	>80	0 to 40	>85
F	See note below		

Note: LOS F applies whenever the demand exceeds the segment capacity.
Source: Transportation Research Board 2000.

Table 2.1.5-2. Multi-Lane Highway Level of Service Descriptions

Level of Service	Maximum Density (Passenger Cars per Mile per Lane)			
	60 mph (Free-Flow Speed)	55 mph (Free-Flow Speed)	50 mph (Free-Flow Speed)	45 mph (Free-Flow Speed)
A	0 to 11	0 to 11	0 to 11	0 to 11
B	>11 to 18	>11 to 18	>11 to 18	>11 to 18
C	>18 to 26	>18 to 26	>18 to 26	>18 to 26
D	>26 to 35	>26 to 35	>26 to 35	>26 to 35
E	>35 to 40	>35 to 41	>35 to 43	>35 to 45
F	See note below			

Note: LOS F applies whenever the demand exceeds the segment capacity.
Source: Transportation Research Board 2000.

Table 2.1.5-3 displays the existing 2008 weekday and weekend LOS and percent time spent following for two-lane highway directional segments, as well as LOS and density for multi-lane highway segments. Figures 2.1.5-3 and 2.1.5-4 also show the results of the directional segment LOS analysis for weekdays and weekends, respectively; Appendix E of the traffic analysis

Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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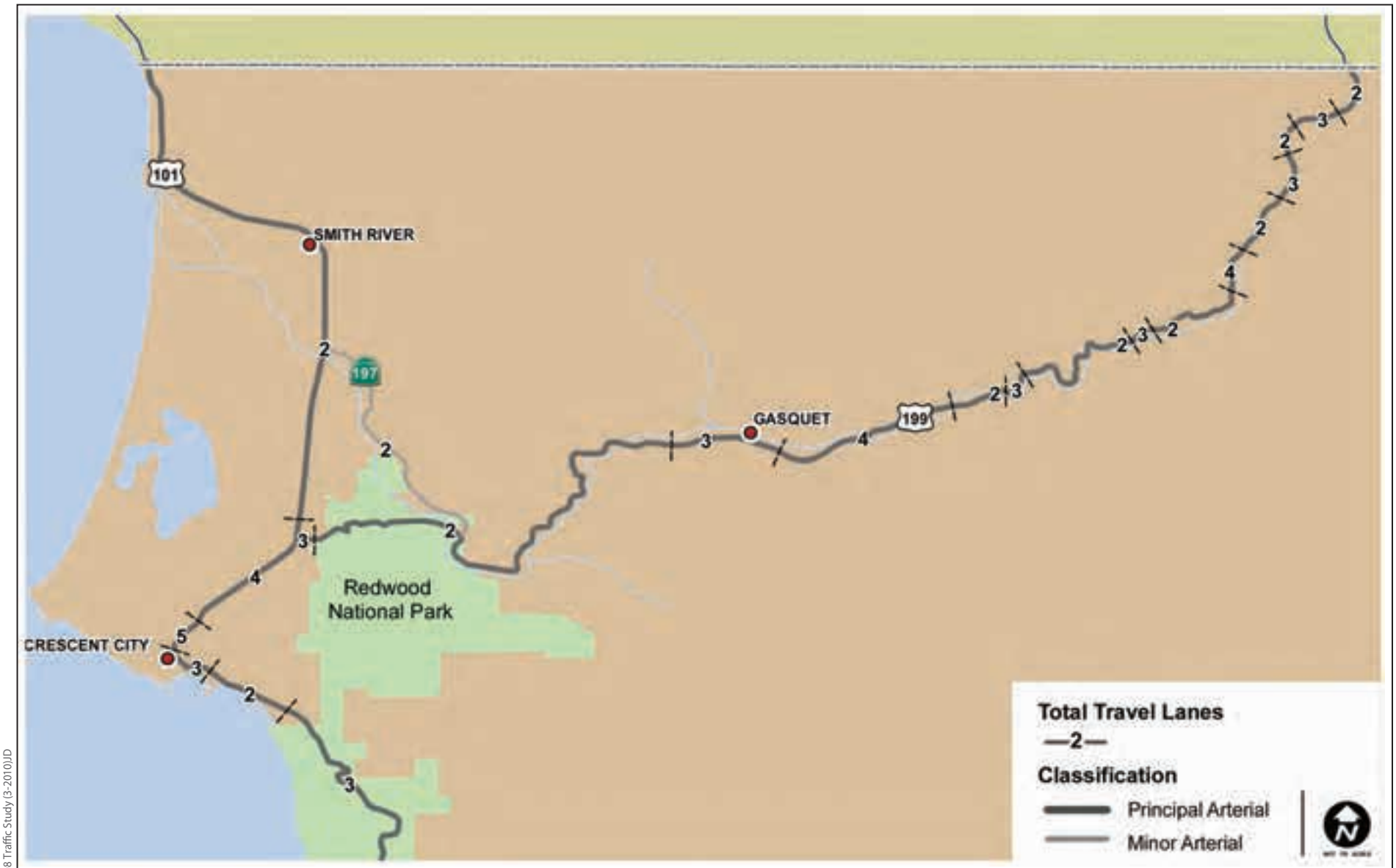
Figure 2.1.5-1
Existing Bicycle Facilities



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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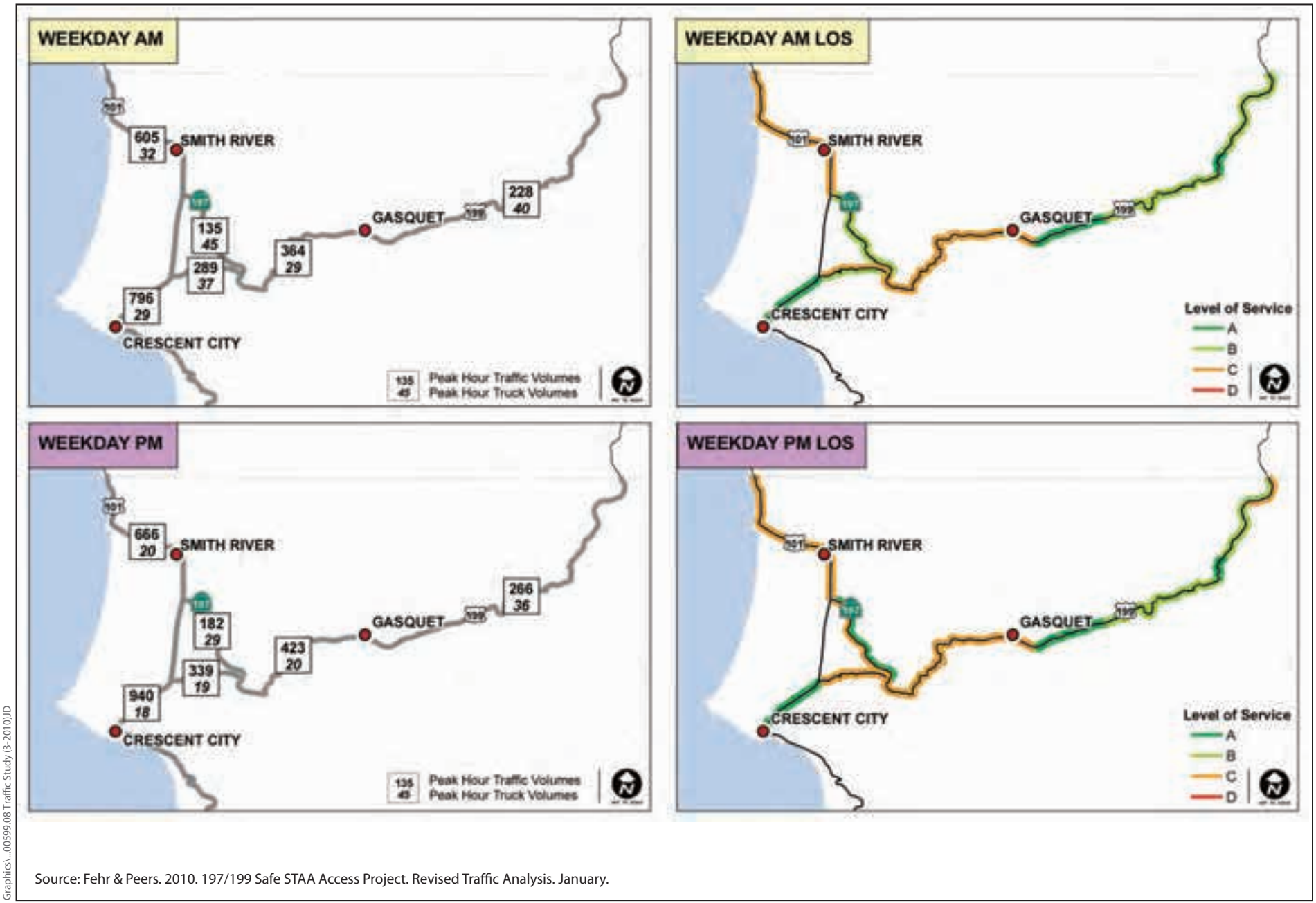
Figure 2.1.5-2
Existing Lane Geometry and Roadway Classifications



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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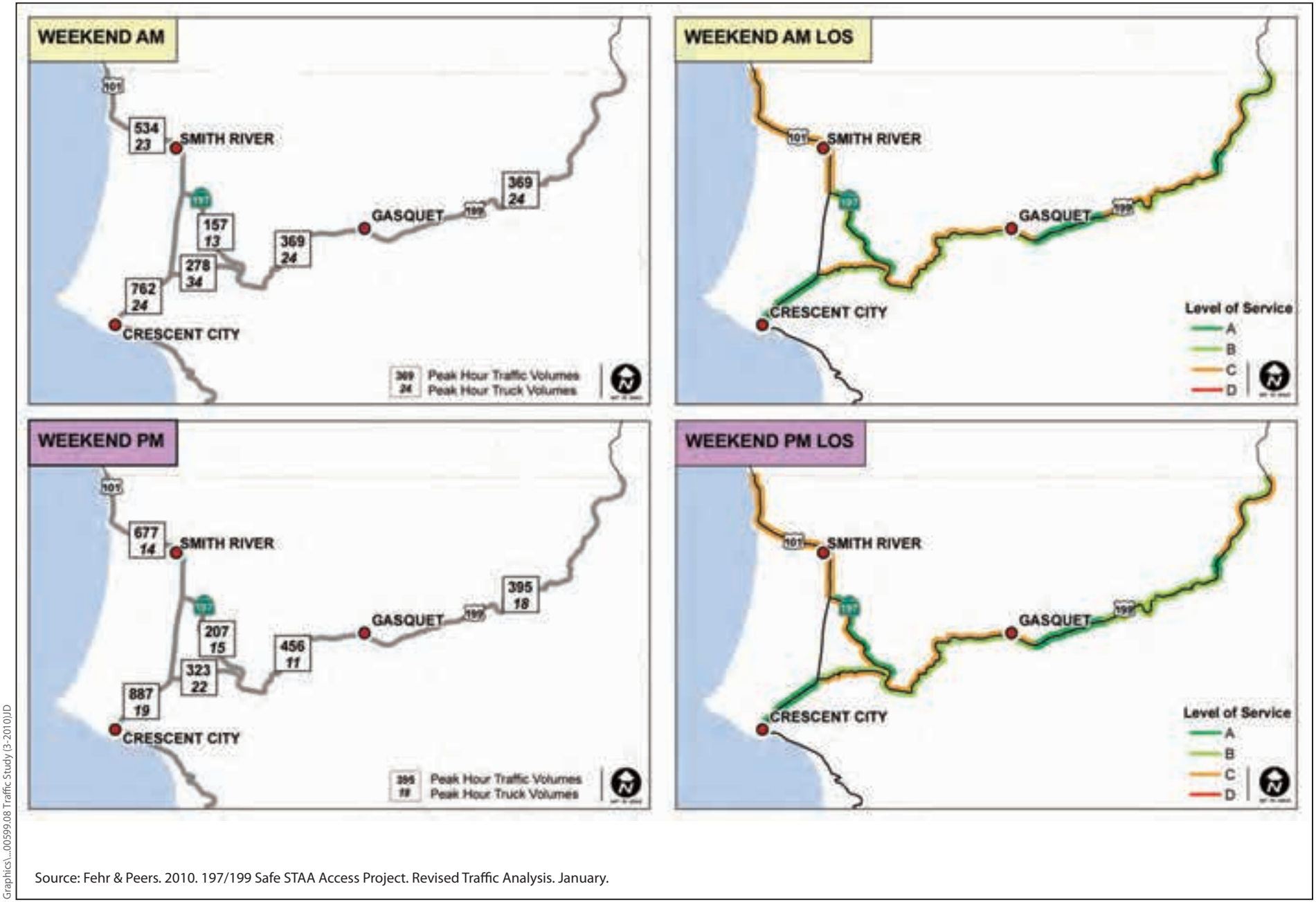
Figure 2.1.5-3
Existing Weekday Peak-Hour Traffic Volumes and Level of Service



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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Figure 2.1.5-4
Existing Weekend Peak-Hour Traffic Volumes and Level of Service

Table 2.1.5-3. 2008 Directional Segment Peak-Hour Level of Service and Percent Time Spent Following

Location		Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)	Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)
US 199—US 101 to SR 197	Weekday	East	B/C	47/59	West	C/C	68/61
	Weekend		B/C	54/60		C/B	57/55
US 199—SR 197 to Gasquet	Weekday	East	C/C	62/60	West	C/C	63/59
	Weekend		B/B	53/53		C/C	61/67
US 199—Gasquet to four lanes	Weekday	North	C/C	62/60	South	C/C	63/59
	Weekend		B/B	54/53		C/C	61/67
US 199—Four lanes to two lanes	Weekday	North	A/A	2/2*	South	A/A	2/2*
	Weekend		A/A	2/3*		A/A	3/2*
US 199—Two lanes to Patrick Creek	Weekday	North	B/B	42/47	South	B/B	54/50
	Weekend		B/B	41/48		C/B	61/55
US 199—Patrick Creek to four lanes	Weekday	North	B/B	45/51	South	B/B	54/50
	Weekend		B/B	44/52		C/B	61/55
US 199—four lane section	Weekday	North	A/A	2/3*	South	A/A	2/2*
	Weekend		A/A	2/4*		A/A	4/2*
US 199—four lanes to Collier Tunnel	Weekday	North	B/B	43/48	South	B/B	54/50
	Weekend		B/B	42/49		C/C	61/53
US 199—Collier Tunnel to California/Oregon state line	Weekday	North	B/C	55/62	South	B/B	45/42
	Weekend		B/C	54/62		B/B	51/46
SR 197—US 199 to US 101	Weekday	North	B/A	41/40	South	B/C	43/55
	Weekend		A/A	33/35		B/C	53/59
US 101—Crescent City to US 199	Weekday	North	A/A	3/5*	South	A/A	7/5*
	Weekend		A/A	3/5*		A/A	7/4*
US 101—SR 197 to PM 39.98	Weekday	North	C/C	55/66	South	C/C	65/58
	Weekend		C/C	59/60		C/C	60/63
US 101—PM 39.98 to California/Oregon state line	Weekday	North	C/C	55/66	South	C/C	65/58
	Weekend		C/C	59/60		C/C	60/63

* Denotes the multi-lane measure of effectiveness density in passenger cars per mile per lane.

contains the detailed LOS reports (Fehr & Peers 2010). The results illustrated in Table 2.1.5-3 indicate that all of the directional segments operate at acceptable levels (LOS C or better) based on the thresholds established in the route concept reports for the respective highways (California Department of Transportation 1999a, 1999b, 2002).

2030 Roadway Characteristics (without Project)

The 2030 traffic conditions analysis assumes that the Richardson Grove Improvements Project will be completed. The Richardson Grove Improvements Project is a realignment project along US 101 in southern Humboldt County to provide access to STAA trucks. The completion of the Richardson Grove Improvements Project would provide an open, continuous STAA-accessible route from the Bay Area north to the California/Oregon state line. This roadway condition will exist on US 101 when the Richardson Grove Improvements Project is completed, regardless of the proposed improvements on SR 197 and US 199.

In addition to the Richardson Grove Improvements Project, there are planned improvements for the US 101/SR 197 intersection in conjunction with a separate Department project, the Dr. Fine Bridge Project (Hum-101, EA 43640). The existing Dr. Fine Bridge alignment would shift, requiring modifications to the US 101/SR 197 intersection. However, because detailed information is not available, the proposed improvements from the Dr. Fine Bridge Project were not incorporated into the 2030 traffic conditions analysis for this project. The Dr. Fine Bridge Project and the resulting improvements to the US 101/SR 197 intersection are planned to occur regardless of the proposed improvements on SR 197 and US 199.

2030 Transit Facilities and Services (without Project)

The 2030 transit system will be very similar to the current transit system in Del Norte County. According to the RCT manager, in the near future, the Oregon Department of Transportation will be sponsoring transit service from Grants Pass to Crescent City along US 199 (Wall pers. comm.). Specialized service for the elderly and disabled is also planned for US 199, which will serve the route one to two times per week. There are no plans to extend RCT service or dial-a-ride service into the SR 197 and US 199 area.

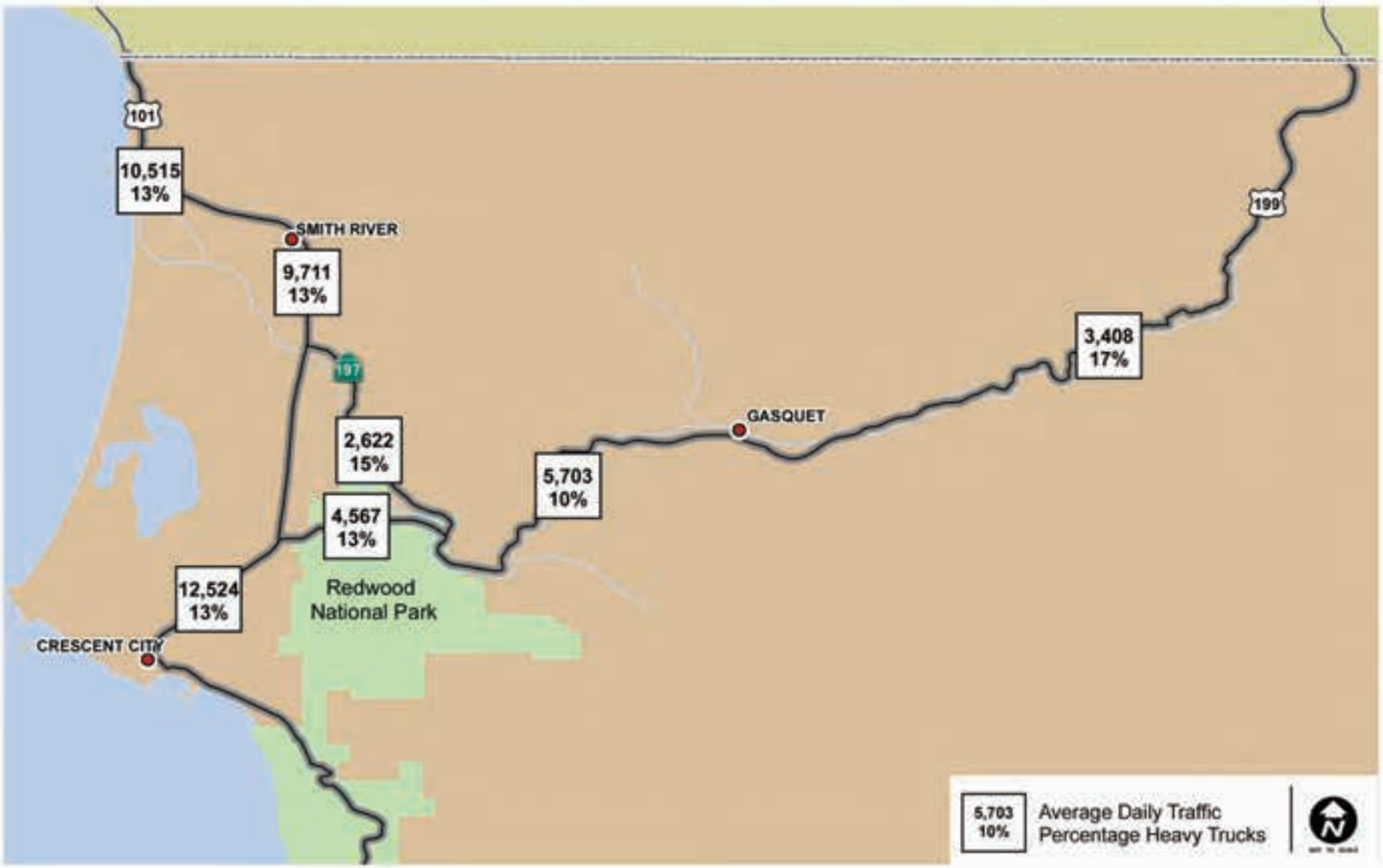
2030 Bicycle and Pedestrian Facilities (without Project)

The bicycle network along the major routes in the study area should remain largely unchanged in the future, except for the building of the Coast to Caves Trail. The Coast to Caves Trail would follow US 199 from roughly Hiouchi until just before Gasquet. According to the *Del Norte County and Crescent City 2007 Bicycle Facilities Plan Update*, the trail would originate in Crescent City, and extend to Oregon Caves National Monument in Josephine County, Oregon. There are no major pedestrian improvements planned along either SR 197 or US 199.

2030 Traffic Operations (without Project)

Department data were used to develop 2030 without-project traffic volume forecasts (using 20-year linear growth factors) for the area roadways. The resulting 2030 with and without-project ADT volumes and heavy-truck percentages for each study roadway segment are shown in Figure 2.1.5-5 and summarized in Table 2.1.5-4.

The 2030 without-project conditions analysis used Highway Capacity Software to analyze roadway segment LOS. The measures of effectiveness for the two-lane highway directional segment analysis are the percentage of time spent following and average travel speed. The measures of effectiveness for the multi-lane highway segment analysis are density and free-flow speed. LOS provides a quality-of-service measurement (in an A–F scale) for both two-lane highway directional segment analysis and multi-lane highway segment analysis. Table 2.1.5-5 displays the 2030 without-project weekday and weekend LOS, percent time spent following, and density for the study roadway segments. The results of the directional segment LOS analysis (peak-hour volumes and LOS) for weekdays and weekends are also shown on Figures 2.1.5-6 and 2.1.5-7, respectively.



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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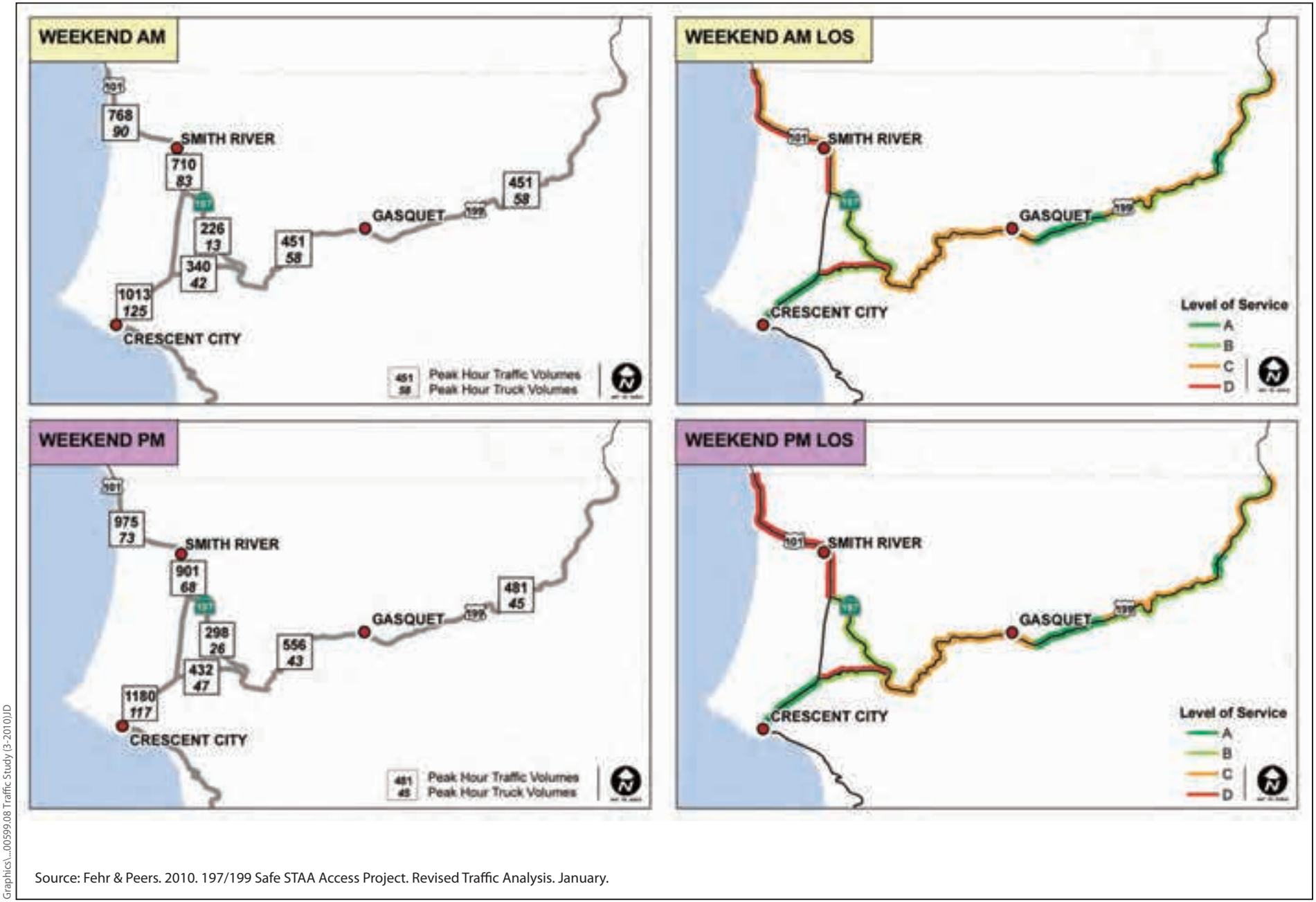
Figure 2.1.5-5
2030 Without-Project ADT Traffic Volumes and Heavy Truck Percentages



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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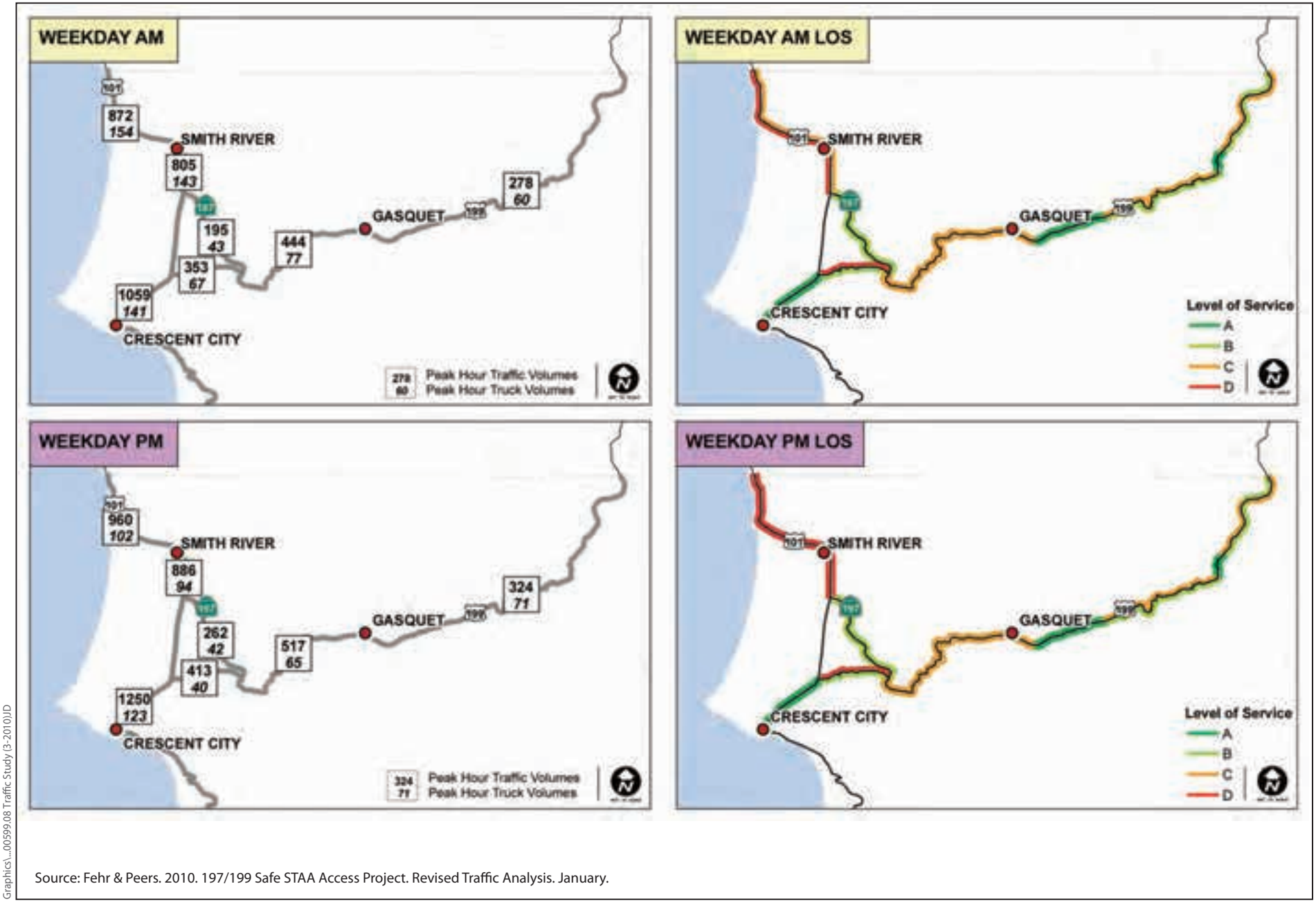
Figure 2.1.5-7
2030 Without-Project Weekend Peak-Hour Traffic Volumes and Levels of Service



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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Figure 2.1.5-6
2030 Without-Project Weekday Peak-Hour Traffic Volumes and Levels of Service

Table 2.1.5-4. Projected 2030 Average Daily Traffic Volumes and Heavy-Truck Percentages With and Without Project

	2030 Without Project			2030 With Project		
Location	ADT Volume	Heavy-Truck (Percentage)	Average Daily Trucks	ADT Volume	Heavy-Truck (Percentage)	Average Daily Trucks
US 199—US 101 to SR 197	4,567	13	594	4567	13	594
US 199—SR 197 to Gasquet	5,703	10	570	5795	11	637
US 199—Gasquet to California/Oregon state line	3,408	17	579	3500	19	665
SR 197—US 199 to US 101	2,622	15	393	2714	18	489
US 101—Crescent City to US 199	12,524	13	1628	12616	14	1766
US 101—SR 197 to midway to state line	9,711	13	1262	9803	14	1372
US 101—Midway to state line to California/Oregon state line	10,515	13	1367	10607	14	1485

Table 2.1.5-5. 2030 Without-Project Directional Segment Peak-Hour Level of Service and Percent Time Spent Following

Location		Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)	Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)
US 199—US 101 to SR 197	Weekday	East	B/B	52/54	West	D/C	72/56
	Weekend		C/B	61/55		C/C	60/59
US 199—SR 197 to Gasquet	Weekday	East	C/C	65/64	West	C/C	58/62
	Weekend		C/C	59/56		C/C	67/69
US 199—Gasquet to four lanes	Weekday	North	C/C	65/64	South	C/C	58/62
	Weekend		C/C	59/56		C/C	67/69
US 199—four lanes to two lanes	Weekday	North	A/A	2/3*	South	A/A	2/2*
	Weekend		A/A	2/3*		A/A	3/2*
US 199—two lanes to Patrick Creek	Weekday	North	B/B	44/43	South	C/C	57/60
	Weekend		B/B	45/54		C/B	67/52
US 199—Patrick Creek to four lanes	Weekday	North	B/B	49/49	South	C/C	57/60
	Weekend		B/C	49/58		C/B	67/52
US 199—Four-lane section	Weekday	North	A/A	3/4*	South	A/A	3/3*
	Weekend		A/A	3/4*		A/A	5/3*
US 199—four lanes to Collier Tunnel	Weekday	North	B/B	46/43	South	C/C	57/60
	Weekend		B/B	46/55		C/B	67/52
US 199—Collier Tunnel to	Weekday	North	C/C	59/56	South	B/B	49/50

Location		Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)	Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)
California/Oregon state line	Weekend		C/C	59/69		C/B	57/44
SR 197—US 199 to US 101	Weekday	North	B/B	47/48	South	B/C	50/63
	Weekend		B/B	42/44		C/C	61/61
US 101—Crescent City to US 199	Weekday	North	A/A	4/6*	South	A/A	9/5*
	Weekend		A/A	4/7 *		A/A	9/5*
US 101—SR 197 to PM 39.98	Weekday	North	C/D	61/73	South	D/C	70/65
	Weekend		C/D	66/68		C/C	65/70
US 101—PM 39.98 to California/Oregon state line	Weekday	North	C/D	63/75	South	D/C	73/67
	Weekend		C/D	67/70		C/D	67/72

* Denotes the multi-lane measure of effectiveness density in passenger cars per mile per lane.

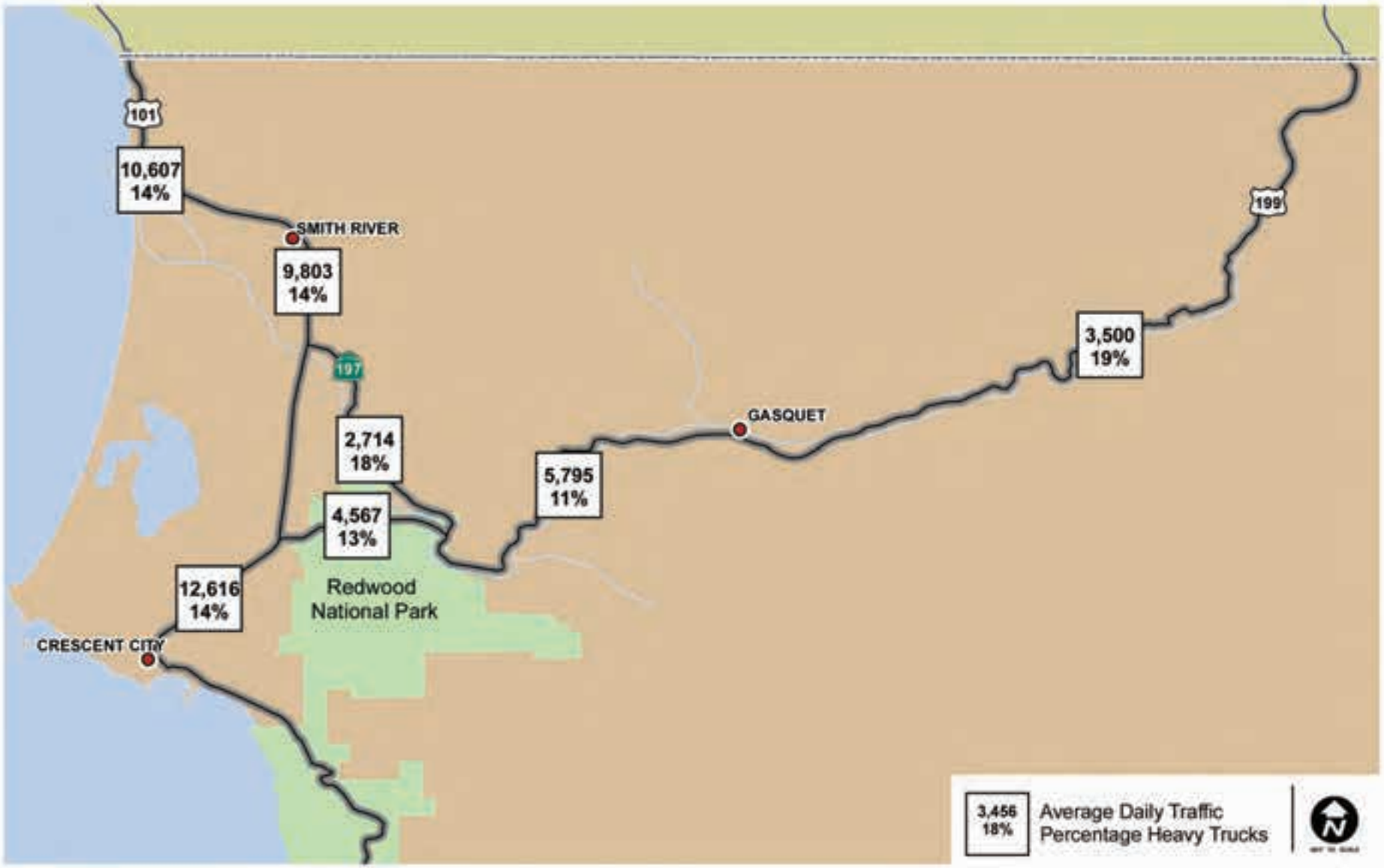
The 2030 without-project conditions analysis indicates the study roadways have a substantial amount of capacity for future growth on most segments, and traffic generally flows at free-flow speeds on most study roadways. The analysis indicates the two-lane sections of US 101 will experience a higher percent time spent following than other roadways in the study area. As shown in Table 2.1.5-5, all roadway segments operate better than their concept LOS.

2.1.5.3 Environmental Consequences

All the build alternatives would provide the same level of improvement and therefore would have the same operational consequences. To obtain future with-project peak-hour truck volumes, the latent demand of STAA trucks (taking into account induced growth to 2030) was proportionally distributed to each study roadway segment based on the percentage of existing daily trucks within the peak hour. The methodology for determining latent demand is described in the traffic analysis (Fehr & Peers 2010). The proposed project is expected to increase traffic by 92 trucks per day.

The future 2030 with-project analysis evaluates the roadways during the peak travel periods of the day under 2030 traffic and geometric conditions with the changes in truck traffic due to the proposed STAA improvements. Figure 2.1.5-8 shows the projected ADT volumes and heavy-truck percentages in 2030; technical data supporting these findings are included in Appendix E of the traffic analysis (Fehr & Peers 2010).

The measures of effectiveness for the two-lane highway directional segment analysis are the percentage of time spent following and average travel speed. The measures of effectiveness for the multi-lane highway segment analysis are density and free-flow speed. LOS provides a quality-of-service measurement (in an A–F scale) for both two-lane highway directional segment analysis and multi-lane highway segment analysis. Table 2.1.5-6 displays the 2030 with-project weekday and weekend LOS, percent time spent following, and density for the study roadway segments. Figures 2.1.5-9 and 2.1.5-10 indicate the results of the directional segment LOS analysis for weekdays and weekends, respectively.



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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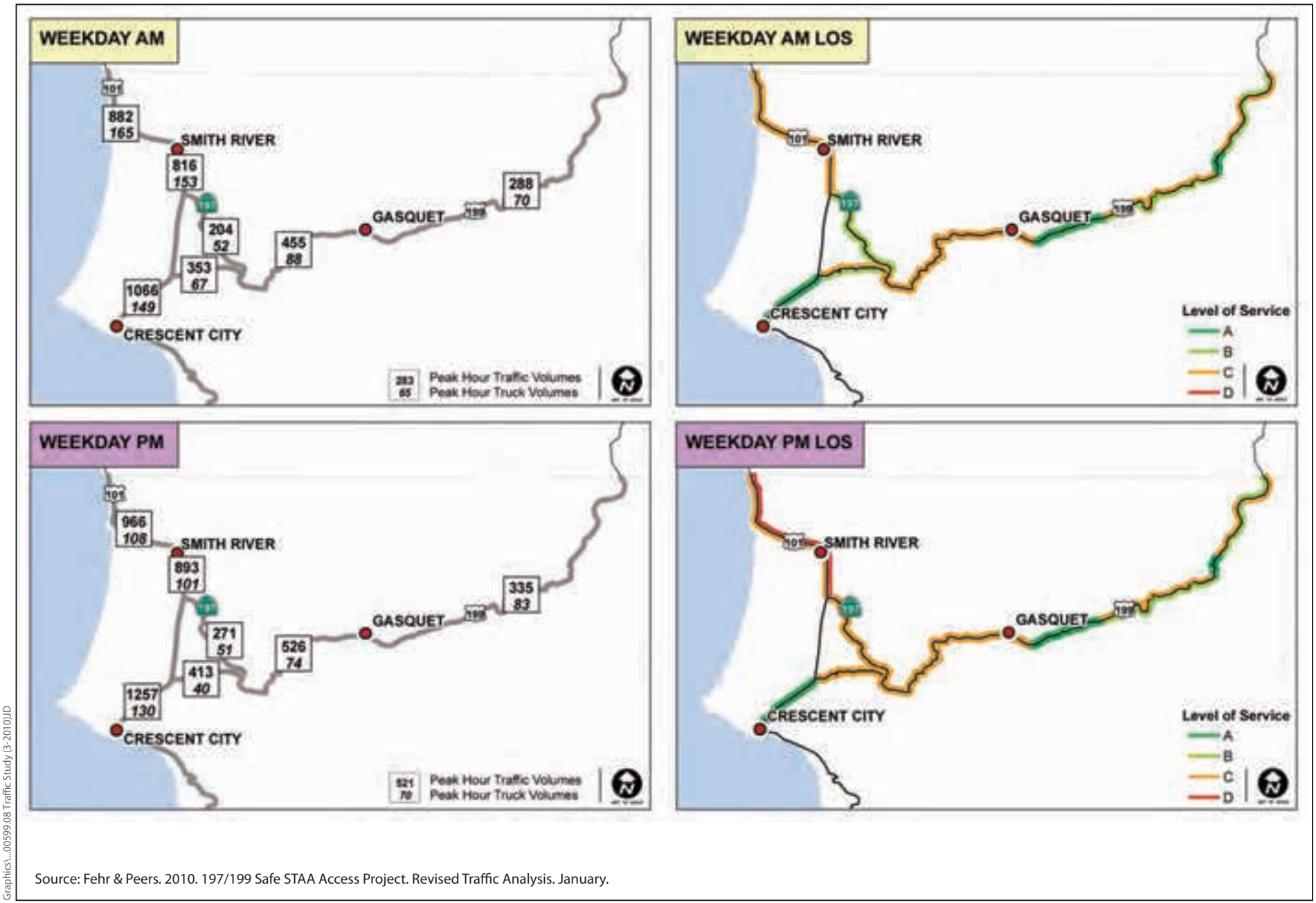
Figure 2.1.5-8
2030 With-Project ADT Volumes and Heavy Truck Percentages



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

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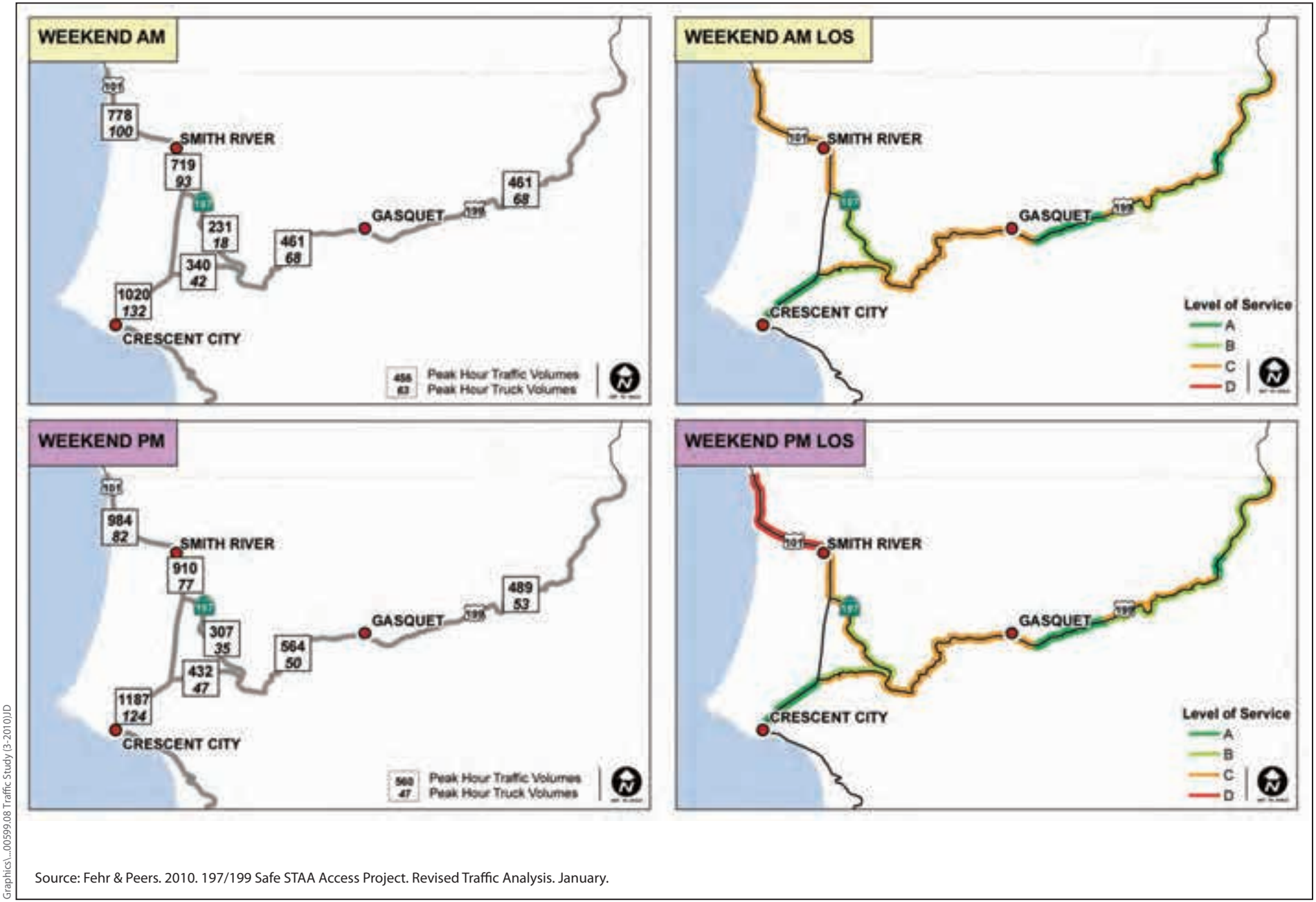
Figure 2.1.5-9
2030 With-Project Weekday Peak-Hour Traffic Volumes and Levels of Service



Source: Fehr & Peers. 2010. 197/199 Safe STAA Access Project. Revised Traffic Analysis. January.

Graphics\...00599.08 Traffic Study (3-2010)JD

Figure 2.1.5-10
2030 With-Project Weekend Peak-Hour Traffic Volumes and Levels of Service

Table 2.1.5-6. 2030 With-Project Directional Segment Peak-Hour Level of Service and Percent Time Spent Following

Location		Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)	Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)
US 199—US 101 to SR 197	Weekday	East	B/C	47/59	West	C/C	68/61
	Weekend		B/C	54/60		C/B	58/55
US 199—SR 197 to Gasquet	Weekday	East	C/C	64/63	West	C/C	61/63
	Weekend		C/C	61/62		C/C	60/63
US 199—Gasquet to four lanes	Weekday	North	C/C	64/63	South	C/C	61/63
	Weekend		C/C	61/62		C/C	60/63
US 199—four lanes to two lanes	Weekday	North	A/A	2/3*	South	A/A	2/2*
	Weekend		A/A	2/3*		A/A	4/2*
US 199—two lanes to Patrick Creek	Weekday	North	B/B	45/45	South	C/C	55/59
	Weekend		B/B	47/47		C/C	60/62
US 199—Patrick Creek to four lanes	Weekday	North	B/B	49/49	South	C/C	55/59
	Weekend		B/B	50/50		C/C	60/62
US 199—Four-lane section	Weekday	North	A/A	3/4*	South	A/A	3/3*
	Weekend		A/A	3/5*		A/A	5/3*
US 199—four lanes to Collier Tunnel	Weekday	North	B/B	46/46	South	C/C	55/59
	Weekend		B/B	47/48		C/B	60/62

Location		Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)	Direction	LOS (AM/PM)	Percent Time Spent Following (AM/PM)
US 199—Collier Tunnel to California/Oregon state line	Weekday	North	C/C	59/59	South	B/B	47/50
	Weekend		C/C	61/60		B/B	51/52
SR 197—US 199 to US 101	Weekday	North	B/C	53/56	South	B/C	49/57
	Weekend		B/C	54/57		B/B	45/51
US 101—Crescent City to US 199	Weekday	North	A/A	4/7*	South	A/A	9/6*
	Weekend		A/A	4/7*		A/A	10/5*
US 101—SR 197 to PM 39.98	Weekday	North	C/D	65/71	South	C/C	67/67
	Weekend		C/C	67/69		C/C	64/69
US 101—PM 39.98 to California/Oregon state line	Weekday	North	C/D	67/73	South	C/C	69/69
	Weekend		C/D	69/71		C/D	63/71

* Denotes the multi-lane measure of effectiveness density in passenger cars per mile per lane.

All of the directional segments would operate at acceptable levels based on the thresholds established in the route concept reports for SR 197, US 199, and US 101 (California Department of Transportation 1999a, 1999b, 2002). For SR 197, all segments would operate at LOS C or better (target LOS E). All segments of US 199 would operate at LOS D or better (target LOS D). All two-lane segments of US 101 would operate at LOS D or better (target LOS D for two-lane segments in rural areas). Therefore, the increase in truck traffic by 2030 due to the project would not result in an adverse effect on traffic operations.

The difference between the 2030 without-project and 2030 with-project conditions is the increase in truck traffic (i.e., 92 trucks per day). This increase in truck traffic, when compared with existing conditions, is another measure of the project's impact on traffic conditions. If the additional 92 trucks per day, when applied to existing conditions, results in segments on SR 197 operating at LOS E or worse, segments on US 199 operating at LOS D or worse, and segments on US 101 operating at LOS D or worse, then there would be an adverse effect on traffic operations. As described above, the additional 92 trucks per day under 2030 conditions would not result in an adverse effect. Levels of service and the percentage of time spent following under existing conditions, shown in Table 2.1.5-3, are the same in 2030, with only three exceptions. Existing conditions, even with the additional 92 trucks per day in 2030, are better than the LOS standards for each roadway segment. Therefore, existing conditions are able to accommodate the increase in truck traffic expected as a result of full buildout of the project. When the additional 92 trucks per day in 2030 is compared with existing conditions, there is no adverse effect on traffic operations.

The results of the 2030 with-project analysis indicate that all roadway segments in the 2030 with-project scenario would operate at or better than their target LOS. Accordingly, traffic is expected to continue to flow at free-flow speeds on all study roadways. Although the project does not include specific transit, pedestrian, or bicycle improvements, it will allow improved access to and from Crescent City for transit and would not degrade the minimal existing bicycle and pedestrian facilities within the study area.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no improved access to or from Crescent City for transit. Increases in truck traffic predicted with the improvements would not occur. There would be no change to existing bicycle and pedestrian facilities.

2.1.5.4 Avoidance, Minimization, and/or Mitigation Measures

No long-term mitigation measures are necessary. Measures necessary during project construction are detailed in Section 2.4, "Construction Impacts," under "Community Impacts" and "Traffic and Transportation."

2.1.6 Visual/Aesthetics

2.1.6.1 Regulatory Setting

NEPA and CEQA

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

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

Forest Service

Six Rivers National Forest Land Resource Management Plan

Portions of the project area fall within parcels of the Six Rivers National Forest, which are managed in accordance with the Six Rivers National Forest Land and Resource Management Plan (Six Rivers RMP). The purpose of this plan is to guide the integrated protection and use of forest resources. The Six Rivers RMP designates Management Area 7, the Smith River National Recreation Area (NRA), which is the management unit within which US 199 and the Middle Fork Smith River fall. The Smith River NRA was designated in November 1990, with the primary goals to "emphasize, protect, and enhance the unique biological diversity; anadromous fisheries; and the wild, scenic, and recreational potential of the Smith River while providing sustained yields of forest products" (U.S. Forest Service 1995). The Smith River NRA Management Plan serves as the management plan that satisfies the requirements of the Wild and Scenic Rivers Act (Sec. 460bbb-7) (Public Law 101-612 1990). Under this act, the project sites along US 199 fall within the Middle Fork-Highway 199 management area (Sec. 460bbb-3.b.2.C) where "the management emphasis for the Middle Fork-Highway 199 management area shall be on maintaining wildlife values and providing for a full range of recreation uses, with particular emphasis on the scenic and recreation values associated with the Smith River, old growth

redwoods, and California State Highway 199." In addition to the Middle Fork Smith River, the following tributaries in the project area are designated recreational rivers:

- Monkey Creek from its headwaters in the northeast quadrant of section 12 T18N R3E, as depicted on the 1951 U.S. Geological Survey (USGS) 15-minute Gasquet topographic map, to its confluence with the Middle Fork Smith River.
- Patrick Creek from the junction of the East and West Forks of Patrick Creek to the confluence with the Middle Fork Smith River.
- Kelly Creek from its source in Section 32 T17N R3E as depicted on 1951 USGS 15-minute Gasquet topographic map to the confluence with the Middle Fork Smith River.

Smith River National Recreation Area Management Plan/Wild and Scenic Rivers

The project area lies within Management Area 3, Middle Fork Management Area, of the Smith River NRA, which emphasizes maintaining wildlife values, scenic and recreation values of the Smith River, offering a full range of recreational uses, and managing the Scenic Byway, US 199 (U.S. Forest Service 1992). According to the NRA, all areas of the Smith River NRA shall:

2. Provide and maintain adequate public access, including vehicular roads for general recreational activities such as camping, hiking, hunting and fishing.
7. Preserve stands and groves of old-growth redwood. Individual large trees in scenic areas will also be retained. Isolated redwood trees in timber production areas may be removed.
8. Consistent with applicable requirements of law, permit removal of trees in those management areas where timber harvest is not specifically authorized, when necessary for human health and safety, to maintain trails or existing roads, for the development of recreation or other facilities, for the protection of the recreation area in the event of fire, or to improve fish and wildlife habitat. Timber damaged or downed in these areas as a result of fire, insects, disease, blow down or other natural events shall otherwise be retained in its natural condition, with removal permitted only upon written determination by the Secretary of Agriculture, based upon written findings, that such removal is necessary to provide for or maintain or enhance biological and ecological diversity, without regard for the commodity value of the timber. Such a decision shall not be delegable by the Secretary but shall be subject to administrative appeal and judicial review.
12. Provide for the restoration of landscapes damaged by past human activity consistent with the NRA Act.
16. Acquire by purchase, donation, exchange, or otherwise lands, waters, or interests therein, including scenic or other easements, and structures or other improvements on lands so acquired within the boundaries of the NRA. An offer to sell, exchange or otherwise dispose of such property by an individual or organization will be given prompt consideration.

Also, Management Area 3, Middle Fork Management Area shall:

a) Provide visitor services for the visiting public including: developed campgrounds, vista points, river access, river oriented day-use facilities, and natural and historical resource interpretation.

b) Incorporate National Scenic Byway management direction when it is completed.

c) Manage for wildlife and scenic values consistent with the objectives of the NRA.

The Middle Fork Smith River is designated as a Recreational River within the project area on US 199 and, therefore, shall be managed in accordance with the Wild and Scenic Rivers Act and with the Smith River NRA Management Plan. The inner gorge of the river to up to one-quarter of a mile from the inner gorge shall be protected, and removal of trees within this area may occur only "when necessary for human health and safety, to maintain trails or existing roads, for the development of recreation and other facilities, for the protection of the recreation area in the event of fire, or to improve fish and wildlife habitat."

The main stem of the Smith River is also designated as a Recreational River within the project area on SR 197 and therefore shall be managed in accordance with the National Wild and Scenic Rivers Act (U.S. Forest Service 1992).

The Six Rivers RMP states that there are areas that have been identified as having the visual quality objectives (VQO) of Retention in the foreground of US 199 (Pass pers. comm.); however, the Smith River Plan does not have these areas mapped. Retention signifies areas where management activities are not visually evident, resulting in a natural appearance. The primary goal of retention VQO is to maintain a natural or near-natural visual condition and to manage human activities so they are not a prominent feature within the characteristic landscape and are not evident to the casual Forest visitor (U.S. Forest Service 1995). In addition, the desired condition for areas managed to meet retention VQOs is that views from visually important roads and trails will appear forested and provide a natural or near-natural appearance, and vegetative or ground-disturbing activities will repeat the representative characteristics of the landscape and will not dominate the visual character of the viewed landscape.

National Scenic Byways Program

US 199 within the Smith River NRA is designated as the Smith River Scenic Byway (National Scenic Byways Program 2009). Under the National Scenic Byways Program, implemented by the FHWA, roadways are designated as National Scenic Byways or All-American Roads based upon their scenic, historic, recreational, cultural, archeological, and/or natural intrinsic qualities. A road must significantly meet criteria for at least one of the above six intrinsic qualities to be designated a National Scenic Byway. For the All-American Roads designation, criteria must be met for multiple intrinsic qualities. Additionally, there must be a local commitment "provided by communities along the scenic byway that they will undertake actions, such as zoning and other protective measures, to preserve the scenic, historic, recreational, cultural, archeological, and natural integrity of the scenic byway and the adjacent area as identified in the corridor management plan." In addition, new signs cannot be erected if they are not in conformance with U.S.C., Title 23, Section 131(c), along any highway that has been designated as a scenic byway under the state's scenic byway program and includes highways that are designated scenic byways under the National Scenic Byways Program and All-American Roads Program, whether or not they are designated as state scenic byways (Federal Highway Administration 1995).

If these roadways no longer possess the intrinsic qualities that supported their designation, local commitment has failed to retain these intrinsic qualities, or if the roadways are not maintained in accordance with their corridor management plan, they can be de-designated.

While governed for their scenic qualities by FHWA as described above, these designated byways fall under jurisdiction of the local county, state (Department), or Forest Service (if on Forest Service lands) and are, therefore, protected largely under those jurisdictions (Steele pers. comm.).

Redwood National and State Parks

While portions of SR 197 and US 199 pass through the Redwood National and State Parks, none of the proposed project locations occur within the parks or on national or state park lands. In addition, the proposed project sites would not affect views from or of national park lands.

Jedediah Smith Redwoods State Park

The Jedediah Smith Redwoods State Park is part of the Redwood National and State Parks. Portions of SR 197 and US 199 pass through the Jedediah Smith Redwoods State Park; however, none of the proposed project locations occur on state park lands. Ruby 2 is the project site closest to the park, and is located over 800 feet north of the northernmost tip of the park. The proposed project sites would not affect views from or of state park lands.

California Wild and Scenic River System

The Smith River is designated as "recreational" from the "confluence of the Middle and South Forks to its mouth at the Pacific Ocean," as is the Middle Fork Smith River from "one-half mile upstream from the confluence with Knopki Creek to the confluence with South Fork Smith River." These segments are protected under the California Wild and Scenic Rivers Act (California Public Resources Code [PRC] Sections 5093.50 et seq.). This act preserves certain designated rivers in their free-flowing state for the benefit and enjoyment of the public. These rivers must possess extraordinary scenic, recreational, fishery, or wildlife values. The Natural Resources Agency is responsible for coordinating activities of state agencies that may affect these designated rivers. In addition to the Middle Fork Smith River, the following tributaries in the project area are designated recreational rivers:

- Monkey Creek from the northern boundary of Section 26 T18N R3E to the confluence with the Middle Fork Smith River.
- Patrick Creek from the junction of East and West Forks of Patrick Creek to the confluence with the Middle Fork Smith River.
- Kelly Creek from its source in Section 32 T17N R3E, as depicted on the 1951 USGS 15-minute Gasquet topographic map, to the confluence with the Middle Fork Smith River.

As per PRC 5093.54(c) "recreational" rivers are "those rivers or segments of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

California Scenic Highway Program

While SR 197 and US 199 are Eligible State Scenic Highways, there are no roadways in or near the project vicinity that are designated as an Official State Scenic Highway worthy of protection for maintaining and enhancing scenic viewsheds (California Department of Transportation 2009). Accordingly, state scenic highway guidelines do not apply.

Del Norte County General Plan

The project site lies within the Smith River Canyons Planning Subarea that is identified in the *Del Norte County General Plan* (Del Norte County 2003) as an area of timber and recreational resources. General plan policies related to water resources, flood hazards, the Smith Canyon subarea, and scenic resources are applicable to the proposed project.

2.1.6.2 Affected Environment

This chapter evaluates the potential impacts to visual resources from implementation of the project. The analysis presented in this chapter is based on the *Visual Impact Assessment 197/199 Safe STAA Access Project, Del Norte County* (ICF International 2010).

Regional Visual Character

The project is located in the Klamath Mountains of Del Norte County and within 15 miles northeast of Crescent City. The project region, as discussed in this section, is considered to be the area within a 30-mile radius of the project location.

The project region lies within the mountainous terrain of the Klamath Mountains. It is primarily forested except along the western edge of the region, where the forest transitions to light agriculture and the developed towns of Crescent City and Fort Dick to the Pacific coastline and ocean. The dominant types of natural vegetation are Douglas-fir and redwood forests and riparian species along drainages in the region. Water features in the project region include the Pacific Ocean, Lake Earl, and the Chetco, Whinchuck, Klamath, and Trinity Rivers.

A mix of agricultural, developed, and forested mountain landscapes characterize the project region. The landscape pattern is influenced by the mountainous terrain and development centralized along major transportation corridors. The visual quality of the project region and the area immediately surrounding the project area is moderately high in vividness, intactness, and unity. (The project areas shown in Figure 1-1 are defined as the area proposed for any ground-disturbing activities, such as construction activities, construction staging area, and construction access.)

Project Vicinity Visual Character

The project vicinity is defined as the area closest to the project sites, within 0.5 mile of the sites along SR 197 and US 199. SR 197 is a winding roadway that roughly follows the Smith River in a northwest–southeast direction. The roadway snakes through the redwood forest, and small groupings of residential development are scattered along the length of the roadway to the east and west. The viewshed from SR 197 can change from an almost tunnel-like corridor, with only foreground views, that is walled by tall evergreen trees and bends in the road to being somewhat open with foreground views of residential development. Much of this development is nestled within the surrounding forest, abutting and adjacent to the right-of-way. Middleground views are mostly limited by vegetation and residential structures. The federal- and state-designated Wild and Scenic Smith River meanders over a mix of coarse gravel and bed rock river bed, creating a number of large gravel bars, supporting varying amounts of riparian vegetation along its banks and on its gravel bars. The Jedediah Smith Redwoods State Park/Redwoods National Park falls within the vicinity and is located west of SR 197. The only camping along SR 197 within the project vicinity is within Ruby Van Deventer County Park. Camping is also available at the

Jedediah Smith Campground, within Jedediah Smith Redwoods State Park, approximately 4 miles to the south of Ruby Van Deventer County Park along SR 197. Development in the project vicinity of SR 197 is limited because the area consists of forested terrain, largely comprised of designated state and national park and forest lands. The Smith River is the primary water feature in the vicinity.

US 199 is a winding roadway that follows the Middle Fork Smith River in a northeast–southwest direction. The roadway roughly parallels the river to the north, except for small portions where the roadway bridges the river, follows to the south, then crosses back over and continues to follow to the north again. The roadway snakes through the Douglas-fir forest and gently climbs and descends through the landscape. Traveling near the base of the slopes, above the river valley, the roadside character to the north slopes almost immediately upwards and changes from nearly vertical exposed rock faces, to densely vegetated steep and vertical faces, to scree-covered cut slopes, and to a combination in between. To the south, a steep embankment drops down to the river. As with to the north, this embankment varies to being scarcely vegetated, rocky slopes to densely vegetated. The federal- and state-designated Wild and Scenic River flows over mostly bedrock, which limits the amount of riparian vegetation that can be supported by such terrain and substrate. In some places, the road is cut down into the terrain; and instead of the typical embankment, the result is a vegetated berm to the south of the roadway that then drops down to the river.

The viewshed from US 199 can change from an almost tunnel-like corridor, with only foreground views, that is walled by tall evergreen trees, steeps slopes, and bends in the road to being open with foreground views of the river valley and middleground views of the nearby ridges and peaks framed by foreground slopes and vegetation. Development in the vicinity is limited to the Patrick Creek Lodge and private residences in Washington Flat, near Patrick Creek Narrows Location 3. The nearest Forest Service campground is located less than 0.25 mile to the west of the Patrick Creek Lodge, outside the project vicinity (U.S. Forest Service 2009). The US 199 project sites are located within the Smith River NRA within the Six Rivers National Forest that, along with terrain and special designations, limits development in the vicinity. The Middle Fork Smith River and its tributaries, such as Little Jones and Monkey Creeks, are the primary water features in the vicinity.

The visual quality of the project vicinity is moderately high in vividness, intactness, and unity because of the scenic nature of viewsheds, the presence of a picturesque waterway, and the lack of visual obstructions caused by manmade elements. Views to the background are not present because they are screened or blocked by terrain, location of viewing locations in the landscape, and existing vegetation.

Study Area Landscape Units and Key Viewpoints

The proposed project consists of two separate sites along SR 197 and five separate sites along US 199, which causes a distinct separation between sites at which viewer groups would be affected by the proposed project. Therefore, for this analysis, the area surrounding the project sites has been subdivided into seven landscape units (Landscape Units 1–7) that are based on specific vantage points and differing sensitivities of those affected by the proposed project. Landscape Units 1–7 are designated Ruby 1, Ruby 2, Patrick Creek Narrows Location 1, Patrick Creek Narrows Location 2, Patrick Creek Narrows Location 3, the Narrows, and Washington

Curve, respectively, and are shown in Figure 2.1.6-1. These landscape units provide the framework for the analysis below. Key viewpoints, shown in Figures 2.1.6-2a through 2.1.6-2i, have been chosen for their representation of the landscape unit within which they are located and the viewers affected.

Landscape Unit 1—Ruby 1

Landscape Unit 1 includes the 687-foot construction corridor along SR 197 and the areas adjacent to the corridor, including Ruby Van Deventer County Park located west of SR 197 and the quarry. Viewers in this unit are park users and travelers on SR 197. The roadway is winding with vegetation on either side that limits views to the foreground. A quarry is located on the east side of the roadway, which can be seen from the park and near the entry to the quarry (Figure 2.1.6-3a, Photo 1). While vegetation partly blocks quarry activities, the quarry is not adequately screened, and it detracts from the unity and intactness of the Landscape Unit. A utility line with wooden poles runs along the west side of the roadway, but the poles are shorter than the nearby tree canopies and are made of a natural material; therefore, they do not stand out against their surroundings. There are no street lights along this section of roadway. Vegetation also blocks middleground and background views to the surrounding area and region. Foreground views consist of the winding roadway, coast redwood forest, and limited glimpses of the Smith River and its gravel bar at this location (Figure 2.1.6-3a, Photo 2). Views along the roadway are scenic yet somewhat typical of the region where there are many roadways that wind through the redwoods along waterways.

Landscape Unit 2—Ruby 2

Landscape Unit 2 includes the 2,307-foot construction corridor along SR 197 and the residences adjacent to and west of the corridor. Viewers in this unit are residents and travelers on SR 197. The roadway is winding with vegetation on either side that limits views to the foreground. The east side of the roadway is forested. While native vegetation and ornamental landscaping along the roadway right-of-way partly blocks views of and from the roadway, and private residences are set back off the road between 200 and 300 feet, these properties have large open lawns with little screening other than the roadside vegetation (Figure 2.1.6-3b, Photo 3). Views to the Smith River are obscured by the residences and dense vegetation located between the residences and the river. A utility line with wooden poles runs along both sides of the roadway as it zigzags throughout the corridor, crossing the roadway several times. However, the poles are shorter than the nearby tree canopies and are made of a natural material; therefore, they do not stand out against their surroundings. Thrie-beam metal guardrails are located along portions of the corridor, along with standard roadway safety signage and markers, but these elements are only minimally intrusive given the scenic quality of the roadway and limited usage. There are no street lights along this section of roadway. Vegetation and residences block middleground and background views to the surrounding area and region. Foreground views consist of the winding roadway, coast redwood forest, and the residences at this location (Figure 2.1.6-3b, Photo 4). While this area is generally naturalized, the presence of the residences detracts from the unity and intactness of the Landscape Unit. Views along the roadway are scenic yet somewhat typical of the region where there are many roadways that wind through the redwoods with scattered residences located off the roadway.

Landscape Unit 3—Patrick Creek Narrows Location 1

Landscape Unit 3 includes the 600-foot corridor along US 199, the downhill embankment and Middle Fork Smith River to the east, and the uphill slope to the west. Viewers are travelers on US 199, which curves through this landscape unit, following the Middle Fork Smith River located to the south, and separated from it by a thrie-beam guardrail and rocky embankment spotted with evergreen trees of the surrounding Douglas-fir forest. North of the roadway, the embankment slopes steeply upwards with an exposed rock and scree-covered cut slope face (Figure 2.1.6-3c, Photo 5). The top and sides of the cut slope are densely vegetated with undisturbed pre-existing vegetation. The viewshed from US 199, looking to the east and west, has open foreground views of the river valley and middleground views of the nearby ridges and peaks framed by foreground slopes and vegetation (Figure 2.1.6-3c, Photo 6). Views to the background are not present because they are limited by terrain, location of viewing locations in the landscape, and existing vegetation. There is no development, street lights, or utility lines in this landscape unit, but there are a few standard roadway safety signs and markers.

Landscape Unit 4—Patrick Creek Narrows Location 2

Landscape Unit 4 includes the 1,690-foot corridor along US 199 that crosses the Middle Fork Smith River and shallow roadside embankments. Viewers in this unit are travelers on US 199. The roadway snakes through the Douglas-fir forest and gently climbs and descends through the landscape, roughly paralleling the river to the north, crossing the river, and then following it to the south. The roadside character opposite the river side of the roadway gently slopes up and is densely vegetated. To the south, a steep embankment drops down to the river. The riverside embankment has steep, moss-covered rocky slopes that are moderately vegetated. The scenic viewshed in this unit is somewhat enclosed by the winding nature of the roadway and tall evergreen trees, with the visual progression of bends meandering through the landscape below nearby ridges and peaks in the middleground that are framed by foreground slopes and vegetation (Figure 2.1.6-3d, Photos 7 and 8). The boulder lined pull-off to the south of the bridge, at the bend in the road, allows roadway travelers the chance to exit their vehicles and to have immediate and prolonged views of the river (Figure 2.1.6-3e, Photo 9). The bridge, which allows for views to the river, is an arch bridge built in 1925 that can be seen more closely upon approach and from the roadside pull-off north of the bridge (Figure 2.1.6-3e, Photo 10).

Landscape Unit 5—Patrick Creek Narrows Location 3

Landscape Unit 5 includes the 686-foot construction corridor along US 199 and the residences adjacent to and south of the corridor. Viewers in this unit are travelers on US 199 and adjacent residents. The roadway roughly parallels the river to the north through densely vegetated steep slopes of Douglas-fir forest and gently climbs when heading east of the landscape (Figure 2.1.6-3f, Photos 11 and 12). To the south, a densely vegetated, steep embankment drops down to the river, but the river is not visible along this portion of the roadway. The viewshed from US 199 is mostly limited to foreground views due to the curvature of the roadway and tall evergreen trees; however, ridges in the middleground can be seen slightly rising above the tree line based on location on the roadway. Views to the background are not present because they are limited by terrain and existing vegetation. Development in the vicinity is limited to a few private residences south of the roadway that are not readily visible from the roadway; residences views are largely screened by the dense vegetation along the roadside. There are no street lights or utility lines in this landscape unit, but there are a few standard roadway safety signs and markers.

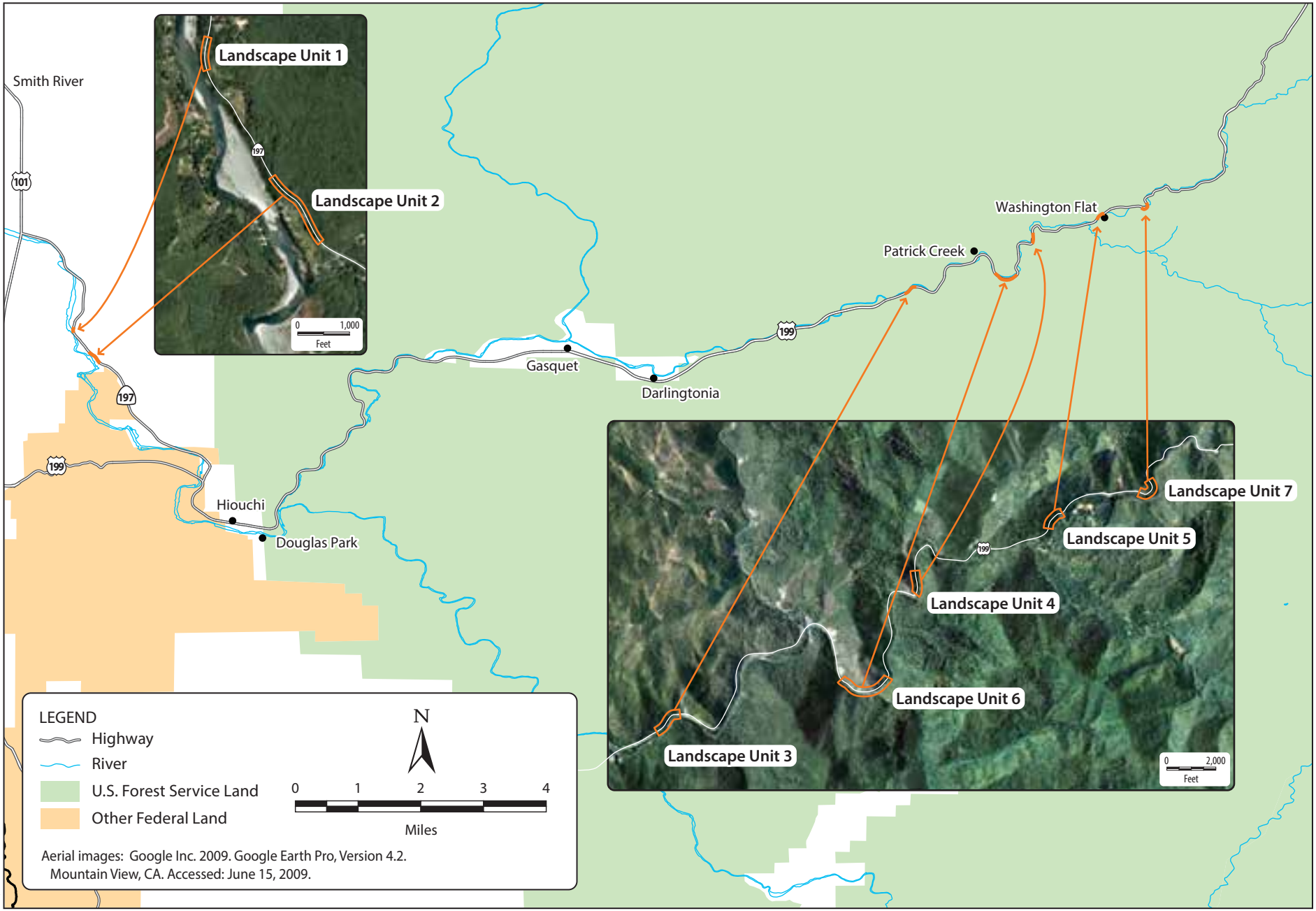


Figure 2.1.6-1
Landscape Units

Figure 2.1.6-2a
Key Viewpoints and Photo Locations:
Landscape Unit 1 (Ruby 1)

Figure 2.1.6-2b
Key Viewpoints and Photo Locations:
Landscape Unit 2 (Ruby 2)

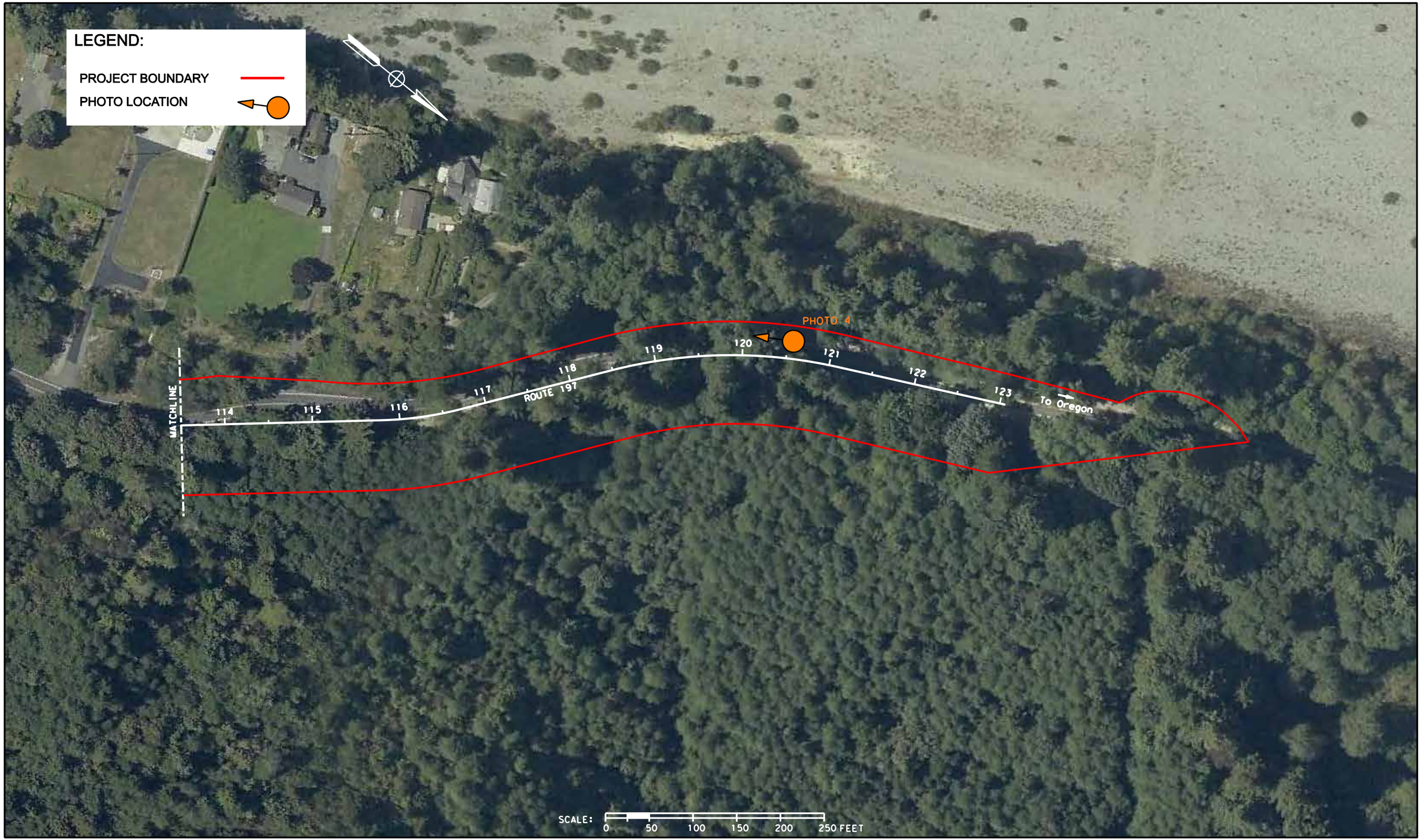


Figure 2.1.6-2c
Key Viewpoints and Photo Locations:
Landscape Unit 2 (Ruby 2)

Figure 2.1.6-2d
Key Viewpoints and Photo Locations:
Landscape Unit 3 (Patrick Creek Narrows Location 1)

Figure 2.1.6-2e
Key Viewpoints and Photo Locations:
Landscape Unit 4 (Patrick Creek Narrows Location 2)

Figure 2.1.6-2f
Key Viewpoints and Photo Locations:
Landscape Unit 5 (Patrick Creek Narrows Location 3)

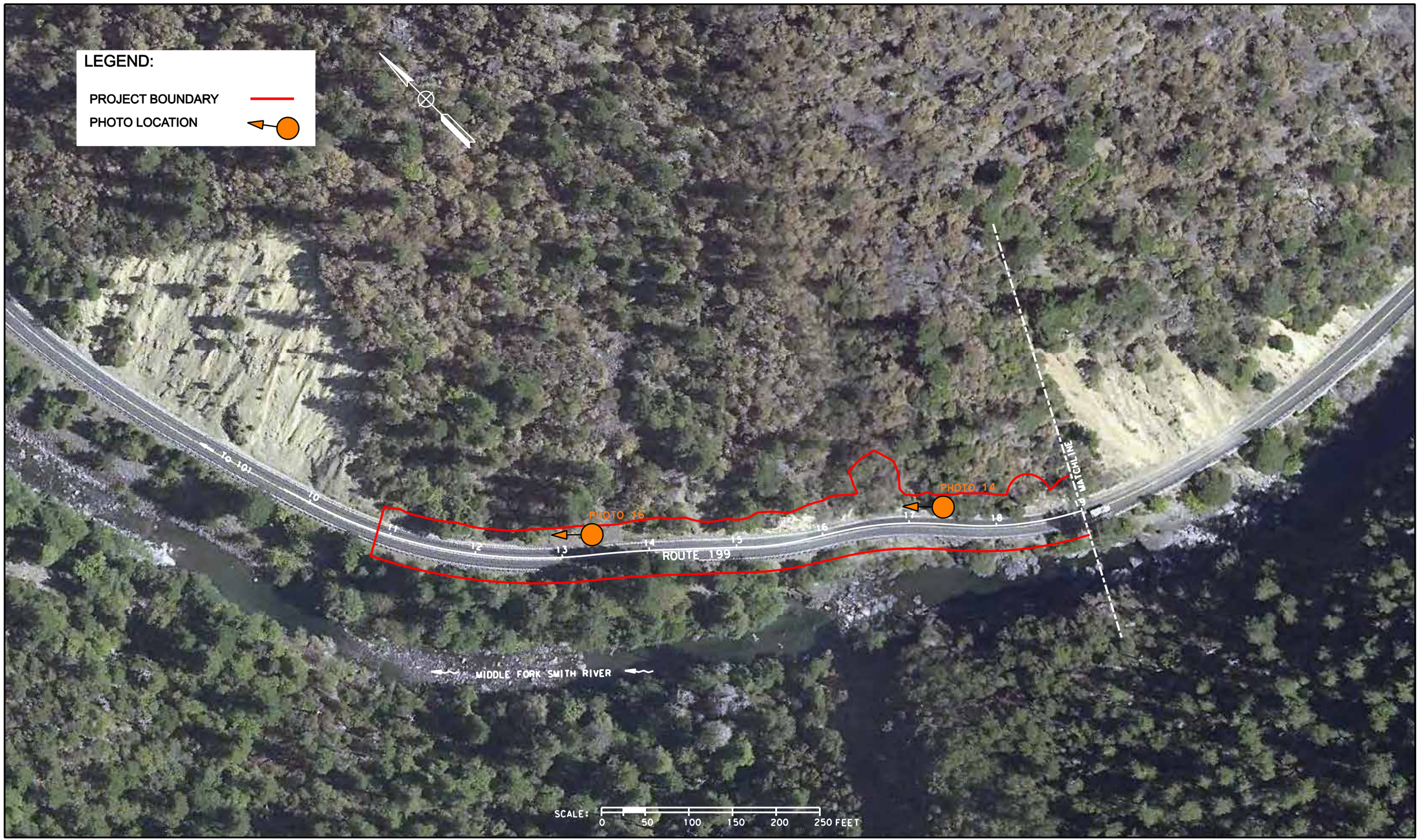


Figure 2.1.6-2g
Key Viewpoints and Photo Locations:
Landscape Unit 6 (The Narrows)

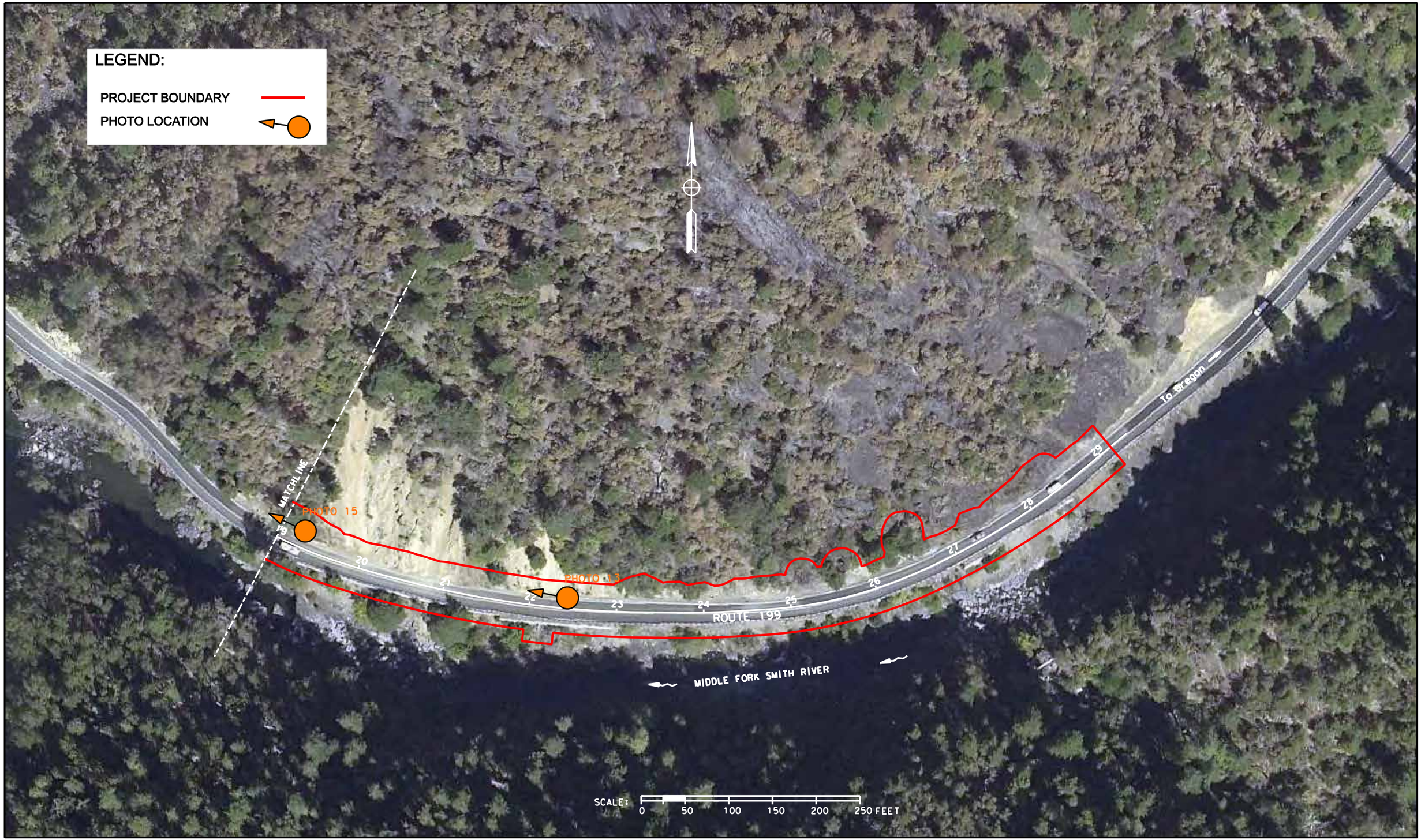


Figure 2.1.6-2h
Key Viewpoints and Photo Locations:
Landscape Unit 6 (The Narrows)

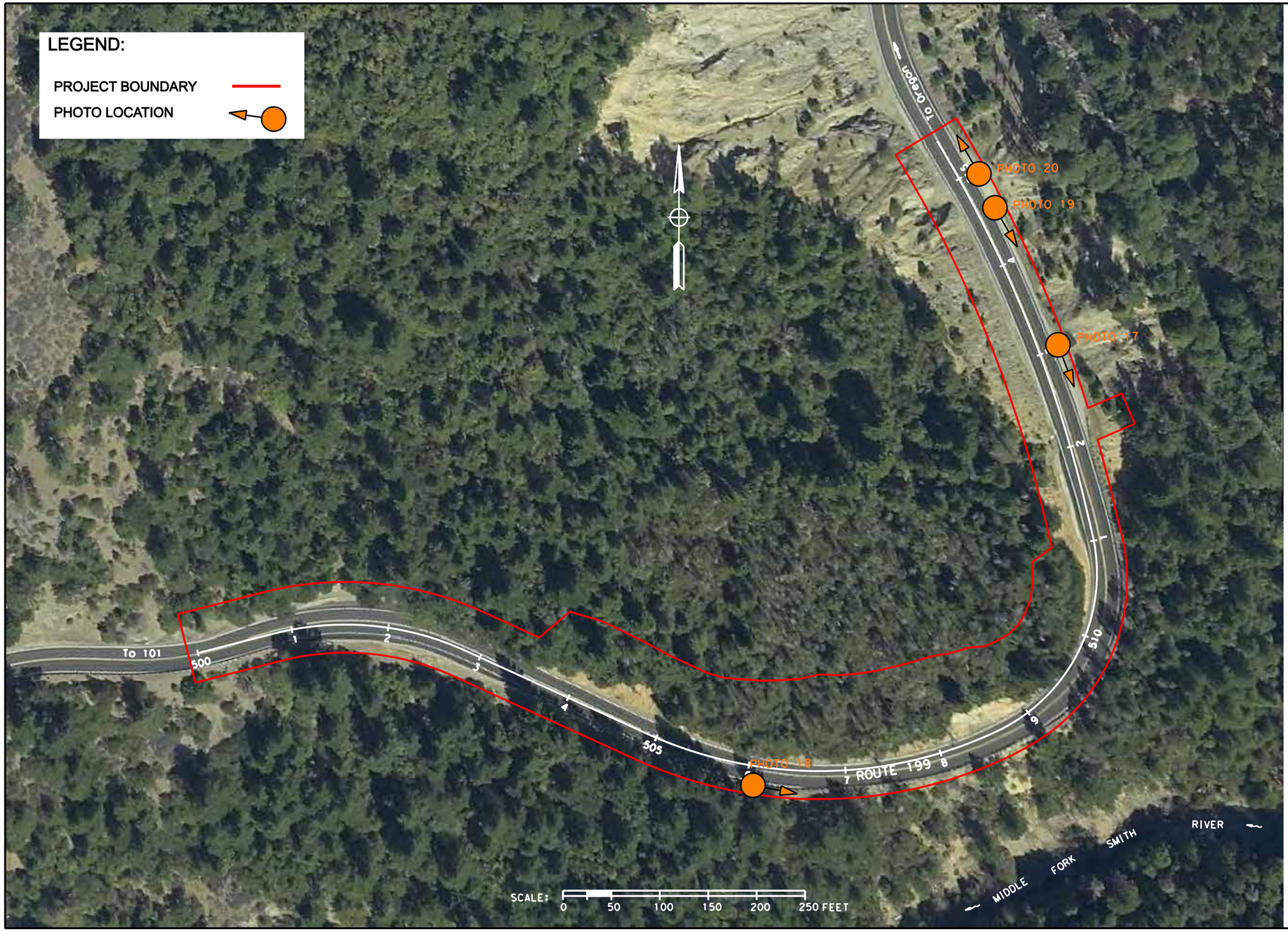


Figure 2.1.6-2i
Key Viewpoints and Photo Locations:
Landscape Unit 7 (Washington Curve)

Photo 1

Photo 2

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3a
Landscape Unit 1 (Ruby 1)

Photo 3

Photo 4

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3b
Landscape Unit 2 (Ruby 2)

Photo 5

Photo 6

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3c
Landscape Unit 3 (Patrick Creek Location 1)

Photo 7

Photo 8

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3d
Landscape Unit 4 (Patrick Creek Location 2)

Photo 9

Photo 10

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3e
Landscape Unit 4 (Patrick Creek Location 2)

Photo 11

Photo 12

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.7-3f
Landscape Unit 5 (Patrick Creek Location 3)

Landscape Unit 6—The Narrows

Landscape Unit 6 includes the 1,584-foot corridor along US 199. Viewers in this unit are travelers on US 199. The roadway travels near the base of nearly vertical, steep rock cut slopes to the north that in places have large, overhanging rock outcrops. The exposed rock faces exhibit mosses and some larger vegetation that has established in interstices in the cut slope (Figure 2.1.6-3g, Photos 13 and 14). To the south, moderately vegetated embankment drops down steeply toward the river. In certain sections cable mesh drapery has been installed to prevent falling rock from unstable, vertical rock faces (Figure 2.1.6-3h, Photo 15). This section of US 199 has no shoulders and the vertical cut slope and steep river embankment create a narrow corridor that requires extra attention and limits roadway travelers' ability to take in their surroundings. Around certain curves, there are very quick, limited views of the river (Figure 2.1.6-3h, Photo 16). The viewshed from this landscape unit is mostly limited to foreground views due to the curvature and narrowness of the roadway, steep rock faces, and tall evergreen trees; however, ridges in the middleground can be seen slightly rising above the tree line based on location on the roadway. Views to the background are not present because they are limited by terrain and existing vegetation. There is no development, street lights, or utility lines in this landscape unit, but there are thrie-beam guardrails and a few standard roadway safety signs and markers.

Landscape Unit 7—Washington Curve

Landscape Unit 7 includes the 1,500-foot corridor along US 199. Viewers in this unit are travelers on US 199. The roadside character to the north slopes almost immediately upwards with steep-to-nearly vertical exposed soil, rock, and scree-covered faces that exhibit mosses and some larger growing vegetation that have established in interstices in the cut slope (Figure 2.1.6-3i, Photo 17). These slopes range in color from grey to red, providing visual interest. To the north, the slope is vegetated with Douglas-fir forest and knobcone pine on the eastern side of the ridge. To the south, a thrie-beam guardrail separates traffic from the steep embankment that drops down to the river (Figure 2.1.6-3i, Photo 18). This embankment is moderately to densely-vegetated with Douglas-fir forest. The roadway slopes downhill when traveling to the northeast and uphill in the opposite direction, which allows for views to the surrounding landscape on certain portions of the curves (Figure 2.1.6-3j, Photos 19 and 20). However, this section of US 199 has no shoulders, although there are a few pull-offs, and the vertical cut slope and steep river embankment create a narrow corridor that requires extra attention and limits roadway travelers' ability to take in their surroundings. The viewshed from this landscape unit is mostly limited to foreground views due to the curvature and grade of the roadway and steep rock faces; however, ridges in the middleground can be seen slightly rising above the tree line based on location on the roadway. The river is not visible from the roadway in this landscape unit. Views to the background are not present because they are limited by terrain and existing vegetation. There is no development, street lights, or utility lines in this landscape unit, but there are a few standard roadway safety signs and markers.

Viewer Groups and Responses

Roadway Users

One of the largest viewer groups of the proposed project are travelers along SR 197 and US 199. Because these routes handle commercial, commuter, and recreational traffic, frequent viewers include truck drivers, commuters, and recreationists. Speeds on both roadways vary due to their

winding nature and narrow or no shoulders; and roadway conditions require extra attention and focus. Residents acquainted with the area driving locally would have a higher awareness of the proposed project. Tourists and vacationers unfamiliar with the area would be less aware of the project, with their views oriented toward the surrounding landscape.

Roadway users frequently traveling on roadways generally become familiar with the passing landscape, and their attention typically is not focused on the passing views. Standard roadway speeds allow viewers to observe their surroundings and experience the passing landscape and changing views throughout the project corridor; however, views are of short duration and roadway users are fleetingly aware of surrounding traffic, road signs, their immediate surroundings within the automobile, and other visual features. Drivers are less aware of their greater surroundings because of their concentrated effort on slowing down to handle roadway curves and focus on oncoming traffic. However, the terrain and bends in the roadway allow for high quality scenic views for passengers. Overall, roadway users would have moderately low sensitivity to changes in the visual environment.

Recreationists

Recreationists in the project area primarily include campers, naturalists, fishermen, hikers, kayakers, and photographers. From Ruby Van Deventer County Park, SR 197 is visible, primarily from the parking lot near the park entry. Ruby Van Deventer County Park offers 18 campsites under the forest canopy and in proximity to the Smith River, with limited views of the roadway corridor. US 199 falls within the Smith River NRA of the Six Rivers National Forest, and the proposed project may be partially visible, at a distance, to hikers on Forest Service roadways and hiking trails in the area. Campsites at the Forest Service's Patrick Creek campground are nestled in the forest, down the slope toward the river, and they have limited views of the roadway. Recreationists who would view the proposed project are more likely to regard the natural and built surroundings as a holistic visual experience, yet they have limited, intermittent viewing durations of the proposed project. Recreationists would be moderately sensitive to visual changes in the environment because the baseline condition includes the existing roadway.

Residents

Residents along SR 197 are most likely to be affected by the proposed project because of their proximity to SR197. Residential properties abut the Department's right-of-way, and residences are separated from it by native vegetation and landscaping. Residents are likely accustomed to the traffic and sight of the vegetated right-of-way and SR 197. Residences face toward SR 197, but are set back from the roadway by about 200 to 300 feet, with large open areas of lawn with some residential landscaping. Residents along US 199 have less direct views of US 199, because there is more native vegetation between them and the roadway and because they are located slightly downhill. According to public comments received on the proposed project during a public scoping meeting, residents have expressed opposition to increased truck traffic on the roadways but support safer roadway conditions and speeds (ICF Jones & Stokes 2008). Even though visual focus is not presently placed on SR 197 and US 199, residents would have high viewer sensitivity because of public perceptions and the high degree of public awareness of the proposed project.

Photo 13

Photo 14

Figure 2.1.6-3g
Landscape Unit 6 (The Narrows)

Photo 15

Photo 16

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3h
Landscape Unit 6 (The Narrows)

Photo 17

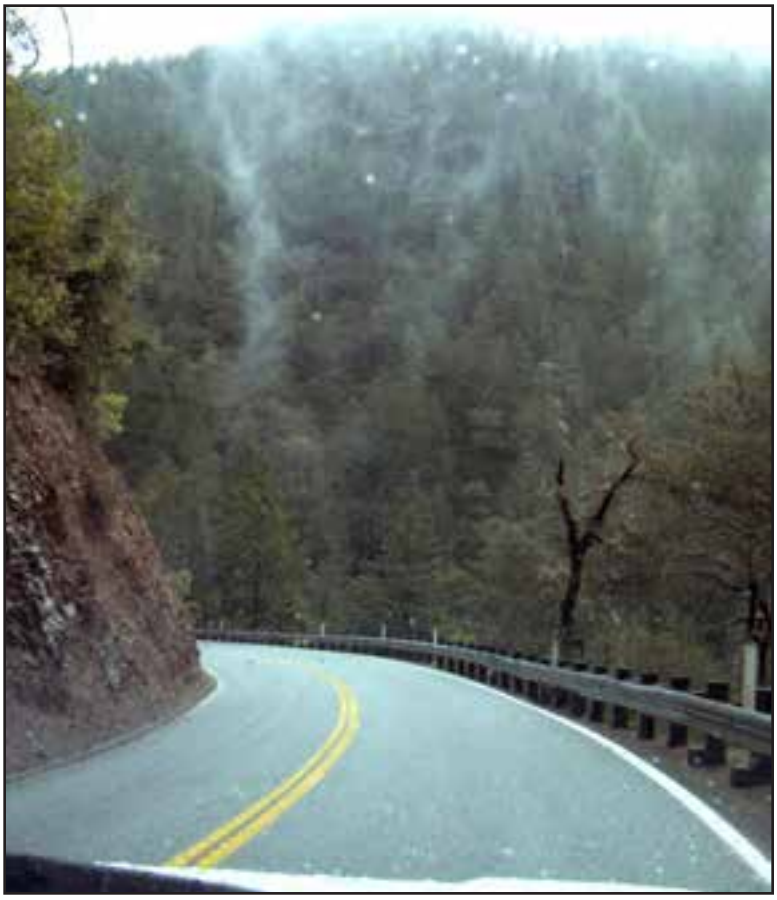


Photo 18

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3i
Landscape Unit 7 (Washington Curve)

Photo 19

Photo 20

Graphics ... 00599.08 (3-2010)JD

Figure 2.1.6-3j
Landscape Unit 7 (Washington Curve)

2.1.6.3 Environmental Consequences

This section describes how the proposed project and alternatives could affect visual/aesthetic resources. Because evaluating visual impacts is inherently subjective, federal and professional standards of visual assessment methodology have been used to determine potential impacts on aesthetic values of the project area.

There are no scenic vistas along SR 197. Along US 199, the project involves widening the roadway and curve radii, installing or widening the shoulders, installing or relocating guardrails, installing retaining structures, and cutting existing slopes in certain locations and relocating a bridge near its existing location; none of these improvements would substantially alter vistas that can be viewed while using either US 199 relative to baseline conditions. Nor would it alter vistas as viewed from residences or recreationists. It would create a safer driving experience for roadway users on US 199 and possibly allow slightly extended views of vistas that are present because of the improved roadway conditions. There would be no effect on scenic vistas.

Degrade Scenic Resources, Including, but not Limited to, Trees, Rock Outcroppings, and Historic Buildings Within a Scenic Highway

Landscape Units 1 and 2 (Ruby 1 and 2)
SR 197 is an Eligible State Scenic Highway but is not officially designated. Therefore, within Landscape Units 1 and 2, the proposed project would not affect scenic resources along a scenic highway.

Landscape Units 3–7 (Patrick Creek Narrows Locations 1, 2, and 3; the Narrows; and Washington Curve)
US 199 is an Eligible State Scenic Highways but is not officially designated. It is, however, designated as the Smith River Scenic Byway and falls under jurisdiction of the Forest Service being within the Smith River NRA. Also, the Six Rivers RMP states that there are areas of "retention" in the foreground of US 199.

Widening the roadway and curve radii, installing or widening the shoulders, and installing or relocating guardrails, would not substantially alter the existing visual resources of the project site and would not affect foreground areas seen from US 199 that have a VQO of retention. Instead, these changes would create a safer driving experience for roadway users on US 199 and possibly could allow slightly extended moments when viewers are able to take in more of their surroundings. However, installing retaining structures, cutting existing slopes in certain locations, and relocating a bridge near its existing location would remove, damage, and degrade existing scenic resources such as trees, rock and vegetated slopes, and a 1925 bridge structure. These effects are discussed in further detail below as they also relate to the visual character or quality of project sites.

Degrade the Existing Visual Character or Quality of Project Site and its Surroundings
Tables located at the end of each landscape unit impact discussion below include the existing visual quality rating and post-project visual quality rating for each alternative. Tree removal numbers provided for Landscape Units are based on tree take data from the Natural Environmental Study (California Department of Transportation 2010).

Landscape Unit 1 (Ruby 1)

Visible changes in this landscape unit would include lengthening the curve of the road. Lane widths would remain 12 feet; shoulders would be increased from their existing 0- to 1-foot widths to new varying widths. On the southbound side, the new shoulders would vary from 0 to 7 feet, transitioning from each end of the project limits. Four-foot shoulders are proposed on the northbound side. Vegetation removal would be limited to that required for widening. This would involve two redwood trees, approximately 17 and 18 inches diameter at breast height (dbh)[1] three alder trees, ranging from 14 to 16 inches dbh; and a cluster of California bay trunks, approximately 42 inches dbh. One utility pole would be relocated.

Views of this landscape unit encompass a winding roadway surrounded by towering redwood trees where the predominant visual feature is the surrounding forest vegetation. This enclosed forest view is moderately free of encroaching elements, except for the quarry. While modifications to the roadway surface would not affect visual resources or the existing visual character, tree removal north of PM 4.42 would act to open views from the roadway of the quarry and create a degraded view from the roadway and would affect the visual quality of the viewshed.

Landscape Unit 2 (Ruby 2)

Visible changes in this landscape unit would result from any of the three design alternatives proposed for this location.

Four-Foot Shoulders Alternative

Visual changes would result from improving the existing curve radii, slightly widening the existing roadway alignment, and installing 4-foot-wide shoulders. Vegetation removal would be limited to that required for widening. This would involve 28 redwood trees, ranging from 6 to 144 feet dbh, and 22 non-redwood trees, ranging from 6 to 48 inches dbh. Twelve tree stumps were also identified for removal, ranging from 48 to 180 inches dbh. Right-of-way estimates show that utility poles would need to be relocated. Segments of chain-link fence would also need to be relocated to accommodate the proposed width of the road after construction.

Views of this landscape unit encompass the residential properties along a winding roadway surrounded by deciduous trees and towering redwoods where the predominant visual feature is the surrounding forest vegetation. Widening the roadway surface and removing a number of large trees on both sides of the street would degrade the existing visual quality of trees framing the roadway corridor. This alternative has the greatest impact on visual resources in this landscape unit.

Two-Foot Shoulders Alternative

Visual changes would result from improving the existing curve radii, slightly widening the existing roadway alignment, and installing 2-foot-wide shoulders. Vegetation removal would be limited to that required for widening. This would involve 18 redwood trees, ranging from 6 to 120 inches dbh, and five non-redwood trees, ranging from 6 to 24 inches dbh. Design calculations also identified eight tree stumps for removal that range from 52 to 120 inches in diameter. Right-of-way estimates show that utility poles would need to be relocated.

[1] Diameter measured at 4.5 feet above the forest floor on the uphill side of the tree.

Views of this landscape unit encompass the residential properties along a winding roadway surrounded by deciduous trees and towering redwoods where the predominant visual feature is the surrounding forest vegetation. While modifications to the roadway surface would not affect visual resources or the existing visual character, removal of large trees on the property across the street from the residences would act to open the area along the roadway corridor and degrade the existing visual quality of trees framing the roadway corridor.

Two-Foot Widening in Spot Locations Alternative

Visual changes would result from improving the existing curve radii and constructing spot widen at the inside curve shoulders to 2 to 4-foot-wide shoulders. Vegetation removal would be limited to that required for widening. This would involve three redwoods, ranging from 18 to 31 inches dbh, and 12 non-redwood trees, ranging from 6 to 23 inches dbh. Four tree stumps that are approximately 6 to 10 feet in diameter would also need to be removed. Two utility poles would need to be relocated for this alternative.

Views of this landscape unit encompass the residential properties along a winding roadway surrounded by deciduous trees and towering redwoods where the predominant visual feature is the surrounding forest vegetation. While modifications to the roadway surface would not affect visual resources or the existing visual character, removal of large trees on the property across the street from the residences would act to open the area along the roadway corridor and degrade the existing visual quality of trees framing the roadway corridor. However, this alternative requires the least amount of tree removal and would remove trees of a smaller stature as compared to the Four-Foot Shoulders Alternative and the Two-Foot Shoulders Alternative. Therefore, this alternative would have the least visual impact on the landscape unit.

Landscape Unit 3 (Patrick Creek Narrows Location 1)

Visible changes in this landscape unit would include a slight increase to the curve radius and an increase in the roadway lane width to a minimum of two 12-foot lanes with 4-foot shoulders on both sides. Typical existing cross-section widths of the existing highway through this section vary from 26 to 31 feet, while the proposed project would create a constant 32-foot width within the project, including a 3-foot shoulder on the river side (eastbound lane) of the road and no shoulder on the cut-slope side (westbound lane). The embankment on the cut-slope side consists of an 80-foot cut slope of unconsolidated cobbles and boulders. Because excavation of the toe of this slope might result in perennial rock fall, a retaining wall along the river side of the road, approximately 190 feet long and 5 feet tall, is proposed along the river side of the road above a portion of the existing steep rock-armored riverbank. Vegetation removal would be limited to that required for widening and construction of the wall. This would involve two Douglas-fir and 16 white alder between 6 and 8 inches dbh.

Views of this landscape unit encompass the curving US 199, the river to the south, the rocky embankment spotted with evergreen trees, and the steep upwards slope with an exposed rock and scree-covered cut face whose top and sides are densely vegetated with pre-existing undisturbed vegetation. The predominant visual feature is the river valley and views of the nearby ridges and peaks framed by foreground cut slopes and surrounding forest vegetation. While modifications to the roadway surface would not affect visual resources or the existing visual character, a greater area of cut slope would act to increase the area of cut slope,

require a retaining wall, and degrade the existing visual quality of the roadway corridor. However, aesthetic treatments of the wall would be incorporated into the wall's design to minimize the wall's effect.

Landscape Unit 4 (Patrick Creek Narrows Location 2)

Visible changes in this landscape unit would result from any of the three design alternatives proposed for this location. In general, all alternatives would require rock excavation that would extend over 100 feet above the highway and expose 1.0 acre of newly excavated rock slope. A 1:1 cut-slope ratio is anticipated, pending final geotechnical recommendations. Because of the fractured nature of the sandstone bedrock, rock fall is expected after construction. Therefore, a permanent rock fall mitigation system may be needed and may consist of a wire mesh drape, or incorporating a rock fall catchment area at roadway level. Common features of all alternatives include: culvert reconstruction; roadway and shoulder widening; cold plane asphalt concrete; dense grade and open grade asphalt concrete; striping and shoulder backing; and metal-beam guardrail construction.

Views of this landscape unit encompass a gently undulating and winding roadway, surrounding Douglas-fir forest, shallow roadside embankments, bridge crossing over the Middle Fork Smith River, and views of the river from the bridge. While modifications to the roadway surface would not affect visual resources or the existing visual character, a vast area of cut slope with a rock fall mitigation system would greatly degrade the existing visual quality of the roadway corridor.

Upstream Bridge Replacement Alternative

In addition to visual impacts from the common features of all alternatives, this alternative would replace the bridge to an alignment upstream of its current location. A retaining wall, approximately 400 feet long and up to 100 feet high, would be constructed and/or rock bolts installed on the southwest, upstream side of the proposed new bridge. Realignment of the roadway, relocation of the bridge, landform alteration, and vegetation removal would greatly affect the existing visual quality of the landscape unit. Vegetation removal would involve 173 trees with sizes ranging from 6 to 42 inches dbh. This alternative requires more tree removal and modification of the existing visual environment as compared to the Bridge Preservation with Upslope Retaining Wall Alternative. Therefore, this alternative would have a high degree of visual impact on the landscape unit. Aesthetic treatments of the wall would be incorporated into the wall's design to minimize the wall's effect.

Downstream Bridge Replacement Alternative

This alternative would involve replacing the bridge to an alignment downstream of its current location. A 150 foot long retaining wall and 95 foot long viaduct would be built on the southeast, downstream side of the new bridge, and transition directly into the new bridge approach. The retaining wall would extend down slope from highway level to a height of 15 feet and be supported along the bank of the Middle Fork Smith River. Additionally, a wall up to 10-feet high and 175-feet long along the cut slope north of the new bridge would be required with this alternative. The viaduct would allow the widened northbound highway be supported over the bank of the Middle Fork Smith River. Column supports and a shorter curtain wall may be built under the northbound traffic lane potentially raising the viaduct footing above that footing elevation needed for the retaining wall.

As with the Upstream Bridge Replacement Alternative, realignment of the roadway, relocating the bridge, landform alteration, and vegetation removal would greatly affect the existing visual quality of the landscape unit. Vegetation removal would involve 109 trees with sizes ranging from 6 to 52 inches dbh. This alternative requires more tree removal and modification of the existing visual environment as compared to the Bridge Preservation with Upslope Retaining Wall Alternative. Therefore, this alternative would have a high degree of visual impact on the landscape unit. Aesthetic treatments of the wall would be incorporated into the wall's design to minimize the wall's effect.

Bridge Preservation with Upslope Retaining Wall Alternative

In addition to visual impacts from the common features of all alternatives, this alternative would require construction of a retaining wall/rock bolting or rock net drapery on the cut slope side of the highway. The retaining wall/rock bolting area would be approximately 300 feet long and up to 100 feet high. This would greatly reduce earthwork, tree removal, and modifications to the roadway surface compared with the Upstream Bridge Replacement Alternative; however, construction of a large retaining wall would still greatly affect visual resources and the existing visual character. Vegetation removal would involve 165 trees with sizes ranging from 6 to 36 inches dbh. Aesthetic treatments of the wall would be incorporated into the wall's design to minimize the wall's effect.

Landscape Unit 5 (Patrick Creek Narrows Location 3)

Visual changes in this landscape unit include straightening the "S" curve by eliminating the interior curve and slightly widening the roadway. A wall on the riverside is proposed that would measure approximately 180 feet in length and 15 feet in height. Lane width would increase to a total roadway width of up to 40 feet within the project location limits. There would be no tree removal at this location. Views of this landscape unit encompass the curving US 199 and rocky embankments that are densely vegetated with evergreen trees. While modifications to the roadway surface would not affect visual resources or the existing visual character, a greater area of cut slope would act to increase the area of cut slope, require a gravity retaining wall, and degrade the existing visual quality of the roadway corridor. Aesthetic treatments of the wall would be incorporated into the wall's design to minimize the wall's effect.

Landscape Unit 6 (The Narrows)

Visual changes in this landscape unit include widening the pavement to 28 feet (12-foot lanes with 2-foot shoulders). Also, isolated outcrops of overhanging or loose rock above the excavation limits would be stabilized by cutting deeper into the existing cut slope. There would be no tree removal at this location. Improvements at the Narrows four segments are as follows:

- **Segment A**—The slope varies from 0.5:1 to 1:1 (Horizontal:Vertical). Minor widening into the cut bank, which is made of soft materials, and proposed cut heights range from 0 to 15 feet with an average height of 10 feet and an average depth of 4 feet.
- **Segment B**—Extremely irregular rock with slopes ranging from 1:1 to overhanging. Sliver cuts will be required. Proposed cut heights vary from 0 to 60 feet with an average height of 25 feet and an average depth of 4 feet.

- **Segment C** The slope varies from 0.5:1 to 1:1. Minor widening into the cut bank will be required. Soft material enables mechanical equipment such as an excavator to remove cut bank. Proposed cut heights range from 0 to 15 feet with an average height of 10 feet and an average depth of 4 feet.
- **Segment D** Extremely irregular rock with slopes ranging from 1:1 to overhanging. Sliver cuts will be required. Proposed cut heights vary from 0 to 60 feet with an average height of 25 feet and an average depth of 4 feet.

Views in this landscape unit encompass a narrow corridor of exposed rock faces with mosses and larger growing vegetation that has established in interstices in the cut slope, with certain sections covered in cable mesh drapery to prevent falling rock, and a moderately vegetated embankment dropping steeply down toward the river. There are glimpses of the river only on certain curves. While modifications to the roadway surface would not affect visual resources or the existing visual character, removal of existing vegetation, a greater area of cut slope, and additional rock fall mitigation drapery would degrade the existing visual quality of the roadway corridor. Vegetation removal would involve 46 trees with sizes ranging from 6 to 24 inches dbh.

Landscape Unit 7 (Washington Curve)

Visual changes in this landscape unit, for both alternatives, include increasing the radius of the smaller radius of the compound curve from 160 to 180 feet. Two alternatives were considered at this location; the Cut Slope Alternative was selected as the preferred alternative. Common features of both alternatives include: replacing the metal beam guard rails, improving drainage, placing an open graded asphalt concrete overlay on the road, and installing a centerline rumble strip. Drainage improvements would consist of replacement and lengthening of an existing 24-inch culvert and drainage inlet.

Views in this landscape unit encompass steep-to-nearly vertical exposed rock and scree-covered faces that have mosses and some larger growing vegetation that have established in interstices in the cut slope. The roadway slope allows for views to the surrounding landscape on certain portions of the curves; however, the viewshed is mostly limited to foreground views due to the curvature and grade of the roadway and steep rock faces, and the river is not visible from the roadway in this landscape unit. While modifications to the roadway surface would not affect visual resources or the existing visual character, the changes resulting from either alternative would degrade the existing visual quality of the roadway corridor.

Cut Slope Alternative

In addition to visual impacts from the common features of all alternatives, visual changes resulting from this alternative, the selected preferred alternative, include a new cut slope on the west side of the highway. The total disturbed area would be approximately 1 acre. The proposed cut-slope ratio is ¾:1, depending on final geotechnical recommendations. This would greatly increase earthwork, tree removal, and modifications to the roadway surface, as compared to the Retaining Wall Alternative, and would affect visual resources and the existing visual character from construction of a large cut slope. Vegetation would involve approximately 138 trees with sizes ranging from 6 to 28 inches dbh.

Retaining Wall Alternative

In addition to visual impacts from the common features of all alternatives, visual changes under this alternative would result from the wall being the longest and tallest retaining wall (800 feet long by up to 30 feet high [approximately 14,000 square feet]) on US 199, which would cause a greater visual impact than that of the Cut Slope Alternative. Shoulders at this location would be widened and would vary from 2 to 8 feet. Excavation for construction of the wall would be approximately 5,000 cubic yards. The total disturbed area would be approximately 0.6 to 0.8 acre.

This alternative would greatly reduce earthwork, tree removal, and modifications to the cut slope compared with the Cut Slope Alternative; however, with the proposed wall being the longest and tallest wall on US 199, it would have a greater impact on visual resources and the existing visual character of US 199 than that of the Cut Slope Alternative. Vegetation removal would involve 15 trees with sizes ranging from 6 to 12 inches dbh. Aesthetic treatments of the wall would be incorporated into the wall's design to minimize its effect.

This alternative was previously anticipated, in the DEIR/EA, to have the least visual impact on the landscape unit because of concerns that the cut slope would be mostly erosive soil; however, information gathered and provided by the Department's geotechnical engineers after circulation of the DEIR/EA lead the Department to determine that the Cut Slope Alternative would have fewer visual impacts than the Retaining Wall Alternative (see Chapter 1 of the Final EIR/EA for further details).

Permanent Changes in Light and Glare

No permanent nighttime lights are proposed as part of this project; therefore, there would be no change in intensity and location of nighttime light or glare. There would be no adverse impact.

The proposed railings would be galvanized steel; no reflective surfaces are proposed. These galvanized surfaces would naturally oxidize within a short time following installation and would not cause reflective daytime glare. Portions of the roadway would be widened to accommodate shoulders and slightly wider lanes and curve radii. This would not create a substantial increase in the amount of paved surface so as to increase glare. Removal of vegetation would occur to accommodate construction operations and roadway improvements, but would not substantially act to increase glare. Retaining structures would be visible, especially where large retaining walls are required, and they would have the potential to create a new source of glare.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no construction, improvements, or widening at any of the seven locations listed above, and therefore, there would be no affect on visual resources.

2.1.6.4 Avoidance, Minimization, and/or Mitigation Measures

Follow Best Management Practices to Implement Permanent Enhanced Erosion Control Seeding and Revegetation for the Proposed Project

The Department, or its contractor, would follow the measures for permanent enhanced erosion control seeding and revegetation, as listed in Section 2.3.1.3, "Avoidance, Minimization, and/or Mitigation Measures for Natural Communities in the Biological Environment" and also listed in

Appendix R, Enhanced Erosion Control Seeding and Revegetation Plan. Following those proposed measures would ensure seeding and revegetation that reflect natural existing vegetation patterns and provide multiple canopy layers, seasonality, diverse habitat, and reduced susceptibility to disease.

Implement Best Management Practices for Project Design and Construction

The following design practices will be utilized to maximize project aesthetics and minimize visual impacts:

- The Department will coordinate with the Forest Service and the public to select locally appropriate aesthetic treatments for the final design of retaining walls, bridges, barriers, and other construction elements. Aesthetic treatments will address materials, patterns, texture, and color.
- Refer to local reference sites that are within 30 miles of the project area, such as Idlewild Curves, Hardscrabble Creek Bridge and Hiouchi/Myrtle Creek Viaduct sites on US 199, for design and construction treatments that will reduce visual impact and retaining wall and bridge aesthetics. This may include the use of slope rounding, steeper cut slopes to reduce wall area and/or cut surface areas, use of flatter toes at cut slopes to provide area for rock fall instead of using a retaining structure, using redwood soldier pile retaining walls, and mimicking aesthetics from local historical bridges within the new bridge design to lessen impacts on visual resources.

Construct Walls with Low-Sheen and Non-Reflective Surface Materials

To reduce the potential for glare, retaining walls will be constructed with construction materials with pattern, texture and color similar to that which exists in the area and using low-sheen and non-reflective surface materials. The finish would be matte and roughened. The use of smooth, trowelled surfaces and glossy paint would be avoided.

2.1.7 Cultural Resources

2.1.7.1 Regulatory Setting

"Cultural resources," as used in this document, refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended (NHPA), sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 Code of Federal Regulations [CFR] 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, the State

Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties. See Appendix B for specific information regarding Section 4(f).

Historical resources are considered under CEQA as well as California PRC Section 5024.1, which established the California Register of Historical Resources (CRHR). PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet NRHP listing criteria. It further specifically requires the Department to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks.

2.1.7.2 Affected Environment

This section's analysis is based on the Historic Property Survey Report (HPSR) and the Archaeological Survey Report (ASR) prepared for the project (ICF International 2010).

Area of Potential Effects

The Area of Potential Effects (APE) for this undertaking was established in consultation with the Department in accordance with PA Stipulations VI.B.7 and VIII.A. The archaeological APE encompasses all project location alternatives discussed previously and generally follows the maximum possible area of direct impact resulting from the project, including all new construction, easements, and staging areas.

Methodology

The effort to identify cultural resources in the Area of Potential Effects (APE) consisted of a records search of the California Historical Resources Information System (CHRIS), consultation with the Native American Heritage Commission (NAHC), Native American individuals and/or groups, and a pedestrian survey of the APE. The results of the research and consultation are discussed below.

Archival Research and Records Search

Staff of the North Coastal Information Center (NCIC) of the CHRIS conducted a records search on November 24, 2008, of previous cultural resources studies and previously recorded resources in the APE. The records search was specific to the APE and included a 0.5-mile surrounding radius to identify any adjacent cultural resources or cultural resources studies. Sources consulted included base maps marked with the locations of previous cultural resources studies and known cultural resources. In addition, the following sources were consulted:

- *California Inventory of Historic Resources* (California Department of Parks and Recreation 1976);
- *California Points of Historical Interest* (1992 and updates);
- *California Historical Landmarks* (California Department of Parks and Recreation 1996 and updates);
- General Land Office plat maps (General Land Office 1856, 1884);
- *California Place Names* (Gudde 1969);
- *Historic Spots in California* (Hoover et al. 1966, Hoover et al. 1990);
- NRHP (computer listings through 2002);
- *The Tolowa and their Southwest Oregon Kin* (Drucker 1937);
- *Village Sites in Tolowa and Neighboring Areas of Northwestern California* (Waterman 1925);
- California Historic Property Inventory (California Office of Historic Preservation [OHP] 2003);
- CRHR (2002); and
- The Department's *Historic Bridge Inventory* (2006).

The records search indicated that three cultural resources studies have been conducted within the APE (King 1972, McDaniel 2002, Strudwick 1997), covering approximately 10% of the current project APE.

The Middle Fork Smith River Bridge (Bridge #01 0015) is listed as Category 5 (not eligible for the NRHP) on the Department's 2006 *Historic Bridge Inventory.* According to the records search results, no previously recorded cultural resources are located within the archaeological APE. A request for further information regarding sites and previous studies was sent to Julie Burcell Archaeologist at Six Rivers National Forest. No response has been received to date.

Native American Consultation

On October 24, 2008, the NAHC was contacted with a request to conduct a sacred lands database search for the project area and provide a list of Native American representatives who might have any information or concerns regarding the project area. The NAHC replied on November 4, 2008, stating that the sacred lands database search indicated the presence of one Native American cultural resource, recorded as CA-DNO-36, in the study area vicinity and recommended that Mr. Loren Bommelyn, Council Member of Smith River Rancheria of California, be contacted to determine if the project would affect the site. Mr. Bommelyn requested a project description and mapping; these were provided as requested. Contact was made with Mr. Bommelyn again on February 18, 2010. He requested maps of the project areas in order to discuss the project at the next Smith River Rancheria cultural committee meeting sometime in March 2010.

In addition to Mr. Bommelyn's contact information, the NAHC provided contact information for eight local Native American representatives. The following individuals and organizations were listed:

- Dale Miller, Chairperson, Élk Valley Rancheria of Smith River Tolowa;
- Glen Gary, Tribal Administrator, Élk Valley Rancheria of Smith River Tolowa;
- John Greene, Cultural and Natural Resources Committee Chairman, Élk Valley Rancheria of Smith River Tolowa;
- Shannon Tushingham, Tribal Historic Preservation Officer (THPO), Cultural and Natural Resources Committee Chairman, Élk Valley Rancheria of Smith River Tolowa;
- Kara Brundin-Miller, Chairperson, Smith River Rancheria of California;
- Suntayea Steinruck, THPO, Smith River Rancheria of California;
- Russ Crabtree, Tribal Administrator, Smith River Rancheria of California; and
- Melochundum Band of Tolowa Indians.

Letters were sent to the above-listed representatives on November 10, 2008, and included a brief project description, a map of the project area, and a request for any information and/or concerns regarding the project. At the Department's request, Ms. Sharon Eller-Sligh, representing the Tolowa Nation, and Ms. Marva Scott, Cultural Director for the Smith River Rancheria were also contacted for information. Ms. Tushingham, Ms. Steinruck, and Ms. Eller-Sligh requested a full project description and project mapping; the description and mapping were sent to each as well as to Ms. Marva Scott. Ms. Shannon Tushingham responded via email that the materials sent were reviewed by the Elk Valley Rancheria Culture Committee and, as a result, could not provide any information about cultural sites in the APE. They would, however, like to receive project updates.

Contact was made with Ms. Scott and Ms. Steinruck on February 18, 2010. Both said they would be in touch after discussing the proposed project at their cultural committee meeting (Smith River Rancheria) sometime in March 2010. In a letter sent to the Department, Ms. Steinruck stated that although the project is within the viewshed of a cultural site of importance to the Rancheria, project activities would not impact the site.

Contact with Ms. Eller-Sligh was made February 20, 2010 via email. Ms. Eller-Sligh said she forwarded the project maps to the environment chair, Raja Storr.

Pedestrian Survey

An ICF archaeologist conducted a pedestrian survey of the APE on April 16 and 17, 2009. The survey strategy was determined based on the width of the APE and sensitivity for archaeological resources. Some of the APE is very steep and covered in heavy vegetation. These areas were not sensitive for cultural resources, and in some cases they offered virtually no visibility. Some of the APE consists of paved and gravel surfaces. These areas were subjected to cursory survey. All other areas within the APE were subjected to intensive pedestrian survey using transects that range from 5 to 10 meters, depending on the width of the APE. On average, ground visibility in unpaved areas was

0% to 50%. In areas where excessive amounts of duff obscured the ground surface, boot scrapes were used every 10 meters to better inspect the ground for potential resources.

The APE does not include full parcel takes, nor does the project cut off access to those parcels that contain buildings. No built environment resources were observed within the APE. Therefore, the architectural APE would not include full parcels. As a result, no built environment would be included in the APE.

Cultural Resources Identified

The records search indicated that no previously recorded archaeological resources were identified in the APE. In addition, an intensive pedestrian survey did not identify any archaeological resources in the APE. No cultural resources were identified within the project APE; therefore, a finding of no historic properties affected is appropriate for the project.

2.1.7.3 Environmental Consequences

Potential Damage to or Destruction of an As-Yet-Unidentified Cultural Resource

Although no archaeological or historic resources or burial sites were identified within or immediately adjacent to the APE, it is possible that previously unknown cultural resources could be uncovered during ground-disturbing construction activities. This would be considered an adverse effect to previously unknown cultural resources.

No Build (No Action) Alternative

The No Build (No Action) Alternative would not result in project-related effects on as-yet-unidentified archaeological resources because there would be no project-related excavation within archaeologically sensitive areas.

2.1.7.4 Avoidance, Minimization, and/or Mitigation Measures

Implement Avoidance and Notification Procedures for Cultural Resources

It is the Department's policy to avoid cultural resources whenever possible. If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. The Department will implement all reasonable measures needed to avoid, minimize, or mitigate further harm to the resource. If appropriate, the Department will notify Indian tribes or Native American groups that may attach religious or cultural significance to the affected property.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the county coroner shall be contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent (MLD). The Department will work with the MLD to avoid the remains, and if avoidance is not feasible, to determine the respectful treatment of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

2.2.1.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing an action in a floodplain unless it is the only practicable alternative. FHWA requirements for compliance with this order are outlined in 23 CFR 650 Subpart A.

In order to comply with these FHWA requirements, the following must be analyzed:

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

A *base flood* is defined by the Federal Emergency Management Agency (FEMA) as the flood having a 1% chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the "100-year flood." The base flood is the national standard used by National Flood Insurance Program and all federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development. The *base floodplain* is defined as "the area subject to flooding by the flood or tide having a 1% chance of being exceeded in any given year." *Base Flood Elevations* (BFEs) are the level the 100-year floods are expected to reach and are typically shown on Flood Insurance Rate Maps (FIRMs). FHWA defines *encroachment* as "an action within the limits of the base floodplain."

Significant encroachment is defined in the Code of Federal Regulations (CFR) Title 23: Highways § 650.105 as a

> (q) highway encroachment and any direct support of likely base flood-plain development that would involve one or more construction or flood-related impacts:
>
> (1) A significant potential for interruption of termination of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route.
>
> (2) A significant risk, or
>
> (3) A significant adverse impact on natural and beneficial flood-plain values. (23 CFR 650.105)

2.2.1.2 Affected Environment

The information presented in this section is based on reviews of preliminary floodplain and drainage reports prepared for the project by the Department. Preliminary reports were prepared for the project locations where FEMA has conducted a flood hazard analysis. Table 2.2.1-1 lists the reports prepared for this project.

Table 2.2.1-1. Technical Studies Consulted

Project Location	Document	Date	Prepared by
Ruby 1	Draft Drainage Report, in Del Norte County at the entrance to Ruby Van Deventer County Park, Widening, with attached Preliminary Floodplain Analysis and Drainage Recommendations (2007) and Floodplain Evaluation Report Summary (2010)	June 2007 and June 2010	Department North Region, Design E-4; Dawn M. Friend, PE, D01 Hydraulics, Eureka (California Department of Transportation 2007) and Kemset K. Moore, PE, D01 Hydraulics, Eureka (California Department of Transportation 2010a)
Ruby 2	Draft Drainage Report, in Del Norte County from Kaspar/Keene Road to 0.5 mile south of Ruby Van Deventer County Park, with attached Preliminary Floodplain Analysis and Drainage Recommendations (2007) and Floodplain Evaluation Report Summary (2010)	February 2008 and June 2010	Department North Region, Design E-4; Dawn M. Friend, PE, D01 Hydraulics, Eureka (California Department of Transportation 2008a) and Kemset K. Moore, PE, D01 Hydraulics, Eureka (California Department of Transportation 2010b)
The Narrows	Floodplain Evaluation Report Summary	August 2008	Department North Region, Design E-4; Fernando Manzanera, PE, D01 Hydraulics, Eureka (California Department of Transportation 2008b)
Patrick Creek Narrows Locations 1, 2, and 3	Draft Drainage Report, in Del Norte County, Middle Fork Smith River, with attached Preliminary Floodplain Analysis and Drainage Recommendations (2009) and Floodplain Evaluation Report Summary – Revised (2011)	September 2009 and September 2011	Department North Region, Design E-4; Glenn G Hurlburt, PE, D01 Hydraulics, Eureka (California Department of Transportation 2009) and Kemset K. Moore, PE, D01 Hydraulics, Eureka (California Department of Transportation 2011)
Washington Curve	Floodplain Evaluation Report Summary	December 2008	Department North Region, Design E-4; Fernando Manzanera, PE, D01 Hydraulics, Eureka (California Department of Transportation 2008c)

The Smith River, Middle Fork Smith River, and their tributaries are subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), North Coast Regional Water Quality Control Board (NCRWQCB), and DFG and contain wetlands also subject to USACE jurisdiction and considered waters of the State. In addition, they provide, but are not limited to, the following natural and beneficial floodplain values:

- habitat for coho salmon and other special-status fish and aquatic species,
- habitat for special-status plants,
- habitat for special-status terrestrial animals,
- areas of natural beauty,

- areas for scientific study,
- areas for outdoor recreation,
- forestry,
- natural moderation of floods,
- water quality maintenance, and
- groundwater recharge.

SR 197

The Draft Drainage Reports for Ruby 1 and 2 reviewed the potential of the proposed construction activities and the resultant roadway improvements to affect FEMA floodplains. At Ruby 1, two existing culverts would be extended, and new drainage inlets installed within the proposed work area for Ruby 1, to match the new roadway width. Similarly, at Ruby 2, four culverts would be extended or replaced to match the new roadway width. Work would be done during the dry season, but water diversion or dewatering may be required during construction.

The Smith River watershed in this area begins the transition from steep-sided canyon to broad floodplain, with the highway running approximately parallel to the river. This is a rural area with large portions of surrounding land used for recreational purposes. Adjacent structures include residences and various outbuildings.

Both project sites along SR 197 are within FEMA designated Zone AE. Zone AE is the area estimated to flood in a 100-year flood event that has a base flood elevation (BFE). This base flood elevation is determined by detailed analytical methods by FEMA and mapped on Flood Insurance Rate Maps (FIRMs). The two FIRMs for the Ruby 1 and Ruby 2 construction sites are in Appendix H to this document.

US 199

The project sites along US 199 are located within the Smith River canyon in an area where no FEMA flood hazard analysis has been conducted. There are no printed FEMA maps for this section of US 199, and no BFEs have been established along this portion of the Middle Fork Smith River.

2.2.1.3 Environmental Consequences

Project construction activities and the completed roadway improvements, including culvert extension and/or replacement at Ruby 1 and Ruby 2 (SR 197 sites), are located within FEMA Zone AE. The project would not result in any new risks of flooding of facilities or structures, or adversely affect FEMA floodplains at either of the project sites because the increase in impervious area (approximately 1 acre) resulting from the proposed highway improvements is very small compared to the size of the Smith River watershed (217,600 acres). No change in the base flood elevation is anticipated. Although any construction activity within a base floodplain is considered an encroachment, the project would not have an adverse impact on natural and beneficial floodplain values, again due to the size of the proposed project. Therefore, the

proposed project does not constitute a significant floodplain encroachment at these locations as defined in 23 CFR Section 650.105(q). There are no known adverse floodplain impacts that would occur due to proposed construction or new drainage facilities at any of the project sites.

Roadway cross culverts at Ruby 1 and Ruby 2 (SR 197) are modified to accommodate roadway widening. Existing drainage patterns are perpetuated and any increase in runoff would be accommodated by roadside ditches and existing vegetated slopes.

Construction activities and the roadway improvements at the US 199 locations are not within a FEMA-designated floodplain, and because there is no designated floodplain, there would be no encroachment.

Roadway cross culverts at the US 199 locations are modified to accommodate roadway widening. Existing drainage patterns are perpetuated and any increase in runoff would be accommodated by roadside ditches and existing vegetated slopes.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, no improvements would occur at any of the seven project locations, and there would be no impacts on the hydrology or floodplain of the project area.

2.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary at either SR 197 location because no adverse floodplain impacts are anticipated. Additionally, no measures are necessary at any of the US 199 locations because there are no FEMA-designated floodplains.

2.2.2 Water Quality and Storm Water Runoff

2.2.2.1 Regulatory Setting

Federal Requirements

Clean Water Act

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

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the United States to obtain certification from the state so that the discharge will comply with other provisions of the act (most frequently required in tandem with a Section 404 permit request) (see below).

- Section 402 establishes NPDES, a permitting system for discharges (except for dredged or fill material) of any pollutant into waters of the United States. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters."

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

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

State Requirements

Porter-Cologne Water Quality Control Act

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

waters not considered waters of the United States. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details regarding water quality standards in the project area are contained in the NCRWQCB Basin Plan. States designate beneficial uses for all water body segments and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point-source controls, the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state. RWQCBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System (NPDES) Program

Municipal Separate Storm Sewer Systems

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

The Department's MS4 permit, under revision at the time of this update, contains two basic requirements:

1. The Department must implement a year-round program in all parts of the state to control storm water and non-storm water discharges effectively; and
2. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) best management practices (BMPs) and other measures.

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

Part of and appended to the SWMP is the Storm Water Data Report (SWDR) and its associated checklists. The SWDR documents the relevant storm water design decisions made regarding project compliance with the MS4 NPDES permit. The preliminary information in the SWDR prepared during the Project Initiation Document (PID) phase will be reviewed, updated, confirmed, and if required, revised in the SWDR prepared for the later phases of the project. The information contained in the SWDR may be used to make more informed decisions regarding the selection of BMPs and/or recommended avoidance, minimization, or mitigation measures to address water quality impacts.

Construction General Permit

The Construction General Permit (Order No. 2009-009-DWQ) adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of 1 acre or greater and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre must comply with the provisions of the Construction General Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this Construction General Permit if there is the potential for significant water quality impairment resulting from the activity, as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; implement sediment, erosion, and pollution prevention control measures; and obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and based on potential erosion and transport to receiving waters. Requirements apply according to the risk level determined. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with a DSA less than 1 acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water body must obtain 401 certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering

401 certification are CWA Section 404 permits issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

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

2.2.2.2 Affected Environment

The information presented in this section is based on the 197/199 Safe STAA Access Water Quality Report (California Department of Transportation 2009).

The proposed project is located partly within the Six Rivers National Forest. The Middle Fork Smith River and the Smith River, as well as associated tributaries of these rivers, are receiving waters associated with the project. The Smith River has the greatest annual discharge per square mile of any major California basin. The Smith River is one of the cleanest and most pristine in California and is a large recreational use attraction. The Smith River and Middle Fork Smith River are not included in the 2006 CWA Section 303(d) list of water quality limited segments, and no TMDLs are established at this time.

SR 197

The Ruby 1 and Ruby 2 sites are situated in a forested area adjacent to the Smith River flood plain in the Smith River Plain Hydrologic Sub-Area 103.11. Slopes leading from the roadway alignment toward the river are relatively flat. Unpaved ground surfaces adjacent to the roadway are generally covered with vegetation or duff. The roadway drainage system includes a side ditch at the toe of the slope and cross drain culverts. Sheet flow appears to drain toward the river channel side.

US 199

The Patrick Creek Narrows (three locations), the Narrows, and the Washington Curve sites are situated in close proximity to the Middle Fork Smith River in the Middle Fork Hydrologic Area 103.30. The project area is characterized by steep rock cut slopes above the winding highway, which follows a narrow and rocky riverbank. More detail about the site characteristics and drainage at project locations along US 199 is provided below.

Patrick Creek Narrows

At Patrick Creek Narrows Location 1, there is little to no shoulder adjacent to the cut shoulder. Three culverts are present.

Patrick Creek Narrows Location 2 is relatively flat and forested on the northeast quadrant. There is a narrow shoulder along the roadway and one culvert is present.

Patrick Creek Narrows Location 3 traverses a leaf littered vegetated steep slope adjacent to the river. There is one culvert.

The Narrows

This site sits on a mid-slope terrace cut through rock next to the Middle Fork Smith River. There is little to no buffer between the roadway and the river at this location. There is no defined roadside drainage ditch.

A wetland delineation indicated that a seasonal drainage and a wetland are located within this project site. The seasonal drainage is approximately 15 feet long and 1 foot wide. The wetland is a 75-foot-long ditch averaging 2 feet wide. There is no culvert connecting this feature to the Middle Fork Smith River. More detail on the wetlands delineated is in Section 2.3.2, Wetlands and Other Waters.

Washington Curve

A vegetation buffer separates the roadway at the Washington Curve site from the Middle Fork Smith River. There is a steep slope to the west of the roadway and a guardrail on a retaining wall to the east. Shoulders are negligible and two culverts are present.

2.2.2.3 Environmental Consequences

Effects by Location

Ruby 1

Construction at this project site would result in an increase of impervious surface area of 0.068 to 0.13 acre. The estimated area of disturbed soil as a result of construction at this site is approximately 0.6 acre.

Potential water quality impacts as a result of project operation include those related to increased storm water runoff, contaminants entering the Smith River from accidental spill and/or road maintenance activities, and erosion. Increased runoff from the increase in impervious surface area is minimal relative to the receiving water body flows (Smith River watershed). The area between the roadway and the Smith River is flat and provides opportunities to implement measures for reducing potential impacts at the culvert inlet and outlet. There may also be opportunities to reduce storm water erosion potential by dispersing flows and sheet flowing storm water onto adjacent flatter areas. The additional storm water runoff is anticipated to be relatively low and is expected to be non-significant and manageable.

Ruby 2

Construction at this site would disturb between approximately 0.6 and 1.0 acre of soil depending upon which of the three alternatives is selected. The increase in impervious surfaces would be between approximately 0.05 and 0.42 acre. The alternatives are compared below.

- The Two-Foot Shoulders Alternative would disturb approximately 0.6 acre of soil and would result in an increase in impervious surface of approximately 0.21 acre.

- The Four-Foot Shoulders Alternative would disturb approximately 1.0 acre of soil and would result in an increase in impervious surface of approximately 0.42 acre.
- The Two-Foot Widening in Spot Locations Alternative, the selected preferred alternative, would disturb approximately 0.7 acre of soil and would result in an increase in impervious surface of approximately 0.05 acre.

Potential water quality impacts resulting from project operation are increased storm water runoff from increased impervious surfaces, and potential for pollutants to enter the Smith River. Additional storm water runoff resulting from the increase in impervious surface of any alternative would be small relative to receiving water body flows (Smith River watershed). Storm water flow patterns are predominately sheet flow and would disperse throughout the various widened roadway areas. The vegetation and forest duff surfaces on adjacent slopes will minimize the small increase in storm water sheet flows.

Patrick Creek Narrows Location 1

The main project components at this project site would be constructing a retaining wall along the river channel and replacing existing culverts. Construction at this site would result in a minor increase in impervious surface of approximately 0.06 acre. The disturbed soil and/or rock resulting from construction at this site is estimated to be approximately 0.25 acre.

Potential water quality impacts resulting from project operation are increased storm water runoff from increased impervious surface, and potential for pollutants to enter the channel. The increase in impervious surface is minor, and therefore the potential impact at this site is minimal. Appropriate BMPs would ensure the maintenance of water quality.

Patrick Creek Narrows Location 2

Three alternatives were considered at this location (Upstream Bridge Replacement, Downstream Bridge Replacement, and Bridge Preservation with Upslope Retaining Wall). All three alternatives include a cut slope. Construction at this site is expected to result in an impervious surface increase of approximately 0.12 to 0.28 acre, depending on the alternative, and an area of disturbed soil and/or rock ranging between approximately 2.0 and 3.0 acres. The alternatives are compared below.

- The Upstream Bridge Replacement Alternative would disturb approximately 3.0 acres of soil and/or rock and result in an increase in impervious surface of approximately 0.28 acre. Replacing the bridge provides the opportunity to eliminate existing drains, if feasible, that currently discharge directly to the Middle Fork Smith River, which would reduce the potential for long-term water quality impacts. The alignment needed for this alternative would require the most extensive cut extending into an area that has a high potential for rock fall. This alternative would create a potential for additional rock fall into the river, but not additional sediment.
- The Downstream Bridge Replacement Alternative, the selected preferred alternative, would disturb approximately 0.7 acres of soil and/or rock and result in an increase in impervious surface of approximately 0.22 acre. As with the upstream alternative, replacing the bridge provides the opportunity to eliminate existing drains, if feasible, that currently discharge directly to the Middle Fork Smith River, which would reduce the potential for long-term water quality impacts.

- The Bridge Preservation with Upslope Retaining Wall Alternative would disturb approximately 2.0 acres of soil and/or rock and result in an increase in impervious surface of approximately 0.12 acre. The alignment needed for the Bridge Preservation with Upslope Retaining Wall Alternative would require an extensive cut extending into an area that has a high potential for rock fall. This would create a potential for sediment discharge into the river.

Long-term operational impacts would be associated with increased storm water runoff and increased erosion potential from cut slopes. Each proposed alternative would require cutting into the slope located west of the river in the southern portion of the project area, creating an increased potential for sedimentation. This project location may offer space and adequate topography for considering BMPs to treat runoff.

Patrick Creek Narrows Location 3

The main project components at this location consist of constructing a retaining wall on the river channel side and replacing two culverts. Construction of the project would result in an increase in impervious surfaces of an estimated approximately 0.09 acre and disturbance of approximately 0.3 acre of soil.

Potential water quality impacts resulting from project operation are increased storm water runoff from increased impervious surfaces, and potential for pollutants to enter the channel. The increase in storm water runoff is expected to be minimal because areas adjacent to this project location are densely vegetated year-round showing good stability. Site stability combined with roadway drainage improvements should offset potential increased runoff-related impacts.

The Narrows

The expected disturbed area associated with this project is estimated at approximately 0.2-0.4 acre, which includes erosive soil cut slopes and excludes rock areas considered stable. Additional impervious surface is estimated at approximately 0.1 to 0.2 acre.

Potential water quality impacts resulting from project operation are increased storm water runoff from increased impervious surfaces, and potential for pollutants to enter the river channel. Increased runoff from the increase in impervious surface area is minimal relative to the receiving water body flows (Middle Fork Smith River watershed). The presence of erosive soils at this project site introduces a potential for water quality impacts associated with erosion, if the soils are not adequately stabilized. Additionally, the roadway is close to the river channel, and the lack of space would make implementing treatment BMPs for addressing storm water pollutants difficult. To address this difficulty, emphasis will be placed on source control BMP measures that would be designed into the project to reduce impacts to water quality from the potential soil erosion. Source control BMP (both structural and non-structural) means land use or site planning practices, or structures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize contact between pollutants and urban runoff. There would be no adverse impacts at this location.

There is also a potential for impacts on wetlands at this location. A drainage ditch at this project location was classified as a wetland and road improvements require permanently affecting this feature. This impact is discussed further below.

Washington Curve

Two alternatives were considered for this project location—a Cut Slope Alternative and Retaining Wall Alternative. The approximately 800-foot-long, 12- to 30-foot-high soil-nail retaining wall would be constructed along the west side (cut slope side). The new cut-slope would be constructed on the side opposite to the river channel. Approximately 0.6 to 1.0 acre of soil and/or rock would be disturbed as a result of construction at this site. Construction at this site is expected to result in an impervious surface increase of approximately 0.07 to 0.23 acre, depending on the alternative. The alternatives are compared below.

- The Cut Slope Alternative, the selected preferred alternative, would disturb approximately 1.4 acre of soil and/or rock and result in an increase in impervious surface of approximately 0.16 acre. There would be a potential for water quality impacts as a result of erosion.
- The Retaining Wall Alternative would disturb approximately 0.6 acre of soil and/or rock and result in an increase in impervious surface of approximately 0.23 acre.

Potential water quality impacts resulting from project operation are increased storm water runoff from increased impervious surfaces, and potential for pollutants to enter the river channel.

Potential for Reduced Water Quality from Increased Storm Water Runoff

Multiple constituents such as heavy metals, nutrients, and conventional pollutants have been detected in monitoring associated with highway storm water characterization studies [CTSW-RT-03-065]. Along the highways, storm water is anticipated to contain conventional pollutants, metals, and bacteria found at other Department sites with similar usage. Pollutants typically found in highway runoff may originate from vehicle tire and brake wear, fuels and lubricant leaks, and exhaust emissions. These pollutants accumulate on the roadway surface and may be transported to receiving waters during rain events. Highway runoff quality is influenced by several factors, including land use, rainfall, antecedent conditions, soil type, atmospheric deposition, average daily traffic (ADT) volumes, receiving water body, and localized vegetation density.

All alternatives would result in minor increases in impervious surfaces, which would result in minor increase in storm water runoff. Although a primary pollutant associated with storm water runoff is trash, highway runoff can contain contaminants generated by traffic, pavement materials, and naturally occurring airborne particles that settle on the pavement and are carried by runoff to receiving waters. Traffic-generated contaminants, the extent of which is determined by ADT volumes, are of primary concern. Locations with higher ADT volumes have higher concentrations of pollutants. As described in Section 2.1.5, “Traffic and Transportation/Pedestrian and Bicycle Facilities,” the improvements proposed for these project locations are not expected to significantly increase truck volumes. Therefore, traffic-generated pollutants are not likely to increase significantly.

Potential for Reduced Water Quality from Contaminants Entering Stream

Under all alternatives at all locations, contaminants used in maintenance and landscaping or those released by accidental spills could enter the adjacent channel. Both these mechanisms have the potential to cause substantial water quality impacts, depending on the material type and volume.

Spills caused by traffic accidents have resulted in pollutants reaching the Smith River in the past. Improving the conditions at the Narrows, Patrick Creek Narrows, and Washington Curve sites will reduce potential similar discharges to the Middle Fork Smith River. Their close proximity would make it difficult to control a spill before reaching the river.

Chemical application from landscaping operation and maintenance activities could potentially enter receiving waters; however, no change from existing operations is anticipated from the proposed project.

According a March 9, 2010 telephone conversation between Domenic Bongio, a Landscape Specialist with the Department's District 1, and Kim Hayler, a Department Environmental Planner, herbicides are not used by agreement on routes traversing Forest Service lands, such as US 199. Along SR 197, herbicides are only applied around Highway Safety Structures. Applications are not frequent and are controlled to minimize any undesired impacts. Landscaping requiring fertilizer does not exist on these routes.

Potential for Reduced Water Quality from Erosion

The potential for erosion impacts during and after construction exists at the Ruby 1; Patrick Creek Narrows Locations 1, 2, and 3; the Narrows; and Washington Curve sites. Increased erosion can result from higher runoff volumes that can lead to potential stream scouring and bank erosion and from the presence of new cut slopes or unvegetated areas that are prone to erosion. Finally, traction sand used on road surfaces may be transported to receiving waters in storm water runoff.

As described in detail above, total impervious surfaces added would depend on the alternatives selected. Appropriate BMPs will reduce potential impacts on intermediary drainages resulting from increased runoff. These BMPs may include rock-armored culvert inlets, promoting sheet flow where possible, adequately sized culverts, and rock slope protection (RSP) among others.

Storm water runoff will be discharged to stable pre-established drainages, where possible, to prevent substantial localized increased point source runoff. Appropriate BMPs will reduce the potential for erosion to occur between roadway drainage system outlets and the receiving waters and will improve existing drainage conditions, therefore reducing long-term sediment discharges.

Installing traction sand traps where feasible will reduce potential sediment inputs.

If the Middle Fork Smith River Bridge is replaced, designing the new bridge would provide the opportunity to eliminate existing scuppers, if feasible, that currently discharge directly to the Middle Fork Smith River.

Potential for Reduced Water Quality from Loss of Wetland and Other Jurisdictional Waters at the Narrows

A hillside wetland seep and drainage ditch are located at the Narrows site. Wetlands are known to naturally remove pollutants from storm water through biological activities and removal of suspended material through sedimentation. Destruction or degradation of wetlands reduces their ability to remove pollutants and potentially reduces water quality. Grading and road widening

activities may directly impact identified wetlands and other jurisdictional waters. Ultimately, the affected hillside wetland seep and drainage ditch may re-establish in the future on the new roadside drainage flow line.

Avoidance measures to preserve wetlands and other jurisdictional waters are addressed in Section 2.3.2, "Wetlands and Other Waters." The NCRWQCB and USACE will likely require compensatory mitigation for any jurisdictional waters impacted. The North Coast RWQCB may classify as Water of the State hydrologic features that are not typically considered Waters of the United States and may require mitigation if these are affected.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, no improvements would occur at any of the seven project locations, and there would be no impacts to water quality within the project area.

2.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

The project must comply, and will be designed and constructed in conformance with the following laws and permits:

- The CWA of 1972, the major federal legislation governing water quality
- The Porter-Cologne Water Quality Act, the basis for water quality regulation in California
- The Department's Statewide NPDES Permit, Order No. 99-06-DWQ, covering all Department facilities in the State. In compliance with this permit, the Department developed the Storm Water Management Plan (SWMP) in 2003 to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout the state.
- Statewide Construction General Permit, Order no. 2009-0009-DWQ, adopted by the California State Water Resources Control Board in 2009

By implementing water pollution prevention BMPs at each location, there would be no adverse impacts to water quality, and potential sediment transport and non-storm water releases would be avoided or minimized. After construction, storm water conveyance systems and permanent erosion control measures would be maintained in compliance with the Department's SWMP. BMPs in the Department's SWMP have been demonstrated to be effective for reducing impacts to water quality from storm water runoff to non-significant levels.

Implement Standard Specifications, Special Provisions, and Permit Requirements

Contract standard specifications, special provisions, and permit requirements reduce potential short-term impacts. Construction-related impacts are managed by the 2006 Standard Specifications, Section 7-1.01G; the 01-20-12 Amendments to 2006 Standard Specifications Section 7-1.50B, FHWA-1273; 2010 Standard Specifications Section 13; 2010 Revised Standard Specifications Section 13-1.01 (01-20-12); Standard Special Provision (SSP) 07-345 (2006); various 2010 SSPs, as appropriate; Construction General Permit Order No. 2009-0009-DWQ; NPDES General Permit No. CAS000002; the Department storm water permit, Order 99-06-DWQ; and NPDES Permit No. CAS000003. Short-term protections are contained in the

Department's *Construction Site BMPs* manual.[1] These are minimum requirements that must be met by all contractors working on Department projects. The Department has a program to research and test the effectiveness of new BMPs for construction sites (CTSW-RT-03-049), which allows for continued improvement of BMPs for construction sites. An active SWPPP program also provides BMP inspection and sampling to ensure their maintenance until the project is complete and the site stabilized.

Minimize Sediments, Turbidity, and Floating Material

Suspended material is the most likely pollutant resulting from Department construction projects. Erosion of sediments is the main source of suspended material. Turbidity and floating material are reduced through the use of BMPs. Implementing standard Department practices and procedures will reduce potential impacts.

The Department's 2006 construction site BMP guidance is found at the following website: http://www.dot.ca.gov/hq/oppd/stormwtr/constssp.htm.

The Department's construction site BMPs are found at the following website: http://www.dot.ca.gov/hq/construc/stormwater/factsheets.htm.

During construction activities, the construction site BMPs listed at the above-mentioned website are most likely to be, and commonly are, utilized to reduce or eliminate sediment, turbidity, and floating materials in receiving waters. The final selection of BMPs will be made by the contractor in the SWPPP submittal to the engineer. The actual BMPs used on these projects will be as authorized by the engineer (in the authorized SWPPP) immediately prior to construction.

The Department also uses water pollution control worksite specifications containing BMPs such as Construction Site Management, 2006 SSP 07-346 (08-05-11), and Job Site Management, 2010 Standard Specification Section 13-7.

In addition to BMPs required as part of the project-specific SWPPP, Design Pollution Prevention BMPs reduce the amount of erosion during construction using slope designs that reduce erosion potential via techniques such as slope rounding, benching, track walking, reducing slope length, and providing top of slope drains. Hydraulic design techniques also reduce erosion through the use of Pollution Prevention BMPs such as flared-ends sections, rock slope protection, paved water conveyances, and energy-dissipater pads. These BMPs have been demonstrated to be effective for reducing erosion and sedimentation to non-significant levels.

Minimize Oil, Grease, and Chemical Contamination

Contract specifications and permit conditions prohibit the Contractor from discharging oils, greases, or chemicals into receiving waters. Construction operations are required to follow BMPs that provide potentially harmful chemical containment and spill protection. Construction site accidents may introduce pollutants to the environment. The Department addresses these

[1] http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm.

problems with detection and reporting procedures to ensure prompt cleanup. By implementing Construction Site BMPs and SSPs, any build alternatives selected would reduce potential impacts from construction-related oils, greases, and chemicals (see the above-mentioned Department construction site BMP website for examples).

2.2.3 Geology/Soils/Seismic/Topography

2.2.3.1 Regulatory Setting

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

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department's Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. Structures are designed using the Department's Seismic Design Criteria (SDC). The SDC provide the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and the methods that will be used for estimating seismic demands and structural capabilities. For more information, please see the Department's Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

Local Regulations

The Del Norte County General Plan addresses seismic and geologic hazards in its Safety and Noise Element (Del Norte County 2003). The following goals and policies apply:

> **Goal 2.B.** To minimize the loss of life, injury, and property damage due to seismic hazards.
>
> **Policy 2.B.5.** In order to minimize risks, new public roads and bridges should be designed to the most current seismic design criteria, and existing bridges should be periodically inspected and improved. SSS SH.P.8.
>
> **Policy 2.B.7.** Since no active or potentially active earthquake faults have been identified within Del Norte County, the provisions of the Alquist-Priolo Special Studies Zone are not applicable. SSS GP.R.2.
>
> **Goal 2.C.** To minimize the loss of life, injury, and property damage due to geologic hazards.
>
> **Policy 2.C.4.** The County shall continue to require that a geologic investigation be made by a registered geologist, engineering geologist, or Registered Civil Engineer for all proposals in landslide potential areas, coastal or river bluffs, and development on slopes greater than 10 percent, including road construction. These investigations should assess the stability of the site under both normal and seismic conditions as well as recommend mitigation measures. If it is

found that the hazards cannot be mitigated to within acceptable risk levels appropriate with the intended land use, the proposal should be denied. SSS GH.P.6., HA IV.D.5.

2.2.3.2 Affected Environment

The information presented in this section is based on reviews of geotechnical reports prepared for the project by the Department. Geotechnical reports were prepared for all the project locations with the exception of Ruby 1. It was determined that no geotechnical report was necessary for the Ruby 1 site because of the minimal nature of the proposed project improvements at this location. Table 2.2.3-1 lists geotechnical reports prepared for this project, some reports had additional information in addendums.

Table 2.2.3-1. Technical Studies Consulted

Project Location	Document	Date	Prepared by
Ruby 1	None	NA	NA
Ruby 2	Preliminary Geotechnical Report, Ruby 2 (Memorandum to Cindy L. Graham Senior Design Engineer, Department, District 01, Design Branch E-4)	Dec 5, 2008	Dawn McGuire, CEG No. 2280, Engineering Geologist, Department, Office of Geotechnical Design North, Branch B, Eureka (California Department of Transportation 2008)
Patrick Creek Narrows Locations 1, 2, and 3	Preliminary Geotechnical Report, Patrick Creek Narrows (Memorandum to Lena Ashley, Design Branch Chief, Department, E3)	April 15, 2009	Daniel Vann, Engineering Geologist, and reviewed by Charlie Narwold, CEG No. 2335, Department, Office of Geotechnical Design North, Branch B, Eureka (California Department of Transportation 2009a)
Patrick Creek Narrows Location 2	Structure Preliminary Geotechnical Report (SPGR) and Preliminary Seismic Report (Memorandum to Jeff Simms, Branch Chief, Department, Design Branch 1, Office of Bridge Design North, Division of Engineering Services)	May 4, 2009	Jacqueline A. Martin, Engineering Geologist, John L. Thorne, Engineering Geologist, Reid Buell, CEG No. 1481, Senior Engineering Geologist, and Reza Mahallati, Senior Materials and Research Engineer, Department, Division of Engineering Services, Geotechnical Services MS 5, Office of Geotechnical Design (California Department of Transportation 2009b)
Patrick Creek Narrows Locations 1, 2, and 3	*Advanced Planning Study Transmittal (Memorandum to Kevin Church, Project Manager, Department, District 1)*	*June 3, 2009*	*Jeff Simms, Branch Chief, Design Branch 1, Office of Bridge Design North, Division of Engineering Services (California Department of Transportation 2009c)*
Patrick Creek Narrows Locations 1, 2, and 3	Tunnel Classification for Realignment and Widening at Patrick Creek Narrows (Memorandum to Brenda Harwell, Project Engineer, Department, Design E3)	Feb 6, 2012	Dawn McGuire, CEG No. 2280, Engineering Geologist, Department, Office of Geotechnical Design North, Branch B, Eureka (California Department of Transportation 2012)
Patrick Creek Narrows Location 1	Foundation Report Retaining Wall at PM 20.5 (Memorandum to Jeff Simms, Branch Chief, Design Branch 1, Office of Bridge Design North)	March 1, 2012	June James, PE No. 55009, Transportation Engineer, Department, Office of Geotechnical Design North, Branch B, Eureka (California Department of Transportation 2012)

Project Location	Document	Date	Prepared by
Patrick Creek Narrows Location 3	Foundation Report Retaining Wall at PM 25.5 (Memorandum to Jeff Simms, Branch Chief, Design Branch 1, Office of Bridge Design North)	March 1, 2012	June James, PE No. 55009, Transportation Engineer, Department, Office of Geotechnical Design North, Branch B, Eureka (California Department of Transportation 2012)
The Narrows	Preliminary Geotechnical Report (Memorandum to Rob Burnett, Senior Design Engineer, Department, Office of Design R3, Redding)	April 15, 2009	Dawn McGuire, CEG No. 2280, Engineering Geologist, Department, Office of Geotechnical Design, North Branch B, Eureka (California Department of Transportation 2009d)
The Narrows	Geotechnical Recommendations (Memorandum to John Martin, Senior Design Engineer, Department, Office of Design R1, Redding)	March 19, 2013	Charlie Narwold, CEG No. 2335, Senior Engineering Geologist, Department, Office of Geotechnical Design North, Branch B, Eureka (California Department of Transportation 2013)
Washington Curve	Preliminary Geotechnical Report, Washington Curve (Memorandum to Lena Ashley, Design Branch Chief, Department, E3)	April 16, 2009	Daniel Vann, Engineering Geologist, and reviewed by Charlie Narwold, CEG No. 2335, Department, Office of Geotechnical Design, North Branch B, Eureka (California Department of Transportation 2009e)
Washington Curve	Cutslope Recommendations (Memorandum to John Martin, Senior Design Engineer, Department, Office of Design R1, Redding)	March 14, 2013	Charlie Narwold, CEG No. 2335, Senior Engineering Geologist, Department, Office of Geotechnical Design North, Branch B, Eureka (California Department of Transportation 2013)

The SR 197 project area is located in the meandering river plain of the Smith River in Del Norte County. The US 199 project area is located in a mountainous part of Del Norte County, which is drained by the Middle Fork Smith River. The river flows westward through a deep gorge in which an irregular pattern of meanders has been deeply incised. SR 197 and US 199 are located adjacent to the river.

The project area along SR 197 and US 199 is not located within any Alquist-Priolo Earthquake Fault Zone.

No groundwater studies have been conducted in the project area. The Department anticipates that most groundwater will be unconfined, occurring in fractures in bedrock and in interstitial spaces in colluvium. Additionally, the level of groundwater will vary seasonally, being higher after rains that begin late in the year.

SR 197

The region lies above the Cascadia subduction zone, which is exposed offshore and dips landward beneath northernmost California, Oregon, and Washington. Rocks of the Franciscan Complex underlie the project area and surrounding Coast Range province. Local bedrock has been variously mapped as the “Broken formation” of the Cretaceous-Jurassic Franciscan Complex (KJfbf) and “sandstone” of the Cretaceous-Jurassic Franciscan Complex in the less detailed, smaller scale Weed 2-degree geologic map.

As described above, no geotechnical information was collected for the Ruby 1 location. Local geologic units at the Ruby 2 location include Quaternary alluvial fan and colluvial deposits (Qac) and active Holocene fluvial deposits (Q) of the Smith River. These are underlain by the Cretaceous-Jurassic Franciscan Complex of the Coast Range province. Dormant translational/rotational slides, debris slides, and disrupted ground have been mapped on the hillslopes above and east of the project site. A nearby study indicated that the uppermost geologic layer consisted of gravel and landslide debris. The second layer consisted of riverbed materials and extended until reaching Franciscan bedrock. On the project site, cut slopes on the right side of the road expose bedrock, colluvium, and very fine-grained silty road fill of an abandoned logging road.

Fluvial hillslope erosion is the most significant ongoing erosional process at this site and is most active during the wet months of October through April when 80 to 90 inches of rain falls on average. Fluvial erosion is exacerbated by timber harvesting and road cut activity in the area. The existing ditch on the right side of the road is insufficient to handle winter runoff, resulting in silt-laden water sheets crossing the road in the wet months. The silt originates from the adjacent hillslopes and is most likely the product of fluvial erosion.

US 199

The project area along US 199 lies within the western Jurassic belt of the northern section of the Klamath Mountain geomorphic province. The western Jurassic belt includes the Galice Formation (Jg) and the Josephine ophiolite. The Josephine ophiolite is divided into three assemblages of rocks: volcanic rocks (Jv), gabbro, diorite and related rocks (Jgd), and ultramafic rocks (Jum). Each of the project locations along US 199 is discussed further below.

Patrick Creek Narrows

The existing cut slopes in the area show exposed bedrock that consists primarily of medium to dark gray and brownish grey slate and meta-sandstone. The slate and sandstone consist of a slightly weathered to moderately weathered and slightly to intensely fractured rock mass. The existing cut slopes are prone to generating rock fall and rockslides.

Patrick Creek Narrows Location 1

Surficial deposits at this location consist of clayey, silty, sandy, gravel, cobbles and boulders. Underlying the surficial deposits are partially to completely serpentinized peridotite and locally mafic rocks of the Jurassic Josephine ophiolite complex, consisting of ultramafic rocks, mafic rocks, volcanic rocks, and minor amounts of other rocks of ophiolitic affinity. The soil and rock types present at this location contain measureable levels of naturally occurring asbestos (NOA).

Patrick Creek Narrows Location 2

Surficial deposits at this location are composed primarily of clayey, silty sand that contains varying amounts of gravel, cobbles, and boulders. Underlying the surficial deposits are rocks related to the Jurassic Galice Formation. The Galice Formation consists of slate metagraywacke and some massive greenstones. The subsurface material is unknown because there are no As-Built Log of Test Borings (LOTB) available for the bridge site.

The controlling fault in the area is the Bald Mountain-Big Lagoon (BML) fault, located approximately 33.6 miles southwest of the project area. Soil classifications are unknown because there are no site-specific LOTBs and, therefore, liquefaction potential is unknown.

The existing upstream cut slope ranges from 45 to 70 degrees. The native slope above the existing cut slope ranges from approximately 33 to 45 degrees. The existing downstream hillslopes range from 26 to 37 degrees. The hillslope above the existing cut slope exhibits evidence of past slope instabilities.

Patrick Creek Narrows Location 3

Surficial deposits are composed primarily of clayey silt and sand containing varying amounts of gravel, cobbles and boulders. Underlying the surficial deposits are rocks related to the Jurassic Galice Formation, which consists of slate and metagraywacke, with some portions of the formation containing massive greenstone.

The Narrows

The project site is underlain by bedrock of the Late Jurassic aged Josephine ophiolite sequence, which consists of oceanic crustal rocks that became attached to the North American plate about 150 million years ago. The existing road cuts expose submarine volcanic pillow basalt and volcanic pillow breccia. The rock in the project area is moderately hard and moderately to intensely fractured. The overlying Galice Formation lies to the east of the project area.

The existing cut slopes expose moderately hard, cliff-forming volcanic rocks. Rock fall affects the road, particularly the left-side lane, based on field observations of pitting of the road and on-site discussion with maintenance staff.

Seismic refraction data indicate colluvium and landslide debris, as thick as 9.2 feet, lie above bedrock at the location of the existing cable drape.

Washington Curve

Surficial deposits at this location are primarily colluvium that consists of silty sand to clayey, silty, sandy gravel with abundant cobbles and boulders. Underlying the surficial deposit are rocks related to the Jurassic Josephine ophiolite contained within the Western Jurassic Belt. Exposed bedrock, indentified in limited outcrops within the existing cut slopes, indicates that the project site is specifically underlain by the mafic and volcanic rocks of the Josephine ophiolite. The mafic and volcanic rocks consist of gabbro and diorite that are generally intensely to moderately weathered and intensely fractured.

Isolated rock types present at the site have been found to contain measurable levels of NOA.

Existing cut slopes in this area are approximately 65 to 75 degrees, and several cut slope failures have been identified. Native hillslopes above the highway range between 26 and 35 degrees.

2.2.3.3 Environmental Consequences

No designated natural landmarks or landforms are present within the project area. New cut slopes and retaining walls may result in visual impacts, which are discussed in Section 2.1.6.

Effects By Location

Ruby 1

Project improvements at this location would consist of widening the road and improving drainage. No road cuts or blasting would be necessary. Because of the minimal nature of disturbance during construction, no effects related to geology are anticipated.

Ruby 2

All three design alternatives would include cut slopes of 1.5:1 or steeper and fill slopes of 2:1 (or less). Under the Four-Foot Shoulders Alternative, 1,170 cubic yards of material would be excavated. Under the Two-Foot Shoulders Alternative, 700 cubic yards of material would be excavated. Under the Two-Foot Widening in Spot Locations Alternative, the selected preferred alternative, 350 cubic yards of material would be excavated.

There is the potential for increased surface erosion associated with the proposed cuts. The Four-Foot Shoulders Alternative requires the highest cuts and therefore would have greater potential for erosion than the Two-Foot Shoulder Alternatives. The potential for increased surface erosion would be reduced by slope rounding and revegetation (i.e., erosion control seeding and/or installation of containerized plants). Slope rounding is when the intersection of a cut slope and natural hillslope results in an inflection point that is prone to erosion. Slope rounding at the top of the cut slope removes this inflection point by creating a smooth transition between the cut slope and natural hillslope, thereby reducing the potential for erosion.

Patrick Creek Narrows Location 1

At this location, the curve in the road would be straightened slightly and shoulders would be created or widened. No excavation into the existing road cut would occur, but the road would be widened to the river side, which would be supported by a retaining wall. There is little potential for effects related to erosion, rock fall, or landslides resulting from the project at this location because the conditions on the hillside would not change as a result of the project. The area is not seismically active, and therefore, there is little potential for effects due to ground shaking or liquefaction.

Patrick Creek Narrows Location 2

Three design alternatives were proposed at this location, two of which involve replacing the bridge. The third alternative involves preserving the existing bridge and adding an upstream retaining wall. The investigation by Structure Maintenance and Investigations staff resulted in no observation of scour at the site. All alternatives would require excavation from the existing rock cut slopes to widen the highway and may require controlled blasting.[2]

[2] Rock blasting must comply with federal, state, and local blasting regulations. Regulations containing specific California Occupational Safety and Health Administration (Cal/OSHA) requirements for blasting activities include

All three build alternatives would include excavation of a hillslope southwest of the bridge, but the Upstream Bridge Replacement Alternative and the Bridge Preservation with Upslope Retaining Wall Alternative would include excavation of an additional area of the hillslope, closer to the bridge. The additional area of hillslope that would need to be excavated for the Upstream Bridge Replacement Alternative or the Bridge Preservation with Upslope Retaining Wall Alternative shows evidence of past instabilities, which indicate the potential for rock fall after the completion of construction. The area of hillslope needing to be excavated for the Downstream Bridge Replacement Alternative, which is the selected preferred alternative, does not have the same evidence of past instabilities compared with the additional area requiring excavation under the two alternatives that were not selected as the preferred alternative. In addition to safety measures described in the project description, exploratory drilling will be conducted to characterize the site for final design details.

Impacts from erosion, landslide, and/or rock fall would be minimized by correctly engineered slopes, safety considerations, retaining walls, and permanent rock fall mitigation systems, where necessary. The proposed cuts are predominantly in rock; therefore the potential for increased erosion should be minimal. There is little risk of impacts due to ground shaking or liquefaction because the area is not seismically active.

Patrick Creek Narrows Location 3

A retaining wall would be constructed at this location to facilitate widening of the road. Impacts from erosion, landslide, and/or rock fall are not likely based on the proposed project and the stability of the existing slope below the wall location. There is little risk of impacts due to ground shaking or liquefaction because the area is not seismically active.

The Narrows

At this location, controlled blasting, along with other methods, would be used to cut into the existing slope and widen the roadway. A drainage ditch would be added, and a new culvert and drain inlet would be constructed to accommodate runoff.

Excavation of sliver cuts may decrease slope stability, resulting in increased potential for rock fall and landslides as well as increased erosion; however, appropriate rock fall mitigation measures will be designed and constructed. The proposed cuts are predominantly in rock; therefore, the potential for increased erosion would be minimal.

There is little risk of impacts due to ground shaking or liquefaction because the area is not seismically active.

Washington Curve

Two design alternatives were proposed to widen the road at this location: the Cut Slope Alternative and the Retaining Wall Alternative.

Title 8 California Code of Regulations, Chapter 4, Subchapter 7, Group 18, "Explosive Materials." It also must comply with the Department's Standard Specifications for Presplitting Rock Excavation Slopes (2006), Rock Excavation (2006/2010), and Rock Excavation (Controlled Blasting) (2006/2010). Per the Rock Excavation (Controlled) Standard Specification, the blaster-in-charge must have 10 years of experience in performing or supervising similar blasting activities and must be a licensed blaster.

Under the Cut Slope Alternative, which is the selected preferred alternative, there is the potential for rock fall and "pop-outs" after construction is complete. The proposed design of the highway has a 4-foot-wide paved shoulder and an approximately 8-foot-wide unpaved ditch to provide a catchment for falling rocks.

Potential for Erosion, Landslide, and Rock Fall

The potential for increased erosion exists on the Ruby 2 project due to the proposed cuts. The potential for erosion, landslides, and rock fall exists on the Patrick Creek Narrows (Location 2), the Narrows, and Washington Curve projects due to the proposed cuts.

Following are methods for reducing the potential for stabilizing proposed cut and fill areas.

- Slope rounding: This is described above in Effects by Location for Ruby 2
- Presplitting for controlled blasting: This involves drilling a single row of closely spaced, small diameter holes along an excavation line. The holes are loaded with small well distributed charges. Controlled blasting is used to excavate rock slopes with minimal damage to the rock face, a frequent cause of slope instability and rock fall.
- Catchment areas: Catchment areas at the toe of slopes reduce the potential for rock from entering the roadway. The width of a rock fall catchment area is a function of the cut slope angle and height and is also generally governed by other design/project constraints.
- Rock bolts: These are steel dowels that are grouted into drilled holes into a rock mass that reinforce and stabilize potentially loose, unstable rock on the face of a cut slope.
- Anchored wire mesh: This is a chain link or double twisted wire mesh that is anchored to the face of a cut slope to reinforce and stabilize the cut face by anchoring soil and rock in place. Wire mesh is anchored to cut slopes using rock bolts or shallow soil anchors.
- Cut slope ratios: In terms of stability, the geologic materials within the limits of a proposed cut dictate, in part, the allowable cut slope angle. Often, the ideal cut slope ratio cannot be achieved due to other project constraints. In these instances, additional measures are implemented to increase slope stability and/or reduce the risk of rock fall. Examples of additional measures that may be taken are installing anchored wire mesh or rock bolts, depending on the geologic materials.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, no improvements would occur at any of the seven project locations and there would be no impacts on geology, soil erosion, and/or slope stability within the project area.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

Stabilize Proposed Cut and Fill Areas

Ruby 2

The potential for increased erosion associated with the proposed cuts would be reduced by slope rounding and revegetation (i.e., erosion control seeding and/or installation of containerized plants).

Patrick Creek Narrows Location 2

The risk of landslides and rock fall associated with the different alternatives would be reduced by the following or similar measures: implementation of appropriate cut-slope ratios, slope rounding, presplitting, controlled blasting, catchment areas, rock bolts,[3] anchored wire mesh, and retaining walls.

The Narrows

The potential for rock fall and landslides would be reduced by presplitting, controlled blasting, rock bolts, anchored wire mesh, and cable drapes.

Washington Curve

The Retaining Wall Alternative would have a lower potential for erosion than the Cut Slope Alternative. The potential of landslides and rock fall associated with the Cut Slope Alternative would be reduced by an appropriate cut-slope ratio, slope rounding, and catchment area for rocks at the bottom of the slope. After construction is completed, a chain link fence would be constructed along the top of the proposed wall if needed to prevent rocks from entering the roadway from the slope above.

2.2.4 Hazardous Waste/Materials

2.2.4.1 Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use.

The primary Federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as "Superfund," is to clean up contaminated sites so that public health and welfare are not

[3] The purpose of rock bolts as part of a retaining wall is to pin two planes of rock, by bolting the slipping plane to a solid rock plane. Rock bolting is a construction technique used when constructing a retaining wall in rocky material. A crane with a drill rig on a platform is raised to the desired location. Loose rock is removed, a hole is drilled, and compressed air flushes the bored hole clean and the drill hole is further widened. Finally, a bar is bolted and secured with epoxy in place, then grouted and tensioned along its length. Each grouted and secured bar is finally locked with a faceplate. Rock bolted tension bars are constructed along the face of the retaining wall to secure the new slope in place.

compromised. RCRA provides for "cradle to grave" regulation of hazardous wastes. Other Federal laws include the following:

- Community Environmental Response Facilitation Act of 1992,
- Clean Water Act,
- Clean Air Act,
- Safe Drinking Water Act,
- Occupational Safety and Health Act,
- Atomic Energy Act,
- Toxic Substances Control Act, and
- Federal Insecticide, Fungicide, and Rodenticide Act.

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

Hazardous waste in California is regulated primarily under the authority of the RCRA and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. The Porter-Cologne Water Quality Control Act also restricts the disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but capable of affecting ground and surface water quality. California regulations that address issues related to waste management and prevention as well as cleanup of contamination include Title 22, Division 4.5, Environmental Health Standards for the Management of Hazardous Waste; Title 23, Waters; and Title 27, Environmental Protection.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

2.2.4.2 Affected Environment

The existing conditions presented in this section are based on review of initial site assessments (ISAs) and other investigations prepared for the project by the Department and Geocon Consultants (Geocon). Table 2.2.4-1 contains a list of the assessments prepared for this project.

Table 2.2.4-1. Hazardous Material/Waste Assessments Prepared for the Proposed Project

Project Site	Document	Date of Completion	Preparer
Ruby 1	ISA (Werner 2007a)	10/10/2007	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
	Aerially deposited lead (ADL) site investigation report, SR 197 PM 4.42/4.54, Del Norte County, CA (Geocon Consultants 2008a)	4/2008	Geocon Consultants, Rancho Cordova, CA
	Transmittal memorandum of an ADL site investigation report (Werner 2008a)	5/28/2008	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
Ruby 2	ISA and transmittal memorandum of an ADL site investigation report (Werner 2008b)	5/28/2008	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
	ADL and site investigation report, SR 197 PM 3.23/4.00, Del Norte County, CA (Geocon Consultants 2008b)	4/2008	Geocon Consultants, Rancho Cordova, CA
Patrick Creek Narrows Locations 1, 2, and 3	ISA (Werner 2007b)	2/28/2007	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
Patrick Creek Narrows Location 1	NOA site investigation report, US 199 PM 20.5/25.5, Del Norte County, CA (Geocon Consultants 2008c)	4/2008c	Geocon Consultants, Rancho Cordova, CA
	Transmittal memorandum of NOA site investigation report (Werner 2008c)	5/28/2008c	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
	Revised NOA disposal requirements (Werner 2009a)	2/5/2009b	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
Patrick Creek Narrows Location 2	Asbestos and lead-containing paint survey report, Middle Fork Smith River Bridge, Del Norte County, CA (Geocon Consultants 2009a)	7/2009	Geocon Consultants, Rancho Cordova, CA
The Narrows	ISA (Werner 2005)	6/14/2005	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
	ISA follow-up memorandum (Werner 2009b)	9/22/2009	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
Washington Curve	ISA (Werner 2008d)	12/12/2008	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
	Revised ISA (Werner 2009c)	2/2/2009	Steve Werner, California Department of Transportation, North Region Office of Environmental Engineering—North
	ADL and NOA site investigation report, US 199 (DN-199) PM 26.5 curve correction, Del Norte County, CA (Geocon Consultants 2009b)	7/2009	Geocon Consultants, Rancho Cordova, CA

Background on Hazardous Wastes/Materials Potentially Found at Project Locations

The existing hazardous wastes/materials conditions presented below are potentially present at one or more of the project locations as discussed in ISAs and other investigations prepared for the project by the Department and Geocon**.**

Aerially Deposited Lead

Aerially deposited lead (ADL) can be found in the surface and near-surface soils along nearly all roadways because of the historic use of tetraethyl lead in motor vehicle fuels. Typically, ADL is found in shoulder areas and has high solubility when subjected to the low pH conditions of waste characterization tests. Shoulder soils along urban and heavily traveled rural highways are commonly above the soluble threshold limit concentration criteria. Investigations for ADL for the proposed project included collecting soil samples along unpaved shoulders and cut slope areas adjacent to the roadway. These samples were then analyzed in a California state-certified laboratory.

Naturally Occurring Asbestos

Asbestos is a name given to a group of six naturally occurring silicate minerals with asbestiform crystal habits. Exposure to asbestos may result from asbestos fibers being inhaled or ingested, which over time may result in damage to the lungs or the membranes that cover the lungs, leading to illness or even death. When NOA-containing material is disturbed, asbestos fibers may be released and become airborne, thereby creating a potential health hazard.

The California Air Resources Board (CARB) has required mitigation practices for construction, grading, quarrying, and surface mining operations that may disturb NOA (Title 17 California Code of Regulations [CCR] 93105). All material excavated from ultramafic rock areas, including those that contain NOA materials, are considered "restricted material," and a warning to those accepting the material for disposal will be required. Presently, Department policy states that restricted material that contains asbestos at a concentration above 0.25% shall not be disposed of outside the state right-of-way except at a licensed landfill permitted to accept that waste. NOA potentially poses a health hazard when it becomes airborne.

Geologic maps of the project sites were reviewed by a Department geologist to determine whether the project sites were in an area underlain by ultramafic rock. As a result, it was determined that ultramafic rock was present and the potential existed for NOA-containing minerals to be present at three project sites: Patrick Creek Narrows Location 1, the Narrows, and Washington Curve. As a result of these findings, NOA testing was conducted to evaluate each of these project sites for the presence of NOA.

Any material with NOA exceeding 0.25% excavated from a project site is required to be reused with appropriate cover, disposed of at a state-owned facility in accordance with the Department's policy for NOA, or taken to a landfill licensed to accept the material.

Asbestos-Containing Materials

The National Emissions Standards for Hazardous Air Pollutants (NESHAPs) (40 CFR 61[M]) and Federal Occupational Safety and Health Administration (OSHA) classify asbestos-containing materials (ACMs) as any materials or products that contain more than 1% asbestos.

Non-friable ACMs are classified by the NESHAPs as either Category I or II material, including materials sometimes found in bridges, rail shims, pipes, pipe coverings, expansion joint facings, and certain cement products.

Regulated ACMs, which are a hazardous waste when friable, are classified as any materials that contains more than 1% asbestos by dry weight and are any of the following:

- Friable (can be crumbled, pulverized, or reduced to powder by hand pressure);
- A Category I material that has become friable;
- A Category I material that has been subjected to sanding, grinding, cutting, or abrading; or
- A Category II non-friable material that has a high probability of becoming crumbled, pulverized, or reduced to a powder during demolition or renovation activities.

Activities that disturb materials containing any amount of asbestos are subject to certain requirements of the California Division of Occupational Safety and Health (Cal/OSHA) asbestos standard found in 8 CCR 1529. Typically, removal or disturbance of more than 100 square feet of materials containing more than 1% asbestos must be performed by a registered asbestos abatement contractor, but associated waste labeling is not required if the materials contain 1% or less asbestos. When the asbestos content of materials exceeds 1%, virtually all requirements of the standard become effective.

Materials containing more than 1% asbestos are also subject to NESHAPs. Regulated ACMs (friable ACMs and non-friable ACMs that will become friable during demolition operations) must be removed from structures before they are demolished. Certain non-friable ACMs and materials containing 1% or less asbestos may remain in highway structures, such as guardrail and bridges, during demolition; however, waste handling/disposal issues and Cal/OSHA work requirements may make this cost-prohibitive. With respect to potential worker exposure, notification, and registration requirements, Cal/OSHA defines ACMs as construction materials that contain more than 1% asbestos (Title 8 CCR 341.6).

Lead-Containing Paint

Construction activities, including demolition, that disturb materials or paints containing any amount of lead are subject to certain requirements of the Cal/OSHA lead standard contained in Title 8 CCR 1532.1. Deteriorated paint is defined by Title 17 CCR 35022 as a surface coating that is crackling, chalking, flaking, chipping, peeling, not intact, failed, or otherwise separating from a component. Demolition of a deteriorating lead-containing paint (LCP) component would require waste characterization and appropriate disposal. Intact LCP on a component is currently accepted by most landfill facilities; however, contractors are responsible for segregating and characterizing waste streams before disposal.

Potential hazards exist to workers who remove or cut through LCP coatings during demolition. Dust containing hazardous concentrations of lead may be generated during scraping or cutting materials coated with LCP. Torching of these materials may produce lead oxide fumes. Therefore, air monitoring or respiratory protection may be required during the demolition of materials coated with LCP.

Yellow and White Pavement Striping

Yellow and white pavement striping and markings are located along the entire length of the SR 197–US 199 corridor. Department studies have determined that yellow thermoplastic striping and yellow painted markings may contain elevated concentrations of lead, depending on the age of the striping (manufactured before 2005) and painted markings (manufactured before 1997). Disturbing either yellow or white pavement markings by grinding or sandblasting can expose workers to lead. Department policy is that removed yellow thermoplastic and yellow paint is treated as hazardous waste unless waste profiling proves otherwise.

Treated Wood Waste

Treated wood is wood that has preservative chemicals that protect it from insect attack and fungal decay during its use. Typical uses in the highway environment include sign posts, guard railing posts, and lagging on retaining walls. The chemical preservatives used, however, are hazardous and pose a risk to human health and the environment. Arsenic, chromium, copper, creosote, and pentachlorophenol are among the chemicals used. These chemicals are known to be toxic or carcinogenic. Harmful exposure to these chemicals may result from dermal contact with Treated Wood Waste (TWW) or from inhalation or ingestion of TWW particulate (e.g., sawdust and smoke) as this material is handled. Construction workers who handle this material must be provided training that includes:

1. All applicable requirements of Title 8, California Code of Regulations;
2. Procedures for identifying and segregating TWW;
3. Safe handling practices;
4. Requirements of Title 22 California Code of Regulations, Division 4.5, Chapter 34; and
5. Proper disposal methods.

Hazardous Waste/Material Conditions by Project Locations

Ruby 1

An ISA was completed by the Department for the Ruby 1 site in October 2007 (Werner 2007a). Mapping research was conducted to determine the potential for ultramafic rock and associated NOA-containing minerals**.** The mapping indicated that NOA is not present at this project site. The ISA also found that this project location is free of any significant hazardous waste issues and is not listed on the DTSC's Hazardous Waste and Substances Site List (Cortese List). An ADL site investigation was also conducted for the Ruby 1 site (Geocon Consultants 2008a); the results are discussed below.

Aerially Deposited Lead

Results of the ADL testing are presented in the ADL site investigation report for the Ruby 1 site prepared by Geocon. The scope of services provided by Geocon included evaluation of the project location for potential impacts due to ADL from motor vehicle exhaust, including the collection of soil samples for analysis, and preparation of a report.

The results of the ADL analysis indicate that the total amount of lead in the roadway shoulder soils is low. Of the 14 soil samples analyzed, total lead was detected in seven of the samples analyzed at concentrations ranging from 5.3 to 9.4 milligrams per kilogram (mg/kg). Although

these concentrations are considered very low, it is standard Department protocol that a lead compliance plan be prepared by a contractor to minimize worker exposure to lead-affected soil. To put the lead levels at Ruby 1 in perspective, the DTSC allows soils at school sites and day care facilities to have up to 255 milligrams per kilogram lead, and for waste material to be considered hazardous waste, it must have more than 1,000 milligrams per kilogram lead.

Ruby 2

An ISA and transmittal memorandum of an ADL site investigation report were completed by the Department for the Ruby 2 site in May 2008 (Werner 2008b). The ISA included a summary of the ADL report and determined that this project location is free of any significant hazardous waste issues and is not listed on the Cortese List. Mapping research was conducted to determine the potential for ultramafic rock and associated NOA-containing minerals**.** The mapping indicated that NOA is not present at this project site. An ADL site investigation was also conducted for the Ruby 2 site (Geocon Consultants 2008b); the results are discussed below. To put the lead levels at Ruby 2 in perspective, the DTSC allows soils at school sites and day care facilities to have up to 255 milligrams per kilogram lead, and for waste material to be considered hazardous waste, it must have more than 1,000 milligrams per kilogram lead.

Aerially Deposited Lead

Results of the ADL testing are presented in the ADL site investigation report for the Ruby 2 site prepared by Geocon. The scope of services requested included evaluation of the project location for potential impacts due to ADL from motor vehicle exhaust on and near the surface, collection of soil samples for analysis, and preparation of a report.

The results of the ADL analysis indicate that the total amount of lead in the roadway shoulder soils is low. Of the 14 soil samples analyzed, total lead was detected in eight of the samples analyzed at concentrations ranging from 5.4 to 10 mg/kg. Although these concentrations are considered very low, it is standard Department protocol that a lead compliance plan be prepared by a contractor to minimize worker exposure to lead-affected soil.

Patrick Creek Narrows Location 1

An ISA was completed by the Department for the three Patrick Creek Narrows locations in February 2007 (Werner 2007b). The ISA found that the project location at PM 20.5 had hazardous waste issues related to NOA because it is within a mapped serpentinized ultramafic rock body. As a result, an NOA investigation was conducted (Geocon Consultants 2008c). The ISA also found that this project location is free of any significant hazardous waste issues other than NOA and is not listed on the Cortese List. As with all work locations along state highways, it is anticipated that ADL will be present; thus, a lead compliance plan will be prepared by contractors for workers' safety.

Naturally Occurring Asbestos

Results of the NOA testing are presented in the NOA site investigation report prepared for Patrick Creek Narrows Location 1 by Geocon. The scope of services requested included evaluation of the project location for potential impacts due to NOA, collection of soil samples for analysis, and preparation of a report.

Geocon reported that samples collected at the site contain chrysolite asbestos ranging from 2.00% to 25.75%. Two targeted samples analyzed by the same methods were reported to contain chrysolite asbestos from 9.00% to 12.50% (Geocon Consulting 2008c).

Patrick Creek Narrows Location 2

As stated above, an ISA was completed by the Department for the three Patrick Creek Narrows locations in February 2007 (Werner 2007b). The ISA found that this project location is free of any significant hazardous waste issues and is not listed on the Cortese List. A survey of the bridge for ACM and LCP was required since demolition could expose workers to these hazards.

Asbestos-Containing Materials

An asbestos survey was performed at this location on May 5 and June 16, 2009. Chrysotile asbestos at a concentration of less than 0.1% was detected in a sample representing approximately 70 square feet of friable joint fill material used on the Middle Fork Smith River Bridge (Bridge 01-0015). Chrysotile asbestos at a concentration of 30% was detected in samples representing approximately 20 square feet of non-friable sheet packing used as shims on the barrier rail systems of the bridge. Chrysotile asbestos at a concentration of less than 0.1% was detected in a sample representing approximately 150 cubic yards of concrete used on the piers, pier footings, and pier struts of the bridge.

Lead-Containing Paint

An LCP survey was performed at this project location on May 5 and June 16, 2009. No LCP was observed during the survey. Consequently, no samples were collected.

Patrick Creek Narrows Location 3

An ISA was completed by the Department for the three Patrick Creek Narrows locations in February 2007 (Werner 2007a). The ISA found that this project location is free of any significant hazardous waste issues and is not listed on the Cortese List. As with all work locations along state highways, it is anticipated that ADL will be present; thus, a lead compliance plan will be prepared by contractors for workers' safety.

The Narrows

An ISA was completed by the Department for the Narrows site in June 2005 (Werner 2005). It was determined that although this project location is in a general area where NOA is known to occur, subsequent testing proved negative for the presence of NOA within the specific project location, and it was determined that no further testing would be necessary. According to the ISA, NOA testing for the Narrows site was completed during another rock removal project with limits that were nearly identical to the Narrows site. NOA was not found to be present, and no further testing for NOA was conducted (Werner 2005). In addition, the ISA found that this project location is free of any significant hazardous waste issues and is not listed on the Cortese List.

An updated ISA was completed in September 2009 and concluded that this project location is free of significant hazardous waste issues. It was also noted that ADL is expected in limited amounts. A lead compliance plan for worker safety will be necessary. The ISA also found that this project location is not listed on the Cortese List.

Washington Curve

An ISA was completed by the Department for the Washington Curve site in December 2008 (Werner 2008d). According to the ISA, although this project location is not within a mapped area known to contain ultramafic rock, field observations indicated that ultramafic rock is actually present (Werner 2008d). A sample collected from this project location confirmed the field observations. As a result, an NOA investigation was conducted (Geocon Consultants 2009b). In addition, an ADL site investigation was conducted (Geocon Consultants 2009b). The ISA also identified yellow thermoplastic paint and determined that TWW will be generated as a result of construction. The ISA also found that this project location is free of any significant hazardous waste issues and is not listed on the Cortese List.

Aerially Deposited Lead

Results of the ADL testing are presented in the ADL and NOA site investigation report prepared for the Washington Curve site by Geocon. The scope of services requested included evaluation of the site for potential impacts due to ADL from motor vehicle exhaust on and near the surface, collection of soil samples for analysis, and preparation of a report. The ADL study indicated that lead levels are very low. Lead was detected in only one of the soil samples tested, at a level just above the method detection limit of 5 milligrams per kilogram. To put this lead level at Washington Curve in perspective, the DTSC allows soils at school sites and day care facilities to have up to 255 milligrams per kilogram lead, and for waste material to be considered hazardous waste, it must have more than 1,000 milligrams per kilogram lead.

Naturally Occurring Asbestos

Results of the NOA testing are presented in the ADL and NOA site investigation report prepared for the Washington Curve site by Geocon. The scope of services requested included evaluation of the project location for potential impacts due to NOA, collection of soil samples for analysis, and preparation of a report.

The ISA found that the most significant hazardous waste issue at the Washington Curve site is the presence of NOA. The numerical average of test results from the site, however, is below the Airborne Toxic Control Measure (ATCM) regulatory threshold of 0.25% by the PLM method.

2.2.4.3 Environmental Consequences

Potential for Increase in Hazardous Materials Shipped and/or Spilled

The proposed project would allow access for STAA trucks to use the SR 197–US 199 corridor. This has raised public concern about whether the proposed project could potentially lead to either an increase in the quantity of hazardous materials transported through the corridor via an STAA truck or an increase in truck traffic through the corridor and whether the project might increase the likelihood of transport of hazardous materials through the corridor. Additionally, there is concern regarding whether there might be an increased risk of accidental release of hazardous materials into the environment along the SR 197–US 199 corridor.

Regarding the first question, as to whether the proposed project could potentially lead to an increase in the quantity of hazardous materials transported through the corridor via an STAA truck, the response depends on the type of hazardous material (i.e., heavy or lightweight). For

heavy hazardous materials, such as fluids, there is no difference (and therefore, no greater capacity) in the amount of fluid that can be carried between an STAA truck and a California Legal truck because both types of trucks have the same weight restriction, regardless of length. For lightweight hazardous materials, there may be a greater capacity to carry that material in an STAA truck; however, since the STAA truck could potentially carry a larger amount of lightweight hazardous material, theoretically there should be fewer trucks transporting lightweight hazardous materials if shipping patterns do not change significantly. The traffic study conducted for the project (2010) concluded that shipping patterns would not change substantially.

Regarding the second question, as to whether the proposed project could potentially lead to an increase in truck traffic through the SR 197–US 199 corridor, the traffic study conducted for the project (2010) concluded that an increase of about 17 trucks per day (about 8.25 new daily round trips) is projected for the corridor if the proposed project is constructed and the corridor becomes STAA accessible. Seventeen trucks per day is a 3.6% increase over the current truck volumes and is not considered a significant increase in the number of trucks; this finding is regardless of whether they were transporting hazardous materials. Future background traffic, including truck traffic, is expected to grow even if the proposed project were not constructed, due to population and employment growth. Future traffic forecasts in the traffic study were based on 20-year linear growth factors provided by the Department. The annual growth rates used in the analysis of future conditions ranged between 1.0% and 2.0% per year and formed the basis of the 2030 analysis. In addition, the percentage of heavy trucks was assumed to remain the same between existing/baseline conditions and 2030 no build conditions. (Fehr & Peers 2010). Applying data collected from surveys, growth factors, research on induced travel, and changes in land use, in 2030 there would be approximately 92 more trucks per day that would use the SR 197–US 199 corridor than the 2030 no-build scenario (Fehr & Peers 2010). The increase in predicted future truck volumes in 2030 of 92 trucks per day, which is a 13.6% increase, is not substantial, considering that future traffic volumes are expected to increase on any highway due to population and employment growth and other factors.

Regarding the third question, as to whether the project might increase the likelihood of transporting hazardous materials through the SR 197–US 199 corridor, the traffic study concluded that shipping patterns of the local trucking industry would not change substantially as a result of the project (Fehr & Peers 2010). Trucking companies did not indicate that shippers of any particular goods would utilize the SR 197–US 199 corridor differently. Additionally, a Federal study called the Commodity Flow Survey (conducted by U.S. Department of Transportation, Bureau of Transportation Statistics, and U.S. Department of Commerce, Bureau of the Census), which provides information on commodities shipped and hazardous materials transportation, stated in the 1997 Commodity Flow Survey that only approximately 7.3% of all trucks in the United States transport hazardous material (U.S. Department of Transportation, Bureau of Transportation Statistics, and U.S. Department of Commerce, Bureau of the Census 2000). If that percentage could be extrapolated to the rural SR 197–US 199 corridor, the percentage of trucks transporting hazardous materials is likely to be even less than 7.3% due to fewer trucks traveling the route compared to a major highway, and the number of trucks transporting hazardous material would be inherently low.

Regarding the final question, as to whether there might be an increased risk of accidental release of hazardous materials into the environment along the SR 197–US 199 corridor, there is a risk of accidental release of hazardous materials if a truck that transports those materials is present on the corridor, because a collision leading to accidental release of hazardous materials could happen unexpectedly, regardless of whether the proposed project is constructed and the corridor is re-designated as STAA accessible. However, as mentioned previously, the projected number of trucks that would use the corridor each day is not anticipated to increase significantly, and, likewise, shipping patterns of the local trucking industry are not anticipated to change significantly; therefore, the risk of accidental release of hazardous materials into the environment would not increase significantly due to the construction of the proposed project and the corridor becoming STAA accessible. The proposed project is designed to improve road safety for all users, including trucks, by providing wider shoulders and additional offtracking room at curves. Roadway geometric improvements may reduce the risk of collisions, and therefore, the release of hazardous materials into the environment may be reduced.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no construction and therefore no potential to expose workers, the public, or nearby land uses to hazardous materials as a result of construction activities.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

No long-term mitigation measures are necessary. Measures necessary during project construction are detailed in Section 2.4, "Construction Impacts," under "Hazardous Wastes/Materials."

2.2.5 Air Quality

2.2.5.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended in 1990, is the federal law that governs air quality. The California Clean Air Act of 1988 is its companion state law. These laws, as well as related regulations by U.S. EPA and CARB, set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM, broken down for regulatory purposes into particles of 10 micrometers or smaller [PM10] and particles of 2.5 micrometers and smaller [PM2.5]), lead (Pb), and sulfur dioxide (SO_2). In addition, state standards exist for visibility-reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at a level that protects public health with a margin of safety and subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics within their general definition.

Federal and state air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA and CEQA. In addition to this type of environmental analysis, a parallel "conformity" requirement under the FCAA also applies.

FCAA Section 176(c) prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs or projects that are not first found to conform to the State Implementation Plan (SIP) for achieving the goals of Clean Air Act requirements related to the NAAQS. "Transportation conformity" takes place on two levels: the regional, or planning and programming, level and the project level. The proposed project must conform at both levels to be approved. Conformity requirements apply only in "nonattainment" and "maintenance" (former nonattainment) areas for the NAAQS and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 CFR 93 govern the conformity process.

Regional level conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for CO, NO_2, O_3, particulate matter, and, in some areas, SO_2. California has attainment or maintenance areas for all of these transportation-related "criteria pollutants," except SO_2, and a nonattainment area for lead (Pb). However, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all of the transportation projects planned for a region over a specific period (at least 20 years for the RTP and 4 years for the FTIP). RTP and FTIP conformity is based on the use of travel demand and air quality models to determine whether implementation of a project would conform to emission budgets or other tests to show that the requirements of the Clean Air Act and the SIP will be met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), such as the Del Norte Local Transportation Commission (DNLTC) for Del Norte County, FHWA, and the Federal Transit Administration, make the determination that the RTP and FTIP are in conformity with the SIP for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and the FTIP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires "hot spot" analysis if an area is designated nonattainment or maintenance for CO and/or particulate matter. A region is a nonattainment area if one or more monitoring stations in the region fail to attain the relevant standard and U.S. EPA officially designates the area as a nonattainment area. Areas that were designated as nonattainment areas but subsequently met the standard may be officially redesignated to attainment status by U.S. EPA. These are then called maintenance areas. Hot-spot analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot-spot analysis. In general, projects must not cause the hot-spot-related standard to be violated, and in nonattainment areas, the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

2.2.5.2 Affected Environment

The information in this section is based on the Air Quality Study prepared for the project (ICF Jones & Stokes 2010).

Climate and Topography

The North Coast Air Basin (NCAB) is bordered on the west by the Pacific Ocean and the topography is generally mountainous, with elevations varying from sea level to over 9,000 feet. Weather is highly dependent on distance from the Pacific Ocean and elevation. Near the coast, in Crescent City, average summer (August) temperatures range from 51°F to 66°F, and average winter (January) temperatures range from 40°F to 54°F (The Weather Channel 2009). Temperatures and weather become more extreme further inland, with hot, dry summers and cold, snowy winters.

Dominant wind patterns in the area vary with the seasons. During the summer months, strong north to northwesterly winds are common, while during the winter months, storms from the south Pacific increase the number of days winds originate from the south. Offshore and onshore flows are also common along the coast and are associated with pressure systems in the area. In the river canyons, a diurnal pattern is present. In the morning, cool air from higher elevations flows down the river valleys, while in the afternoon, the pattern is reversed, and warmer air flows up the canyons. Onshore flows bring fog and cool weather, and offshore flows blow fog away from the coast and bring sunshine and warm weather. Wind speed and direction influence the dispersion and transportation of ozone precursors, particulate matter less than 10 micrometers in diameter (PM10), and CO; the more wind flow, the less accumulation of these pollutants.

The vertical dispersion of air pollutants in the NCAB is limited by the presence of temperature inversion, radiation inversion, and subsidence inversion, which all result in warm air over cool air (North Coast Unified Air Quality Management District 1995). Because of differences in air density, the air above and below the inversion does not mix. Ozone and its precursors will mix and react to produce higher concentrations under an inversion and will trap directly emitted pollutants, such as CO.

Precipitation and fog tend to reduce or limit pollutant concentrations. Ozone needs sunlight to form, and clouds and fog block the required radiation. CO is slightly water soluble; therefore, precipitation and fog tend to reduce CO concentrations in the atmosphere. PM10 is somewhat washed from the atmosphere with precipitation. Annual average precipitation on the north coast ranges from a low of 0.40 inches in July to a high of 11.23 inches in December (The Weather Channel 2009).

Description of Pollutants

The following is a general description of the pollutants, for which there are standards (criteria pollutants) and ambient measurements. A description of toxic air contaminants (TACs) and NOA, for which there are no standards, is also included. Ozone, and its precursors, reactive organic compounds (ROG) and oxides of nitrogen (NO_x); sulfates; visibility reducing particles; NO_2; and PM10 and particulate matter less than 2.5 micrometers in diameter (PM2.5) are considered to be regional pollutants because they or their precursors affect air quality on a

regional scale—NO_2 reacts photochemically with reactive organic gases to form ozone, while PM10 and PM2.5 can form from chemical reaction of atmospheric chemicals, including NO_x, sulfates, nitrates, and ammonia. These processes can occur at some distance downwind of the source of pollutants. Pollutants such as CO, SO_2, lead, and PM10 are considered to be local pollutants because they tend to disperse rapidly with distance from the source. Although PM10 and PM2.5 are considered to be regional pollutants, they can also be localized pollutants because direct emissions of PM10 from automobile exhaust can accumulate in the air locally near the emission source. Table 2.2.5-1 provides references for the state and federal standards and Del Norte County's attainment status for the pollutants.

Ozone

Ozone is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials.

Ozone is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. Ozone precursors (ROG and NO_x) react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem.

State and federal standards for ozone have been set for 1- and 8-hour averaging times. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. U.S. EPA recently replaced the 1-hour ozone standard with an 8-hour standard of 0.075 ppm. However, the California 1-hour standard will remain in effect. The state 8-hour standard is 0.070 ppm, not to be exceeded.

Del Norte County is designated as an attainment area for both the 1- and 8-hour state ozone standards and is designated as an attainment/unclassified area for the federal ozone 8-hour standard (Table 2.2.5-1).

Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for 1- and 8-hour averaging times. The state 1-hour standard is 20 ppm, not to be exceeded, whereas the federal 1-hour standard is 35 ppm, not to be exceeded more than 1 day per year. The state 8-hour standard is 9.0 ppm, while the federal standard is 9 ppm. This means that a monitored 8-hour CO concentration from 9.1 to 9.4 ppm violates the state but not the federal standard.

Del Norte County is designated as unclassified for the state 1- and 8-hour CO standards and is designated as attainment/unclassified for the federal 1- and 8-hour CO standards (Table 2.2.5-1).

Inhalable Particulate Matter

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials.

The federal and state ambient air quality standard for particulate matter applies to two classes of particulates: PM2.5 and PM10.

The main sources of PM2.5 in Del Norte County are fires, residential wood combustion, road dust, and industrial processes, while PM10 results mainly from road dust (U.S. Environmental Protection Agency 2009b).

The state PM10 standards are 50 micrograms per cubic meter ($\mu g/m^3$) as a 24-hour average and 20 $\mu g/m^3$ as an annual arithmetic mean. The federal PM10 standard is 150 $\mu g/m^3$ as a 24-hour average. For PM2.5, the state has adopted a standard of 12 $\mu g/m^3$ for the annual arithmetic mean. The federal PM2.5 standards are 35 $\mu g/m^3$ for the 24-hour average and 15.0 $\mu g/m^3$ for the annual arithmetic mean.

Del Norte County is designated as nonattainment for both the annual arithmetic mean and the 24-hour state PM10 standards and is designated as attainment/unclassified for the 24-hour federal PM10 standards. There is no federal annual arithmetic mean averaging time standard for PM10. The county is designated as unclassified for the state annual arithmetic mean PM2.5 standard and is designated as attainment/unclassified for both the federal annual arithmetic mean and 24-hour PM2.5 standards (Table 2.2.5-1).

Carbon Dioxide

CO_2 is the most important anthropogenic GHG and accounts for more than 75% of all anthropogenic GHG emissions. Its long atmospheric lifetime (on the order of decades to centuries) ensures that atmospheric concentrations of CO_2 will remain elevated for decades after GHG mitigation efforts to reduce GHG concentrations are promulgated (Intergovernmental Panel on Climate Change 2007).

Increasing concentrations of CO_2 in the atmosphere are primarily a result of emissions from the burning of fossil fuels, gas flaring, cement production, and land use changes. Three quarters of anthropogenic CO_2 emissions are the result of fossil fuel burning (and, to a very small extent, cement production), and approximately one quarter of emissions are the result of land use change (Intergovernmental Panel on Climate Change 2007).

Atmospheric concentrations of anthropogenic CO_2 emissions have increased, most notably since the industrial revolution. CO_2 concentration has increased from about 280 ppm to 379 ppm over the last 250 years (Solomon et al. 2007). The Intergovernmental Panel on Climate Change estimates that the present atmospheric concentration of CO_2 has not been exceeded in the last 650,000 years and is likely to be the highest ambient concentration in the last 20 million years (Intergovernmental Panel on Climate Change 2007; Solomon et al. 2007).

Table 2.2.5-1. Ambient Air Quality Standards Applicable in California and the Attainment Status of Del Norte County

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Del Norte County	
			California	National	California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	NA	180	NA	If exceeded	NA	Attainment	NA
		8 hours	0.070	0.075	137	147	If exceeded	If fourth highest 8-hour concentration in a year, averaged over 3 years, is greater than the standard	Attainment	Attainment/Unclassified
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	Unclassified	Attainment/Unclassified
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	Unclassified	Attainment/Unclassified
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA	NA	NA
Nitrogen dioxide	NO_2	Annual arithmetic mean	0.030	0.053	57	100	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment/Unclassified
		1 hour	0.18	NA	339	NA	If exceeded	NA	Attainment	NA
Sulfur dioxide	SO_2	Annual arithmetic mean	NA	0.030	NA	80	NA	If exceeded	NA	Attainment/Unclassified
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year	Attainment	Attainment/Unclassified
		1 hour	0.25	NA	655	NA	If exceeded	NA	Attainment	NA
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA	Unclassified	NA
Vinyl chloride	C_2H_3Cl	24 hours	0.01	NA	26	NA	If equaled or exceeded	NA	No info available	NA
Inhalable particulate matter	PM10	Annual arithmetic mean	NA	NA	20	NA	If exceeded	NA	Nonattainment	NA
		24 hours	NA	NA	50	150	If exceeded	If exceeded on more than 1 day per year	Nonattainment	Attainment/Unclassified
	PM2.5	Annual arithmetic mean	NA	NA	12	15.0	If exceeded	If 3-year average of the weighted annual mean from single or multiple community-oriented monitors exceeds the standard	Unclassified	Attainment/Unclassified
		24 hours	NA	NA	NA	35	NA	If less than 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard	NA	Attainment/Unclassified
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA	Attainment	NA
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year	NA	Attainment/Unclassified
		30-day average	NA	NA	1.5	NA	If equaled or exceeded	NA	Attainment	NA
		Rolling 3-month average	NA	NA	NA	0.15	NA	Averaged over a rolling 3-month period	NA	Attainment/Unclassified

Notes: National standards shown are the primary (public health) standards. All equivalent units are based upon a reference temperature of 25°C and a reference pressure of 760 torr.
Parts per million (ppm) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
NA = not applicable.

Sources: California Air Resources Board 2008a, 2009a; U.S. Environmental Protection Agency 2009a

Nitrogen Dioxide

Nitrogen oxides are a family of highly reactive gases that are primary precursors to the formation of ground-level ozone, reacting in the atmosphere to form acid rain. NO_x, a mixture of nitric oxide (NO) and NO_2, are produced from natural sources, motor vehicles, and other fuel combustion processes. NO is colorless and odorless and is oxidized in the atmosphere to form NO_2. NO_2 is an odorous, brown, acidic, highly corrosive gas that can affect human health and environment. Nitrogen oxides are critical components of photochemical smog. NO_2 produces the yellowish-brown color of the smog.

NO_X can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. The effects of short-term exposure are still unclear, but continued or frequent exposure to concentrations that are typically much higher than those normally found in the ambient air may cause increased incidence of acute respiratory illness in children. Health effects associated with NO_x are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation along with pulmonary dysfunction. NO_x can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to the production of particulate nitrates. Airborne NO_x can impair visibility.

NO_x is a major component of acid deposition in California. NO_x may affect both terrestrial and aquatic ecosystems. NO_x in the air is a potentially significant contributor to a number of environmental effects, such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduces the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

CARB and U.S. EPA have set CAAQS and NAAQS standards, respectively, for NO_2 but not for NO. The state NO_2 standards are 0.030 ppm as an annual arithmetic mean and 0.18 ppm as a 1-hour standard, not to be exceeded. The federal NO_2 standard is 0.053 ppm as an annual arithmetic mean, not to be exceeded more than one day per year.

Del Norte County is designated as attainment for both the state annual arithmetic mean and 1-hour NO_2 standard and is designated as attainment/unclassified for the federal annual arithmetic mean NO_2 standard. There is no federal 1-hour NO_2 standard (Table 2.2.5-1).

Sulfur Oxides

SO_x gases are a family of colorless, pungent gases, which include SO_2 and are formed primarily by combustion of sulfur-containing fossil fuels (mainly coal and oil), metal smelting, and other industrial processes. SO_x can react to form sulfates, which significantly reduce visibility. SO_x is a precursor to particulate matter formation.

The major health concerns associated with exposure to high concentrations of SO_x include effects related to breathing, respiratory illness, alterations in pulmonary defenses, and aggravation of existing cardiovascular disease. Major subgroups of the population that are most sensitive to SO_x include individuals with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema), as well as children and the elderly. SO_x emissions can also damage tree foliage and agricultural crops. Together, SO_x and NO_x are the major precursors to acid rain, which is associated with the acidification of lakes and streams and accelerated corrosion of buildings and monuments.

CARB and U.S. EPA have set California Ambient Air Quality Standards (CAAQS) and NAAQS standards for SO_2. The state standards are 0.04 ppm as a 24-hour average and 0.25 ppm as a 1-hour average, not to be exceeded. The federal standards are 0.030 ppm as an annual arithmetic mean, not to be exceeded, and 0.14 ppm as a 24-hour average, not to be exceeded more than one day per year.

Del Norte County is designated as attainment for both the state 1- and 24-hour SO_2 standards and is designated as attainment/unclassified for both the federal annual arithmetic mean and 24-hour SO_2 standards (Table 2.2.5-1).

Lead

Lead is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment; therefore, it essentially persists forever. Several decades ago lead was used as an automotive fuel additive to increase the octane rating. Because gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels, and the use of leaded fuel has been mostly phased out, the ambient concentrations of lead have dropped dramatically.

Short-term exposure to high levels of lead can cause vomiting, diarrhea, convulsions, coma, or even death. However, even small amounts of lead can be harmful, especially to infants, young children, and pregnant women. Symptoms of long-term exposure to lower lead levels may be less noticeable but are still serious. Anemia is common, and damage to the nervous system may cause impaired mental function. Other symptoms are appetite loss, abdominal pain, constipation, fatigue, sleeplessness, irritability, and headache. Continued excessive exposure, as in an industrial setting, can affect the kidneys.

Lead exposure is most serious for young children because they absorb lead more easily than adults and are more susceptible to its harmful effects. Even low-level exposure may harm the intellectual development, behavior, size, and hearing of infants. During pregnancy, and especially in the last trimester, lead can cross the placenta and affect the fetus. Female workers exposed to high lead levels have more miscarriages and stillbirths.

The state standard for lead is 1.5 $\mu g/m^3$ as a 30-day average, not to be equaled or exceeded. The federal standards are 1.5 $\mu g/m^3$ averaged over a calendar quarter, not to be exceeded more than one day per year, and 0.15 $\mu g/m^3$ as a rolling 3-month average, not to be exceeded over a 3-month period.

Del Norte County is designated as attainment for the state 30-day average lead standard and is designated as attainment/unclassified for both the federal calendar quarter and rolling 3-month average lead standards (Table 2.2.5-1).

Mobile Source Air Toxics/Toxic Air Contaminants

TACs are pollutants that may result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects of TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. In 1998, following a 10-year scientific assessment process, CARB identified

particulate matter from diesel-fueled engines as a TAC. Compared to other air toxics CARB has identified and controlled, diesel particulate matter emissions are estimated to be responsible for about 70% of the total ambient air toxics risk (California Air Resources Board 2000).

Through the Clean Air Act Amendments of 1990, Congress mandated that U.S. EPA regulate 188 air toxics, which are also known as hazardous air pollutants (HAPs). In U.S. EPA's latest final rule (2007) on the control of hazardous air pollutants from mobile sources (72 Federal Register [FR] 8430), the agency identified 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS). From this list of 93 compounds, U.S. EPA has identified seven as priority mobile source air toxics (MSATs). The high regulation priority of these seven MSATS was based on U.S. EPA's 1999 National Air Toxics Assessment (NATA) (Federal Highway Administration 2009).

- Acrolein.
- Benzene.
- 1,3-Butadiene.
- Diesel particulate matter/diesel exhaust organic gases (diesel particulate matter).
- Formaldehyde.
- Naphthalene.
- Polycyclic organic matter (POM).

The 2007 rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using U.S. EPA's MOBILE6.2 model, even if vehicle activity (vehicle miles traveled [VMT]) increases by 145% as assumed, a combined reduction of 72% in the total annual emission rate for the priority MSAT is projected from 1999 to 2050 (Federal Highway Administration 2009).

Naturally Occurring Asbestos

NOA is a fibrous material found in certain types of rock formations. It is the result of natural geologic processes and is commonly found near earthquake faults in California. Some rock types known to produce asbestos fibers are varieties of chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite.

Asbestos is harmless when it is left undisturbed under the soil, but if it becomes airborne, it can cause serious health problems. Human disturbance, or natural weathering, can break down asbestos into microscopic fibers that are easily inhaled. Inhalation of asbestos fibers can cause lung cancer, mesothelioma (a rare form of cancer found in the lining of internal organs), and asbestosis (a progressive, non-cancer disease of the lungs involving the buildup of scar tissue, which inhibits breathing) (U.S. Environmental Protection Agency 2008a, 2008b).

Both U.S. EPA and CARB have issued guidance for reducing exposure to NOA. U.S. EPA's suggested measures include leaving NOA material undisturbed, covering or capping NOA material, limiting dust-generating activities, and excavating and disposing of NOA material (U.S Environmental Protection Agency 2008c). The CARB has adopted Airborne Toxic Control

Measures (ATCMs) that are required for road construction and maintenance projects, unless the project is found to be exempt. These ATCMs include stabilizing unpaved surfaces subject to vehicle traffic, reducing vehicle speeds, wetting or chemically stabilizing storage piles, and eliminating track-out material from equipment (California Air Resources Board 2008c).

Existing Air Quality Conditions

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants (see Table 2.2.5-1) and by monitoring data collected in the region. Monitoring data concentrations are typically expressed in terms of ppm or $\mu g/m^3$. The only air quality monitoring station in Del Norte County is the Crescent City–Northcrest monitoring station, located at 880 Northcrest Drive in Crescent City, California, which monitors for PM10 only (California Air Resources Board 2002, 2008b). Air quality monitoring data from the Crescent City–Northcrest monitoring station is summarized in Table 2.2.5-2. These data represent air quality monitoring data for the last three years (2006–2008) in which complete data is available.

Table 2.2.5-2. Ambient Air Quality Monitoring Data Measured at the Crescent City–Northcrest Monitoring Station

Pollutant Standards	2006	2007	2008
Particulate Matter (PM10)[a]			
National[b] maximum 24-hour concentration ($\mu g/m^3$)	40.8	43.7	46.9
National[b] second-highest 24-hour concentration ($\mu g/m^3$)	27.3	30.4	38.2
State[c] maximum 24-hour concentration ($\mu g/m^3$)	43.0	46.3	48.6
State[c] second-highest 24-hour concentration ($\mu g/m^3$)	28.4	32.0	40.0
State annual average concentration ($\mu g/m^3$)[d]	–	–	–
Number of days standard exceeded[e]			
NAAQS 24-hour (>150 $\mu g/m^3$)[f]	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)[f]	0	0	0

Notes: CAAQS = California ambient air quality standards.
NAAQS = national ambient air quality standards.
– = insufficient data available to determine the value.

[a] Measurements usually are collected every 6 days.

[b] National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.

[c] State statistics are based on local conditions data, except in the South Coast Air Basin, for which statistics are based on standard conditions data. In addition, State statistics are based on California-approved samplers.

[d] State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

[e] An exceedance is not necessarily a violation.

[f] Mathematical estimate of how many days concentrations would have been measured as higher than the level of the standard had each day been monitored.

Source: California Air Resources Board 2009c.

As shown in Table 2.2.5-2, the Crescent City–Northcrest monitoring station has experienced no violations of the federal 24-hour PM10 standard and no violations of the state 24-hour PM10 standard during the 3-year monitoring period.

U.S. EPA has classified Del Norte County as an attainment/unclassified area for all pollutants with ambient air quality standards.

The CARB has classified Del Norte County as nonattainment for both the state 24-hour and the state annual arithmetic mean PM10 standards. The county is classified as attainment or unclassified by the CARB for all other pollutants with ambient air quality standards.

Del Norte County's attainment status for all monitored pollutants relative to the NAAQS and CAAQS is summarized in Table 2.2.5-1.

Sensitive Receptors

In its *Rule 101 Definitions*, Section 1.251, the NCUAQMD defines a sensitive receptor as any Class I Area and/or any other area believed to be sensitive by the Air Pollution Control Officer (APCO), including K-12 schools, retirement housing, and hospitals. Within the vicinity of the proposed project area, sensitive receptors include Class I Areas, rural residences, campgrounds, and the Patrick Creek Lodge.

The entrance to the Ruby Van Deventer County Park is located adjacent to the Ruby 1 site. There is a parking lot inside the entrance to the park and a road that leads north from the parking lot to the park's campsites and day use area. Some campsites are situated very close to the roadway. On the east side of the Ruby 1 site, the entrance to a gravel quarry is about 0.2 mile north of the Ruby 1 site. There is one home directly across from the Ruby Van Deventer County Park, and there are rural homes situated on both sides of SR 197 further north and south of the site.

On the west side of the Ruby 2 site, there are several rural homes situated between the roadway and the Smith River. These homes are set relatively far back from the road and are shielded by trees.

The Patrick Creek Narrows Location 1 and the Patrick Creek Narrows Location 2 sites are surrounded by land owned by the Federal government.

At the Patrick Creek Narrows Location 3 site, at PM 25.5, a gated road leads downhill from the highway to a residence approximately 250 feet southwest of the western end of the project limits. There are three other rural homes located at least 600 feet from the highway. These homes are all visually shielded from the highway by heavy vegetation and trees. One juvenile residential treatment facility, Bar-O Boys Ranch, is located relatively close to proposed work at the Patrick Creek Narrows location.

The Patrick Creek Lodge and the Patrick Creek Campground are located approximately 0.5 mile west of the Narrows site, and federal land surrounds the site.

There are no developed land uses around the Washington Curve site. This site is surrounded by federal land.

2.2.5.3 Environmental Consequences

The following discussion of environmental consequences associated with the proposed project analyzes only operational emissions. Construction emissions resulting from the proposed project are discussed in Chapter 2, Section 4.

Transportation Conformity

As previously noted, under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional-Level Conformity

The project is located in an attainment/unclassified area for all current federal air quality standards. Therefore, conformity requirements do not apply.

Project-Level Conformity

As previously noted, if a project is located in a nonattainment or maintenance area for a given pollutant, then additional air quality analysis and reduction measures in regard to that pollutant is required. This "hot spot" analysis is most frequently done for CO and particulate matter.

Project-Level Conformity for Carbon Monoxide

According to consulting traffic engineers, "A detailed analysis of intersection operations was not performed as part of this analysis because of the rural nature of the area and the relatively low intersection volumes (e.g., there are no traffic signals along the SR 197 or US 199 corridors)" (Stinger pers. comm., Fehr & Peers). In addition, the proposed project is located in an attainment area for the federal CO standard (Table 2.2.5-1). Therefore, the proposed project is not subject to transportation conformity requirements and the evaluation of transportation conformity for CO is not required. Consequently, no violations of the federal or state CO standards are anticipated.

Project-Level Conformity for Particulate Matter

The proposed project is located in an attainment area for both the federal PM10 standard and the federal PM2.5 standard (Table 2.2.5-1). Therefore, the proposed project is not subject to transportation conformity requirements and the evaluation of transportation conformity for PM10 and PM2.5 is not required. Consequently, no violations of the federal or state PM10 and PM2.5 standards are anticipated.

Mobile Source Air Toxics

MSAT emissions were evaluated using a combination of FHWA's *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* (Federal Highway Administration 2009) and preliminary California-specific guidance from the Department. At this time, the California-specific guidance is identical to the FHWA's guidance except for California-specific thresholds for performing qualitative and quantitative analysis. The California-specific thresholds are found in CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (Brady pers. comm.; California Air Resources Board 2005). FHWA's interim guidance uses a tiered approach on how MSATs should be addressed in NEPA documents for highway projects (Federal Highway Administration 2009). Depending on the specific project circumstances, FHWA has identified three levels of analysis:

1. no analysis for projects with no potential for meaningful MSAT effects,
2. qualitative analysis for projects with a low potential for MSAT effects, and
3. quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Exempt Projects or Projects with No Meaningful Potential MSAT Effects

The types of projects included in this category are as follows:

- projects qualifying for a categorical exclusion under 23 CFR 771.117(c),
- projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126, or
- other projects with no meaningful impacts on traffic volumes or vehicle mix.

Projects that are categorically excluded under 23 CFR 771.117(c) or exempt under the Clean Air Act pursuant to 40 CFR 93.126 require no analysis or discussion of MSATs. Documentation that demonstrates that the project qualifies for a categorical exclusion and/or is exempt will suffice. For other projects with no or negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is required.[4] However, the project record must document the basis for the determination of "no meaningful potential impacts," with a brief description of the factors considered.

Projects with a Low Potential for MSAT Effects

This category covers a broad range of projects because projects included in this category are those that serve to improve highway, transit, and freight operations without adding new capacity substantially or creating a facility that is likely to increase emissions meaningfully. FHWA anticipates that most highway projects will fall into this category. Any projects not meeting the threshold criteria for higher potential effects should be included in this category. Examples of these types of projects are minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street or where design-year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT). In California, the corresponding AADT thresholds under which a project is considered to have low potential MSAT effects are 100,000 on urban non-freeways and 50,000 on rural non-freeways. In addition, California has a third criteria, which states that if freeway modifications are to be completed more than 500 to 1,000 feet from a sensitive land use, the project is anticipated to result in low potential MSAT effects (Brady pers. comm.; California Air Resources Board 2005).

A qualitative assessment of emissions projections should be conducted for these projects. The qualitative assessment would compare, in narrative form, the expected effect of the proposed project on traffic volumes, vehicle mix, and the routing of traffic and the associated changes in MSATs for the project alternatives based on VMT, vehicle mix, and speed. The assessment would also discuss national trend data, which project substantial overall reductions in emissions due to stricter engine and fuel regulations issued by U.S. EPA. Because the emission effects of these projects are low, FHWA expects that there would be no appreciable difference in overall MSAT emissions among the various alternatives. In addition, quantitative emissions analysis for these types of projects will not yield credible results that are useful to project-level decision-making due to the limited capabilities of the transportation and emissions forecasting tools.

[4] The types of projects categorically excluded under 23 CFR 771.117(d) or exempt from certain conformity requirements under 40 CFR 93.127 do not warrant an automatic exemption from an MSAT analysis, but they usually will have no meaningful impact.

Projects with a Higher Potential for MSAT Effects

Projects included in this category have the potential for meaningful differences among project alternatives. FHWA expects only a limited number of projects to meet this two-pronged test. To fall into this category, projects must create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location or create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000,[5] or greater, by the design year. Projects in this category must also be proposed to be located in proximity to populated areas or, in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals). In California, the corresponding AADT thresholds over which a project is considered to have higher potential for MSAT effects are 100,000 on urban non-freeways and 50,000 on rural non-freeways. In addition, California considers a project to have a higher potential MSAT effects if modifications to freeways are proposed to take place within 500 feet of sensitive receptors (Brady pers. comm.; California Air Resources Board 2005).

Projects falling in this category should be more rigorously assessed for impacts, and FHWA should be contacted for assistance in developing a specific approach for assessing impacts. This approach would include a quantitative analysis that would attempt to measure the level of emissions for the seven priority MSATs for each alternative as a basis for comparison. This analysis also may address the potential for cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of the assistance outlined above. If the analysis for a project in this category indicates meaningful differences in levels of MSAT emissions, mitigation options should identified and considered.

Applicable Project MSAT Category Assessment

Tables 2.2.5-3 and 2.2.5-4 summarize ADT volumes for the two routes studied by the project traffic engineers, Fehr & Peers, for existing/baseline (2008), open-to-traffic-year (2015), and design-year (2030) with and without project conditions. Based on this information, it is estimated that the highest ADT on Route 1 for 2030 will be 8,883, and the highest ADT on Route 2 for 2030 will be 26,100 with project implementation. Because the ADT volumes would not exceed the California-specific ADT threshold of 50,000 for rural non-freeways, the future roadway project is considered a project with low potential MSAT effects, and a quantitative analysis of MSAT emissions is not required (Brady pers. comm.; California Air Resources Board 2005; Federal Highway Administration 2009).

Table 2.2.5-3. Mainline ADT Volumes on Route 1—
US 101 to Grants Pass, Oregon (via SR 197 and US 199)

Segment	2008 (Existing/ Baseline)	2015 No Project	2015 Build	2030 No Project	2030 Build
SR 197 (US 101 to US 199)	1,821	2,076	2,094	2,622	2,714
US 199 (SR 197 to Gasquet)	4,675	5,002	5,020	5,704	5,796
US 199 (Gasquet to state line)	2,794	2,990	3,008	3,409	3,501
US 199 (state line to south of Grants Pass)[1]	7,272	7,755	7,773	8,791	8,883

[5] Using EPA's MOBILE6.2 emissions model, FHWA staff determined that this range of AADT would be roughly equivalent to the Clean Air Act definition of a major HAP source, i.e., 25 tons/yr for all HAPs or 10 tons/yr for any single HAP. Significant variations in conditions such as congestion or vehicle mix could warrant a different range for AADT.

Table 2.2.5-4. Mainline ADT Volumes on Route 2— SR 197 to Grants Pass, Oregon (via US 101, OR-42, and I-5)

Segment	2008 (Existing/ Baseline)	2015 No Project	2015 Build	2030 No Project	2030 Build
US 101 (SR 197 to Smith River)	7,301	8,068	8,050	9,710	9,690
US 101 (Smith River to state line)	7,302	8,324	8,306	10,515	10,495
US 101 (state line to south of Brookings)[1]	8,461	8,698	8,680	9,206	9,186
US 101 (North of Brookings to Port Orford)[1]	3,042	3,042	3,024	3,042	3,022
US 101 (Port Orford to Bandon ~ OR-42 Junction)[1]	4,316	4,349	4,331	4,421	4,401
OR-42 (US 101 to west of I-5)[1]	4,431	4,431	4,413	4,431	4,411
I-5 (OR-42 to north of Grants Pass)[1]	22,211	23,455	23,437	26,120	26,100

[1] ADT for this segment was calculated using a distance-weighted average from ODOT data. Urban area counts were excluded from the calculations.
Adapted from: Fehr & Peers 2010.

Air toxics analysis is an emerging area of research. Currently, limited tools and techniques are available for assessing project-specific health impacts from MSATs because there are no established criteria for determining when MSAT emissions should be considered a significant issue in regard to NEPA.

To comply with Council on Environmental Quality regulations (40 CFR 1502.22[b]) regarding incomplete or unavailable information, Appendix I contains discussion regarding how air toxics analysis is an emerging field and current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that would result from a transportation project in a way that would be useful to decision-makers. Also in compliance with 40 CFR 150.22(b), Appendix I contains a summary of current studies regarding the health impacts of MSATs.

Moreover, U.S. EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly in the future. Even after accounting for a 145% increase in VMT, FHWA predicts MSATs will decline by 72% from 1999 to 2050.This decline will reduce the background level of MSATs.

Tables 2.2.5-3 and 2.2.5-4 present ADT volumes along Route 1 and Route 2, respectively, for existing/baseline (2008), open to traffic-year (2015), and design-year (2030) conditions, and they indicate that for both Route 1 and Route 2 AADT will not exceed the California-specific MSAT AADT threshold of 50,000 for rural non-freeways. Consequently, based on the FHWA's 2009 MSAT guidance, and the California-specific MSAT thresholds, this project is considered a project with low potential MSAT effects, and a quantitative analysis of MSAT emissions is not required (Brady pers. comm.; California Air Resources Board 2005; Federal Highway Administration 2009).

As discussed above, technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSATs at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a

qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions—if any—from the No Build (No Action) Alternative versus the build alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives* (Federal Highway Administration 2006).

For each alternative in this EIR/EA, the amount of MSATs emitted would be proportional to the amount of truck VMT, assuming that other variables (such as travel not associated with truck traffic) are the same for each alternative. The truck VMT estimated for the build alternatives is higher than that for the No Build (No Action) Alternative due to the additional activity associated with designating SR 197 and US 199 as STAA truck routes. This increase in truck VMT would lead to an increase in MSAT emissions associated with the build alternatives (particularly diesel particulate matter) in the vicinity of Route 1 and Route 2. Refer to Table 2.2.5-5 for a summary of mainline daily VMT, truck percentage of daily VMT, and daily truck VMT on Route 1 and Route 2 under existing and design-year (2030) conditions. The 2030 data are summarized for the no-project and with-project scenarios.

Table 2.2.5-5. Mainline VMT, Truck Percentages, and Truck VMT

Scenario	Mainline Daily VMT	Mainline Daily Truck Percentages	Mainline Daily Truck VMT
Route 1—US 101 to Grants Pass, OR (via SR 197 and US 199)			
Existing/Baseline year (2008)	393,625	13.04%	51,329
Design year (2030) no project	479,891	13.04%	62,578
Design year (2030) with project	486,901	14.13%	68,799
Route 2—SR 197 to Grants Pass, OR (via US 101, OR-42, and I-5)			
Existing/Baseline year (2008)	2,067,619	13.04%	269,618
Design year (2030) no project	2,339,432	13.04%	305,062
Design year (2030) with project	2,334,794	14.13%	329,906

Note: Truck percentages were calculated using a weighted average of truck percentages provided in the Fehr & Peers Traffic Study. Truck percentages were assumed to be the same for both routes.
Adapted From: Fehr & Peers 2010

It is expected that there would be no appreciable difference in overall MSAT emissions with implementation of the build alternatives for two reasons:

1. The estimated truck VMT on Route 1 under the 2030 build alternatives is less than 10% higher than it would be under the No Build (No Action) Alternative, and truck VMT on Route 2 under the build alternatives is less than 9% higher than it would be under the No Build (No Action) Alternative.

2. The difference in truck VMT between the 2030 No Build (No Action) Alternative and the 2030 Build Alternative is 6,221 on Route 1 and 24,844 on Route 2. Therefore, the increase in truck VMT attributable to the proposed project amounts to less than 13% on Route 1 and less than 10% on Route 2 compared with existing (2008) conditions. This equates to an increase in traffic of 92 trucks per day (see Section 2.1.5.3, "Traffic and Transportation/ Pedestrian and Bicycle Facilities"). The project is located along a rural non-freeway roadway in an area

with low population density (see Section 2.1.2, "Growth"). Because the ADT volumes would not exceed the California-specific ADT threshold of 50,000 for rural non-freeways, the proposed project is considered a project with low potential MSAT effects. Given the context of the project and the intensity of the proposed changes to the roadway, the project's increase in VMT is not expected to result in an appreciable difference in overall MSAT emissions.

Regardless of the alternative chosen, emissions will most likely be lower than present levels in the design year as a result of U.S. EPA's national control programs that are projected to reduce annual MSAT emissions by 72% from 1999 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, U.S. EPA-projected reductions are so significant (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future as well.

The additional freight activity contemplated as part of the project alternatives will have the effect of increasing diesel emissions in the vicinity of nearby homes, schools, and businesses; therefore, under the build alternatives, there may be localized areas where ambient concentrations of MSATs would be higher than under the No Build (No Action) Alternative. However, as discussed above, the magnitude and the duration of these potential differences cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific health impacts. Even though there may be differences among the alternatives, on a region-wide basis, U.S. EPA's vehicle and fuel regulations, coupled with fleet turnover, will cause substantial reductions over time that in almost all cases the MSAT levels in the future will be significantly lower than today.

No Build (No Action) Alternative

Under the No Build Alternative, construction of the project would not occur. Therefore, the No Build Alternative would not directly generate any short-term construction emissions and the project area would remain in attainment for the federal CO and PM10 standards.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

Because no adverse air quality impacts from traffic are anticipated, no measures are required. Construction related air quality impacts, including avoidance, minimization and mitigation measures, are discussed in Section 2.4, "Construction Impacts," under "Air Quality."

Climate Change

Climate change is analyzed in Chapter 3. Neither the U.S. EPA nor FHWA has promulgated explicit guidance or methodology 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 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 will facilitate decision-making and improve efficiency at the program level and inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can easily 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.

Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in the CEQA chapter (Chapter 3) of this environmental document 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 that the state has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in the growth of vehicle hours traveled.

2.2.6 Noise and Vibration

2.2.6.1 Regulatory Setting

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

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA 23 CFR 772 noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

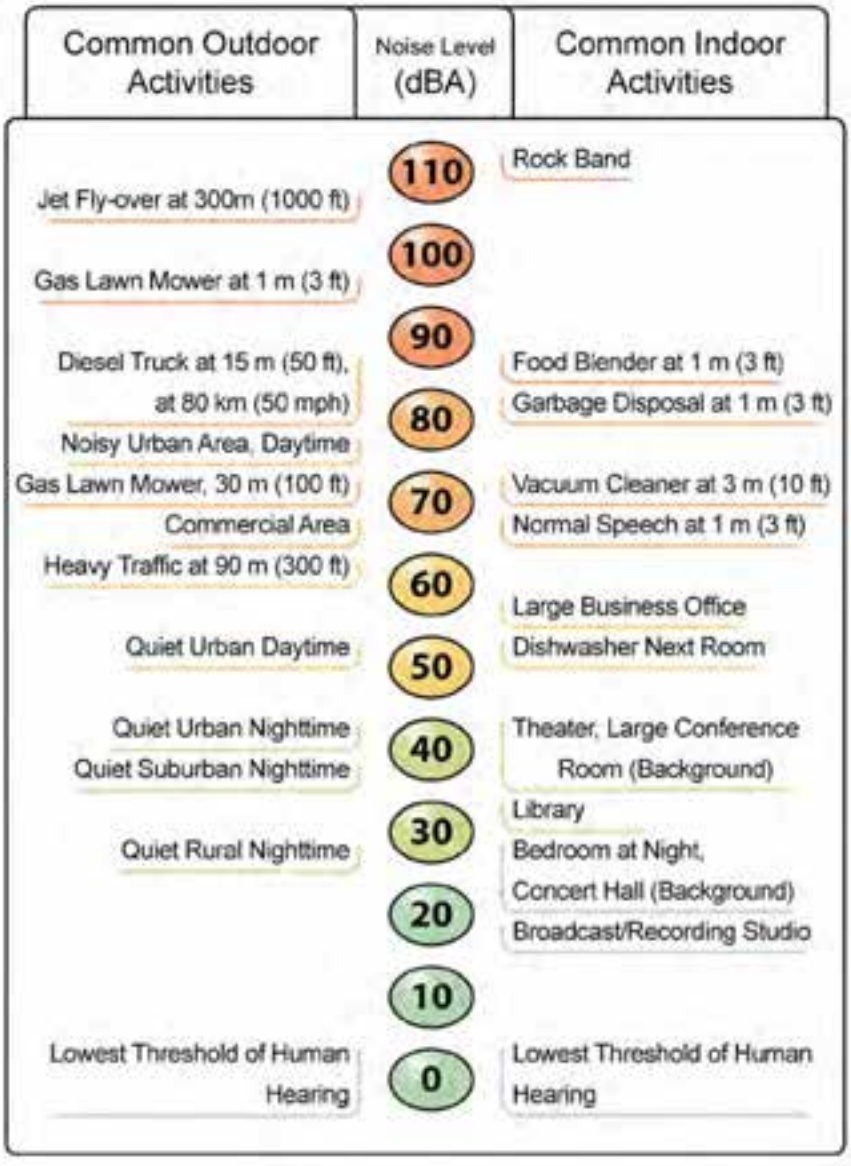
For highway transportation projects with FHWA (and the Department, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in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

Table 2.2.6-1. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA $L_{eq}(h)$	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	–	Undeveloped lands.
E	52 Interior	Residence, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Table 2.2.6-2 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

Table 2.2.6-2. Typical A-Weighted Noise Levels



In accordance with the Department's *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects,* August 2006, a noise impact under CEQA occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) and under NEPA when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

The Department's *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies' input, newly constructed development versus development pre-dating 1978, and the cost per benefited residence.

Under 23 CFR 772, projects are categorized as Type I or Type II projects. FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location or the physical alteration of an existing highway that significantly changes either the horizontal or vertical alignment or increases the number of through traffic lanes. A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment.

Type I projects include those that create a completely new noise source as well as those that increase the volume or speed of traffic or move the traffic closer to a receiver. Type I projects include the addition of an interchange, ramp, auxiliary lane, or truck-climbing lane to an existing highway or the widening of an existing ramp by a full lane width for its entire length. Projects unrelated to increased noise levels, such as striping, lighting, signing, and landscaping projects, are not considered Type I projects.

2.2.6.2 Vibration

Operation of heavy construction equipment, particularly pile-driving and other impulsive devices, such as pavement breakers, create seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in varying vibration levels and contain varying frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance.

As seismic waves travel outward from a vibration source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (ppv). Table 2.2.6-3 summarizes typical vibration levels generated by construction equipment (Federal Transit Administration 2006).

Table 2.2.6-3. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 feet
Vibratory roller	0.210
Hoe ram	0.089
Large bulldozer	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003

Source: Federal Transit Administration 2006.

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. The following equation can be used to estimate the vibration level at a given distance for typical soil conditions. PPV_{ref} is the reference PPV at 25 feet from the equipment listed above in Table 2.2.6-3.

$$PPV = PPV_{ref} (25/distance)^{1.5}$$

Table 2.2.6-4 summarizes typical human response to vibration such as that produced by construction activity.

Table 2.2.6-4. Guidelines for Annoyance from Construction Vibration

Human Response	Maximum PPV (Inches/Second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
Source: California Department of Transportation 2004.

2.2.6.3 Affected Environment

This discussion is based primarily on information from the noise study technical report prepared for this project (ICF International 2010). The technical report discusses potential noise impacts and related noise abatement measures associated with the construction and operation of the project. The report was prepared to comply with 32 CFR 772, Procedures for Abatement of Highway Traffic Noise, and the Department's noise analysis policies as described in the *Traffic Noise Analysis Protocol*.

Land Uses in the Project Area

A field investigation was conducted to identify land uses that could be subject to construction noise impacts resulting from the proposed project. Land uses in the project area include residences, recreational areas (both with overnight camping facilities and others that are limited to day use only), and one lodge. Single-family residences are located along both US 199 and SR 197. The recreational area nearest proposed temporary construction work along SR 197 is Ruby Van Deventer County Park. The recreational areas nearest proposed temporary construction work along US 199 are Sandy Beach, Patrick Creek Lodge, and Patrick Creek Campground. Bar-O Boys Ranch is located relatively close to work at Patrick Creek Narrows Location 3. In addition, hiking trails are interspersed throughout the entire region, some of which are near proposed construction work. The Middle Fork Smith River traverses the majority of the US 199 alignment corridor of proposed work, and the Smith River traverses the SR 197 alignment corridor of proposed work.

Existing Noise Levels

Traffic on highways is the predominant source of noise in the project area. The ambient noise level in locations in the project area is dependent primarily on proximity to nearby highways. Noise monitoring was conducted in the study area to characterize existing noise conditions in the project area.

Short-term monitoring was conducted on Tuesday, June 23, and Wednesday, June 24, 2009, using a Larson-Davis Model 812 Precision Type 1 sound level meter at five locations. All short-term measurements were conducted for a continuous duration of at least 10 minutes and the calibration of the meter was checked before and after the measurement. During the short-term measurements, field staff attended the meter. At all locations, noise levels were measured at a height of approximately 5 feet above the ground and at least 10 feet from structures. Table 2.2.6-5 summarizes short-term monitoring results.

Table 2.2.6-5. Short-Term Noise Level Measurement Results

Location	Date/Time	Duration (Minutes)	Primary Noise Source	Noise Level L_{eq}
ST 1–SR 197 turnout, approx. PM 4.5, approx. 55 feet from SR 197 centerline	6/23/09 3:02 p.m.	15	Traffic on SR 197	60
ST 2–Patrick Creek Campground picnic area, PM 21.7–PM 22.0	6/24/09 9:14 a.m.	10	Smith River water flow	50
ST 3–Patrick Creek Campground No. 5, approx. PM 21.7	6/24/09 9:37 a.m.	10	Traffic on US 199	55
ST 4–Sandy Beach recreational area, PM 20.85	6/24/09 10:24 a.m.	10	Smith River water flow	55
ST 5–LT 1 area, approx. 50 feet from US 199 centerline	6/24/09 11:04 a.m.	15	Traffic on US 199	63

Notes: ST = short-term; LT = long term

Long-term monitoring was conducted at two locations (LT-1 and LT-2) using Larson-Davis Model 720 Type 2 sound level meters. The purpose of these measurements was to quantify the daily trend in noise levels throughout a 24-hour period.

LT-1 was located approximately 1.1 miles north of Gasquet, California, on US 199, at a distance of approximately 115 feet from the US 199 centerline. The long-term noise level data at LT-1 was collected over the 24-hour period between 11:00 a.m. on June 23 and 11:00 a.m. on June 24, 2009. Measured hourly daytime equivalent sound level (L_{eq}) values were in the range of 49 to 60 dBA. Measured hourly nighttime L_{eq} values were in the range of 44 to 54 dBA.

LT-2 was located at approximately PM 2.5 of SR 197, which is just north of Club Drive, approximately 45 feet from the SR 197 centerline. The long-term noise level data at LT-2 was collected over the 24-hour period between 12:00 p.m. on June 23 and 12:00 p.m. on June 24, 2009. Measured hourly daytime L_{eq} values were in the range of 59 to 63 dBA. Measured nighttime L_{eq} values were in the range of 48 to 61 dBA.

Traffic noise modeling was also conducted based on traffic volumes for existing conditions provided by project traffic engineer (Fehr & Peers 2010). Table 2.2.6-6 summarizes existing traffic volumes on roadways in the project area and traffic noise levels calculated using the FHWA Traffic Noise Model (Version 2.5). Noise levels are presented as sound levels over a 24-hour period ("day-night levels," noted as L_{dn}).

Table 2.2.6-6. Summary of Existing Traffic Volumes and Traffic Noise Levels

Highway	Segment	Daily Volume	Truck %	L_{dn}*
US 101	North of US 199	7,302	13	71
	South of US 199	9,416	13	72
SR 197		1,821	15	65
US 199	Between US 101 and SR197	3,743	13	68
	Between SR 197 and Gasquet	4,675	10	68
	East of Gasquet	2,794	17	67

* 50 feet from roadway centerline

2.2.6.4 Environmental Consequences

The project does not qualify as a Type I project under the Department's protocol. Therefore, no noise analysis or consideration of noise abatement is required under 23 CFR 772 for the operational impacts of this project. NEPA, however, requires an evaluation of project effects relative to no build conditions. Table 2.2.6-7 summarizes predicted traffic volumes and traffic noise levels under 2030 no build and 2030 build conditions and provides a comparison between predicted traffic noise levels.

Table 2.2.6-7. Summary of 2030 Traffic Volumes and Traffic Noise Levels

Highway	Segment	2030 No Build			2030 Build			Increase in L_{dn} re: 2030 No Build	Increase in L_{dn} re: Existing[2]
		2030 No Build Daily Volume	Truck %	L_{dn}[1]	2030 Build Daily Volume	Truck %	L_{dn}[1]		
US 101	North of US 199	10,113	13	72	10,205	14	72	0	1
	South of US 199	12,524	13	73	12,616	14	73	0	1
SR 197		2,622	15	67	2,714	18	67	0	2
US 199	Between US 101 and SR 197	4,567	13	69	4,567	13	69	0	1
	Between SR 197 and Gasquet	5,703	10	69	5,795	11	70	1	2
	East of Gasquet	3,408	17	68	3,500	19	69	1	2

[1] 50 feet from roadway centerline.
[2] Refer to Table 2.2.2-6 for existing traffic noise levels.

The results in Table 2.2.6-7 indicate that the increase in traffic noise between 2030 build and 2030 no build conditions as well as the increase between 2030 build and existing conditions will not be perceptible. Therefore, no operational adverse effects are expected. In addition, the projected increase in truck traffic will not substantially increase ground vibration caused trucks because of the relatively small increase in truck volumes and the fact that trucks with a proper suspension and pneumatic tires are not a substantial source of vibration unless there are substantial discontinuities in the roadway surface.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, the proposed improvements would not be constructed and therefore no project-related change in existing traffic volumes or increases in noise or vibration would occur.

2.2.6.5 Avoidance, Minimization, and/or Abatement Measures

Because no adverse noise and vibration impacts from traffic are anticipated, no measures are required. Construction related noise and vibration impacts, including avoidance, minimization and mitigation measures, are discussed in Section 2.4, "Construction Impacts," under "Noise and Vibration."

2.2.7 Energy

2.2.7.1 Regulatory Setting

The CEQA Guidelines, Appendix F, Energy Conservation, state that EIRs are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

NEPA (42 USC Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

2.2.7.2 Affected Environment

The proposed project would improve spot locations on SR 197 and US 199 in Del Norte County to allow reclassification of the SR 197–US 199 corridor as part of the STAA network of truck routes. These improvements also would enhance safety on the routes for automobiles, trucks, and other large vehicles. Safety improvements would include wider lanes, wider shoulders, longer-radius curves, and improved sight distances. The proposed project would not increase roadway capacity, and all the build alternatives would provide the same level of highway operation.

2.2.7.3 Environmental Consequences

US 199 is Del Norte County's most direct transportation link to the interstate highway system (I-5 in Grants Pass, Oregon). The DNLTC considers US 199 to be the route that contributes the most to goods movement and mobility in support of the county's economy. SR 197 is the designated route for the movement of extralegal loads. Alternative access to the interstate highway system is much less direct.

Currently, STAA trucks that travel north on US 101 through Del Norte County to I-5 in Grants Pass must travel approximately 247 miles and spend more than 5 hours en route. Conversely, with STAA truck access on US 199, a one-way journey to I-5 in Grants Pass would be approximately 90 miles and less than 2 hours (Fehr & Peers 2010).

Because the proposed project would not modify energy supplies or energy use patterns, increase the capacity of the roadways in the corridor, or result in a substantial increase in traffic volumes, the project would not result in a permanent increase in energy consumption. Temporary energy consumption during construction would occur, but would not require new energy sources. The project would not cause energy impacts. Refer to Chapter 3 for discussion of climate change and construction and operational emissions.

2.2.7.4 Avoidance, Minimization, and/or Mitigation Measures

No measures are necessary.

2.3 Biological Environment

2.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors, fish passage, habitat fragmentation, and re-establishment of native natural community vegetation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat, thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the federal Endangered Species Act are discussed in Section 2.3.5, "Threatened and Endangered Species." Wetlands and other waters are also discussed in Section 2.3.2, "Wetlands and Other Waters of the United States."

2.3.1.1 Affected Environment

This section is summarized from the natural environment study (NES) (California Department of Transportation 2010), the addendum to the NES (California Department of Transportation 2012), the *Special-Status Plants Survey Report* (ICF International 2010), and the forester/arborist report (Gaman, T. and R. Moritz 2012).

The study area, also referred to as the Biological Study Area (BSA), includes the Middle Fork and Main Stem of the Smith River within the project vicinity. The proposed area of direct impact (hereafter referred to as *area of direct impact*) is defined as the area within each of the seven proposed project locations, consisting of Ruby 1; Ruby 2; the Narrows; Patrick Creek Narrows Locations 1, 2, and 3; and Washington Curve in Del Norte County, California, where construction activities are anticipated to affect the surrounding physical environment, generally through disturbance to vegetation and/or the ground/soil surface. Visual and noise impacts may extend beyond the ROW for special-status animals; those impacts are addressed in the noise study attached to the NES and addressed in Sections 2.2.6, "Noise and Vibration," and 2.4.11, "Noise and Vibration." The BSA includes the Smith River watershed because it is within and adjacent to the project area. The BSA, which is used as a migration corridor, provides habitat for special-status animal species.

The project locations are in forest settings in the California Floristic Province, Northwestern California Region, Klamath Range Subregion (Hickman 1993). The project locations along SR 197 are located adjacent to the north bank of the Smith River, about 5 miles inland from the Pacific Ocean. The sites along US 199 are located in the Six Rivers National Forest (SRNF) Smith River National Recreation Area along the Middle Fork Smith River.

Natural Community Overview

The project locations support several natural vegetation communities, as well as small vegetated seeps and roadside ditches (which could not be assigned to any described community type because of their generally small size and disturbed conditions), and landscaped/disturbed areas.

SR 197 Sites: Ruby 1 Site and Ruby 2 Site

These two sites are located on SR 197 in dense Coast Redwood Forest and dominated by second- and third-growth coast redwood trees (*Sequoia sempervirens*). Associated tree species include Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), red alder (*Alnus rubra*), and California bay (*Umbellularia californica*). A narrow strip of riparian forest is present along an unnamed stream at the Ruby 2 site and dominated by red alder and willows, predominantly Sitka willow (*Salix sitchensis*) with arroyo willow (*S. lasiolepis*).

Large redwood trees and stumps occur along the south side of SR 197 between the edge of the pavement and the north bank of the Smith River. There are fewer large redwood trees along the north side of the highway. The vast majority of the other trees along the north side of the highway represent second- and third-growth timber stands that are managed by industrial timberland owners, primarily Green Diamond Resource Company.

The junction of US 199 and SR 197 near Hiouchi is located just within the boundary of Jedediah Smith Redwoods State Park. SR 197 follows the park boundary for several miles as it heads northwest toward US 101. However, none of the proposed project locations are in or near the park. Ruby Van Deventer County Park is located within the limits of the proposed Ruby 1 site at approximately PM 4.1. The park includes many large redwood trees.

Special aquatic sites can be found at the project locations. Several three-parameter wetlands were delineated within the limits of the proposed Ruby 2 site on SR 197. Both the Ruby 1 and Ruby 2 sites contain riparian wetlands and other waters characterized by ditches and culverts that ultimately outlet into the mainstem of the Smith River. Maps showing the wetlands and other waters can be found in Appendix M.

US 199 Sites: Patrick Creek Narrows (Locations 1, 2, and 3), the Narrows, and the Washington Curve Site

Vegetation on these sites is predominantly Douglas-fir Forest. Douglas-fir is the dominant species in the main canopy and forms a scattered overstory at some sites. Other species typical of the canopy are Pacific madrone (*Arbutus menziesii*), tanoak (*Lithocarpus densiflorus* var. *densiflorus*), canyon live oak (*Quercus chrysolepis*), and big-leaf maple (*Acer macrophyllum*). White alder (*Alnus rhombifolia*) is present along the Middle Fork Smith River and in streams and roadside ditches, often with big-leaf maple and small willows (dbh of less than 6 inches). Small red alder trees are present at Patrick Creek Narrows Location 3. On serpentine substrates at Patrick Creek Narrows Location 1, Port Orford cedar (*Chamaecyparis lawsoniana*) occurs, but most had a dbh of less than 6 inches. At the Washington Curve site, a small area of knobcone pine (*Pinus attenuata*) is located on the east side of the ridge above US 199.

The communities are described further below, including the project locations where they occur.

Trees

In general, the Department does not consider the removal of individual trees to be a significant impact under NEPA or CEQA. Nevertheless, the Department recognizes that native habitat trees are an important resource and attempts to minimize effects on trees. The Department recognizes that definitions for "old-growth" trees can be inexact because most discuss forest stand attributes such as stand structure. Other characteristics that distinguish old-growth stands include mixed-age stands, trees of great age relative to species longevity, large trees, complex trunks and tops, multi-layered canopies, and healthy fungal ecosystems. Assessments of individual tree characteristics tend to be qualitative, such as broken tops and crown complexity. For this analysis, a single straightforward criterion was selected to determine which individual trees would have special consideration. A guideline often cited for determining the size at which a redwood is considered a "large" old tree, and thus worthy of special considerations for protection, is a dbh of 36 inches. Legal, regulatory, or other written documentation supporting this criterion has yet to be identified. Nevertheless, state park officials and staff members from other resource agencies routinely use this measurement when assessing impacts on redwoods from projects. For this document, such trees will be referred to as "large" trees whether they are legacy trees from old-growth forests or younger second-/third-growth trees. Large redwood trees are considered an irreplaceable resource because of their longevity, diameter, and height as well as the amount of time it takes to achieve their size. In addition, unique micro-ecosystems are supported by their upper-canopy habitat. Less than 5% of the original old-growth forest remains uncut. Large redwoods are often considered sensitive because of their limited geographic range (California) and long regeneration period. Although growth rates may vary because of site conditions, a redwood can reach 36 inches dbh in less than 50 years, and trees of this size are abundant across the range of redwoods. Thus, the 36-inch criterion for dbh is a very conservative lower size limit when considering a tree as a sensitive resource.

Other species, such as Douglas-fir, have a much broader geographic range and shorter lives. Such trees lack the cultural and aesthetic values of redwoods. The CalVeg[1] data indicate that 19,380 acres of mature redwood habitat and 130,304 acres of mature Douglas-fir/mixed hardwood/conifer habitat exist in Del Norte County. Individual redwoods can live 2,000 years or more, while Douglas-fir trees live 500 to 1,000 years. In addition, many state and national parks are dedicated to old-growth redwoods because of their large size (often more than 10 feet in diameter) and cultural and aesthetic value. In response to comments from the California Department of Fish and Wildlife, impacts on Douglas-fir trees with a dbh of more than 24 inches are considered late-seral Douglas-fir habitat. Because of the rocky soils and topography, trees along US 199 will grow at slower rates and may begin exhibiting late-seral characteristics when they reach 24 inches.

Impacts on Trees

Impacts to trees are separated into two categories: 1) removal, and 2) indirect impacts. Some trees within the footprint of the proposed project would need to be removed and are documented in the text and tables.

[1] CalVeg, a GIS-based vegetation classification system maintained by the Forest Service, provides information on major habitat classifications, seral stage, and the size class of the forest.

In addition to tree removal itself, project activities could result in other impacts on trees, both long and short term. Long-term project impacts could result from the placement of impervious material, placement of fill over the roots, changing drainage patterns, and compaction of soils. Soil disturbance, excavation, compaction, root cutting, the removal of adjacent trees, and exposure to fuel and oils from leaky equipment can result in short-term construction impacts and affect tree roots.

Of particular concern is construction activity that occurs within the Structural Root Zone of the trees. Such activity could result in both long- and short-term impacts. Typically, the Structural Root Zone, which is composed of large roots that support the aboveground mass of the living tree, is considered to be a circular area (tree trunk at the center) with a radius equal to three times the dbh of the tree. Beyond the Structural Root Zone is the Root Health Zone, which extends to five times the dbh from the base of the tree. Beyond the Structural Root Zone and Root Health Zone are lateral and absorbing roots, which extend past the canopy's drip line. These are smaller roots (1 to 2 inches in diameter) that regenerate relatively quickly and support most of the nutrient uptake and water absorption functions for the tree.

The possibility of injury to a tree resulting from construction activities generally increases as the distance to the trunk decreases. Additionally, construction activities occurring within the top 3 feet of soil have the greatest potential to affect trees.

Potential effects on trees within and adjacent to the project footprint (e.g., from ground-disturbing project activities) were assessed and detailed in the forester/arborist report. Specialists (certified arborist and registered professional forester) visited the project sites with large old trees and assessed the potential for impacts on trees outside the project footprint. Trees were selected for assessment if the project footprint was within five times the dbh distance from the tree, referred to as the Potential Effects Zone (PEZ) (ten times the dbh was used for Douglas-fir trees because they are more susceptible to root impacts.) The evaluation was based on the proposed project activities (amount of fill, culvert replacement, etc.) and potential effects on the root zone from wind, increased light, windthrow, adjacent tree removal, and mechanical damage during construction. Indirect effects due to the removal of adjacent trees were considered in the analysis.

Most healthy trees can tolerate removal of up to 50% of their absorbing roots and excavation of up to 30% of the Root Health Zone. Redwoods are rated as having "good" tolerance of construction effects on roots, while Douglas-firs are rated as "poor." Lateral and absorbing roots regenerate quickly, up to 10 feet per year. Absorbing roots are ephemeral, living only a few days or weeks in undisturbed conditions. Cut roots can compartmentalize wounds quickly, thereby reducing susceptibility to disease.

Survey Results

The natural communities at the project locations were identified according to CDFW's widely used Vegetation Classification and Mapping Program, the *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (California Department of Fish and Game 2003) and the 2007 update (California Department of Fish and Game 2007a). The CDFW classification is a hierarchical scheme that is based on the vegetation classification system developed for the *Manual of California Vegetation* (MCV) (Sawyer and Keeler-Wolf 1995); it is vegetation-based, emphasizing the natural existing vegetation. There are two floristic

levels in the CDFW classification system: associations and alliances. Alliances represent an aggregation of associations and are characterized by one or a group of diagnostic species, which often occur in the dominant or uppermost stratum of the vegetation. Associations are characterized by diagnostic species that occur in all strata (overstory and understory) of the vegetation. The diagnostic species used to determine both the alliance and association are primarily the dominant species. For this project, natural communities were identified at the alliance level, because the areas of vegetation within the project locations are generally too small to allow for more detailed characterization of the vegetation to a lower (i.e., association) level.

The vegetation communities are described below. The locations of the communities in the project area are shown on maps in Appendix J. The area of each community at each project site is listed in Table 2.3.1-1.

Table 2.3.1-1. Area of Natural Communities at Each Project Site

Community	Area (acres)						
	Ruby 1 Site	Ruby 2 Site	Patrick Creek Narrows Location 1	Patrick Creek Narrows Location 2	Patrick Creek Narrows Location 3	The Narrows	Washington Curve Site
Douglas-Fir Forest	0	0	1.70	2.88	2.48	0	2.02
Coast Redwood Forest	0.48	1.81	0	0	0	0	0
Knobcone Pine Forest	0	0	0	0	0	0	0.54
White Alder Forest and Woodland	0	0	0	0.38	0	0	0
Red Alder Forest	0	0.23	0	0	0.15	0	0
Bigleaf Maple Forest	0	0	0	0	0.80	0	0
Emergent Wetlands, including Roadside Seeps and Drainages	0.006	0.105	0.092	0.005	0.087	0.007	0.012
Riverine	0	0	0	0.707	0	0	0
Ruderal/Disturbed	0.1	1.0	0.1	0.5	0.9	0.1	0.6
Sparsely Vegetated	0	0	2.0	1.26	0.57	1.27	0.69

Douglas-Fir Forest

Douglas-fir Forest is the dominant vegetation community in the vicinity of the Patrick Creek Narrows Locations 1, 2, and 3 and Washington Curve site US 199 project locations; it occurs in the staging areas at PMs 19.8, 20.19, 22.11, 23.15, 23.92, 25.00, 25.68, and 26.15. This community is characterized by a well-developed overstory dominated by Douglas-fir trees (*Pseudotsuga menziesii* var. *menziesii*), often with a dense main canopy below. Trees commonly observed in the main canopy were Pacific madrone (*Arbutus menziesii*), tanoak (*Lithocarpus densiflorus* var. *densiflorus*), big-leaf maple (*Acer macrophyllum*), and canyon live oak (*Quercus chrysolepis*). The shrub layer ranges from sparse to relatively dense. In mesic areas, Himalayan blackberry (*Rubus armeniacus*, formerly *R. discolor*) was present. In drier areas, the representative understory shrubs were black huckleberry (*Vaccinium ovatum*), creeping honeysuckle (*Lonicera hispidula*), poison-oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), and wood rose (*Rosa gymnocarpa*). The herbaceous understory of this community was typically sparse but diverse; the representative species observed were sword fern (*Polystichum munitum*), wood strawberry (*Fragaria vesca*), hairy woodrush (*Luzula comosa*), and yerba de selva (*Whipplea modesta*). At the Washington Curve site, where Douglas-

fir Forest occupied the west side of the ridge, mycotrophs[2] were common, including candystick (*Allotropa virgata*), California groundcone (*Boschniakia strobilacea*), and coralroot orchid (*Corallorhiza* sp.). At Patrick Creek Narrows Location 2, much of the Douglas-fir Forest west of the road was burned in a wildfire, and many of the overstory and canopy trees are dead and had a sparse understory.

One special-status plants with California Rare Plant Rank (CRPR)[3] 1B and 2 (formerly California Native Plant Society [CNPS], Lists 1B and 2) was found in this habitat: Coast Range lomatium (*Lomatium martindalei*) ranked 2.3 (rare, threatened or endangered in California; common elsewhere). Two CRPR rank 3.3 (more information needed; not very threatened in California) plants were found: yellow-tubered toothwort (*Cardamine nuttalli* var. *gemmata:* this plant was listed as 1B.3 in the DEIR/EA and the CRPR changed since circulation) and Siskiyou iris (*Iris bracteata*). The Douglas-fir Forest community is common and widespread and is not recognized as sensitive by the CNDDB (California Department of Fish and Game 2003).

Coast Redwood Forest

Coast Redwood Forest is the dominant vegetation community at the SR 197 sites: Ruby 1 site and Ruby 2 site and associated staging areas at PMs 4.05 and 4.02. At the project locations, this community is dominated by second- or third-growth coast redwood trees (*Sequoia sempervirens*), with residual large old redwood trees and stumps that form a very dense canopy. Associated tree species are found in the understory and include Douglas-fir, red alder (*Alnus rubra*), and California bay (*Umbellularia californica*). The shrub layer typically is dense and well developed and includes black huckleberry and red huckleberry (*Vaccinium parvifolium*). Common herbaceous components of the understory include sword fern and redwood sorrel (*Oxalis oregana*).

No special-status or rare plants were found in this habitat. This community is common and widespread and is not recognized as sensitive by the CNDDB (California Department of Fish and Game 2003).

Knobcone Pine Forest

Knobcone Pine Forest occurs only at the Washington Curve site, on the eastern side of the ridge on the north side of the road. This community has a relatively open canopy of knobcone pine (*Pinus attenuata*), with associated Douglas-fir and canyon live oak. The shrub layer is very dense

[2] Mycotrophs, also called saprophytes, are specialized plants that derive their nutrients from close association with a mycorrhizal fungus.

[3] "In March, 2010, DFG changed the name of the CNPS List or the CNPS Ranks to the California Rare Plant Rank (or CRPR). (CNPS made the name change in 2011.) This was done to reduce confusion over the fact that CNPS and DFG jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, NGOs, and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment. The old name gave the false impression that CNPS solely assigned the ranks and had excessive influence on the regulatory process. DFG did this in consultation and agreement with the CNPS executive director and the CNPS board of directors. Nothing about the actual process of rare plant review or rank assignment has changed and the same committee of experts from many organizations in addition to DFG and CNPS still review each change and ultimately assign the ranks" (California Department of Fish and Game California Natural Diversity Database, May 2012, Special Vascular Plants, Bryophytes, and Lichens list; see http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf [accessed on 6/28/12]). Also, see *The Rare, Threatened, and Endangered Plants of California, Glossary of Terms and Field Descriptions* at http://www.rareplants.cnps.org/glossary.html (accessed on 6/14/12).

and dominated by black huckleberry and hairy manzanita (*Arctostaphylos columbiana*). Because of the dense shrub layer, few herbaceous plants are present.

Two CRPR 4 plants were found adjacent to this community at the Washington Curve site, Piper's blue grass (*Poa piperi*) and slender false lupine (*Thermopsis gracilis* var. *gracilis*). Siskiyou iris, which is ranked as CRPR 3, was also found in this habitat. This community is common and widespread and is not recognized as sensitive by the CNDDB (California Department of Fish and Game 2003).

White Alder Forest and Woodland

This riparian community occurs at Patrick Creek Narrows Location 2 as a narrow band along the Middle Fork Smith River. The canopy is dominated by white alder, typically forming a closed canopy; associated trees include big-leaf maple and arroyo willow (*Salix lasiolepis*). Typically, the herbaceous layer is diverse. Mosses are prominent, and associated species include western boykinia (*Boykinia occidentalis*), wood saxifrage (*Saxifraga mertensiana*), bowl clover (*Trifolium cyathiferum*), and torrent sedge (*Carex nudata*).

Two CRPR 4 plants were found in this community, Siskiyou daisy (*Erigeron cervinus*) and Howell's saxifrage (*Saxifraga howellii*). This community is common and widespread and not recognized as sensitive by the CNDDB (California Department of Fish and Game 2003). CDFW jurisdiction is often extended to habitats adjacent to watercourses that function hydrologically as part of the riparian system (California Fish and Game Code Section 2785[e]).

Red Alder Forest

This riparian community is present along the stream at the Ruby 2 site. The community has an overstory of red alder (*Alnus rubra*), with a dense canopy below that is dominated by willows (*Salix* spp.), predominantly Sitka willow (*Salix sitchensis*). The understory consists of shrubs and vines, including Himalayan blackberry (*Rubus armeniacus*, formerly *R. discolor*), California blackberry (*Rubus ursinus*), and twinberry (*Lonicera involucrata* var. *ledebourii*), and herbaceous plants such as lady fern (*Athyrium filix-femina*) and piggy-back plant (*Tolmiea menziesii*). A few red alder trees also occur along the roadside ditch at Patrick Creek Narrows Location 3.

No special-status or rare plants were found in this habitat. This community is common and widespread and not recognized as sensitive by the CNDDB (California Department of Fish and Game 2003). CDFW jurisdiction is often extended to habitats adjacent to watercourses that function hydrologically as part of the riparian system (California Fish and Game Code Section 2785[e]).

Bigleaf Maple Forest

Bigleaf Maple Forest occurs at Patrick Creek Narrows Location 3 where it borders the creek on the uphill side of the road and at the base of the road bank below the road. This community has a dense canopy of bigleaf maple and a dense herb layer that is dominated by sword fern and miner's lettuce (*Claytonia* spp.). This community is a proposed alliance (California Department of Fish and Game 2007b). No special-status or rare plants were found in this habitat. It is common and widespread and is not recognized as sensitive by the CNDDB (California Natural Diversity Database 2009). CDFW jurisdiction is often extended to habitats adjacent to

watercourses that function hydrologically as part of the riparian system (California Fish and Game Code Section 2785[e]).

Darlingtonia Seep

The California pitcherplant (*Darlingtonia californica*) can be found in wetland habitats that are saturated with running water (Darlingtonia seeps). A small Darlingtonia seep occurs at the west end of the Patrick Creek Narrows Location 1 site on the north side of road. The seep is beyond the proposed limits of construction; therefore, it is not included as being in the project locations.

The tree canopy consists of mixed hardwoods and conifers, including tanoak, Pacific madrone, and Port Orford cedar (*Cupressus lawsoniana*). The shrub layer around the seep is dense and supports a variety of shrubs, including western Labrador tea (*Ledum glandulosum*) and western azalea (*Rhododendron occidentalis*).

Numerous California pitcherplants (CRPR 4.2) occur in the dense understory, and one special-status plant, horned butterwort (*Pinguicula macroceras*) (CRPR 2.2), was observed at the edge of the stream that flows from the Darlingtonia seep. This community type is recognized as sensitive by the CNDDB (California Department of Fish and Game 2003) and has a global conservation status rank of G4 and a state rank of S3.2 (see Appendix N for a discussion of global and state conservation rankings).

Emergent Wetlands, Including Roadside Seeps and Drainages

Two small areas of emergent wetland are present at the Ruby 2 site. Roadside ditches supporting emergent hydrophytic vegetation are present at Patrick Creek Narrows Locations 1, 2, and 3, and the Narrows site. In general, these areas were small and often disturbed by road shoulder maintenance (and residential maintenance at the Ruby 2 site). The vegetation could not be assigned to any described vegetation community type. Representative species observed in roadside ditches were Bolander's rush (*Juncus bolanderi*), swordleaf rush (*Juncus ensifolius*) and other rush species, seep monkeyflower (*Mimulus guttatus*), giant horsetail (*Equisetum telmateia* ssp. *braunii*), and fall panic grass (*Panicum capillare*). Representative species observed immediately adjacent to the ditches included birdsfoot trefoil (*Lotus corniculatus*), tall fescue (*Festuca arundinacea*), and rush species (*Juncus* spp.). One of the wetlands at the Ruby 2 site supports water parsley (*Oenanthe sarmentosa*), small-flowered bulrush (*Scirpus microcarpus*), and lady fern and appears to be regularly mown. At Patrick Creek Narrows Location 2, a small ephemeral roadside seep southwest of the bridge is dominated by western coltsfoot (*Petasites frigidus* var. *palmatus*). The roadside ditch at Patrick Creek Narrows Location 3 supports scattered red alder and willow trees. Serpentine substrates influence the seeps and roadside ditches at Patrick Creek Narrows Location 1.

Emergent wetlands at Patrick Creek Narrows Location 1 and the Narrows site support sensitive plant species. The serpentine seep habitats at Patrick Creek Narrows Location 1 support two CRPR 4 plants, California lady's slipper (*Cypripedium californicum*) and Del Norte willow (*Salix delnortensis*). These wetland communities may be considered jurisdictional by the U.S. Army Corps of Engineers (USACE) and are delineated and described in more detail in Section 2.3.2, "Wetlands and Other Waters of the United States." A rocky roadside seep at the east end of the Narrows site supports a small population of California lady's slipper.

Riverine

Riverine habitat includes rivers and streams. These features originate at high elevations and flow toward lower elevations. The Middle Fork Smith River flows through Patrick Creek Narrows Location 2. Here the Middle Fork Smith River is approximately 40 feet wide. No special-status or rare plants were found in this habitat.

Ruderal /Disturbed

Ruderal vegetation occurs along the road shoulders and on vegetated cut banks at each of the seven project locations and associated staging areas. Most of the commonly occurring plants are nonnatives such as perennial sweet pea (*Lathyrus latifolius*), hairy cat's-ear (*Hypochaeris radicata*), bur-clover (*Medicago polymorpha*), wild oats (*Avena* spp.), tall fescue (*Festuca arundinacea*), chicory (*Cichorium intybus*), and bromes (*Bromus diandrus* and *B. hordeaceus*). Noxious weeds such as yellow star-thistle (*Centaurea solstitialis*), French broom (*Genista monspessulana*), Scotch broom (*Cytisus scoparius*), and spotted knapweed (*Centaurea maculosa*) occur in these areas. No special-status or rare plants were found in this habitat.

Sparsely Vegetated Communities

Sparsely vegetated communities occur at the Patrick Creek Narrows Location 1, the Narrows, and the Washington Curve sites on roadside cut banks and cliffs. At Patrick Creek Narrows Location 1, the steep cut bank provides a large area of bare serpentine rock and soil. The vegetation consists of scattered Port Orford trees and saplings as well as a variety of forbs such as woolly sunflower (*Eriophyllum lanatum* var. *achilleoides*) and Bridges' brodiaea (*Triteleia bridgesii*). Below the road at Patrick Creek Narrows Location 1, the slope has been stabilized with rock concrete that stretches from the road level almost down to the Middle Fork Smith River. Typical trees here are scattered Douglas-fir, incense cedar (*Calocedrus decurrens*), and bigleaf maple; forbs include wild carrot (*Daucus carota*) and naked buckwheat (*Eriogonum nudum*). At the Narrows site, the steep rocky cliff face supports scattered canyon live oak and a variety of native forbs such as California fuchsia (*Epilobium canum* ssp. *latifolium*) and cliff maids (*Lewisia cotyledon* var. *cotyledon*).

At Patrick Creek Narrows Location 1, a CRPR 4 plant, Howell's lomatium (*Lomatium howellii*), occurs on sparsely-vegetated serpentine substrates. Also at Patrick Creek Narrows Location 1, Piper's blue grass (*Poa piperi*) occurs on the roadside bank below the road. At the Narrows site, Del Norte willow was recorded at the base of the steep bank above the road. At the Washington Curve site, the steep soil cut bank adjacent to the Knobcone Pine Forest community supports a small patch of the CRPR 4 slender false lupine (*Thermopsis gracilis* var. *gracilis*) and Piper's blue grass. Siskiyou iris, which is ranked as CRPR 3, was also found in this habitat at Patrick Creek Narrows Location 1, the Narrows, and Washington Curve.

Tree Surveys

The Department's Office of Field Surveys surveyed the roadways, including tree locations, in 2008 and 2010. Consultant staff conducted additional surveys in 2009. Department design and environmental staff conducted surveys in 2010, 2011, and 2012. Details by site are listed below.

Tree surveys were conducted by different personnel at various times. The area of disturbance for the different alternatives at each location was modified as design details were refined, resulting in variations in the number of affected trees. Additional tree impacts would occur in some

locations, and fewer tree impacts would occur in others. At the US 199 locations, impacts on smaller trees (dbh of less than 12 inches) were conservatively over estimated because of the steep, inaccessible terrain, which prevented precise surveys. After the arborist/forester surveys, the PRDEIR/SEA included some but not all of the new tree and design details.

The three primary sources of tree count discrepancies between the recirculated draft document and specialist reports are as follows: 1) Multi-trunk trees were initially counted by the Department as single trees and later by the arborists as individual trees; 2) on the steep cut-slope areas at the Narrows, Patrick Creek Location 2, and Washington Curve, tree surveys were initially conducted from the roadway with binoculars, but 3 years later, surveys were conducted on foot; and 3) subsequent to when the first tree surveys were conducted in 2009, Department engineers modified and refined the project design, resulting in changes to tree impact estimates. The Department reported the larger numbers whenever there was a discrepancy; however, not all tables and text were updated correctly. The Department believes that the estimates for acreage and the number of trees are adequate to characterize and evaluate potential impacts and make a significance determination. The inconsistencies in the numbers of trees would not change any significance determinations. The discrepancies, which were minor, still allowed for an analysis and comparison of impacts.

Ruby 1 Site

In 2007 and 2011, Department survey crews measured 72 trees with a dbh of 12 inches or more within 40 feet of the existing roadway at the Ruby 1 site. The survey crew recorded trees with a dbh greater than 12 inches; dbh was estimated to the nearest tenth of a foot. The measured trees included alder, redwood, and California bay.

ICF staff conducted tree surveys at the Ruby 1 site on February 22, 2009, and identified 13 trees, which are in addition to those identified during the Department's 2008 tree surveys. The additional trees included 11 with a dbh of less than 12 inches. The species found during this survey included California bay, redwood, and white alder.

The arborist and forester team conducted surveys at the Ruby 1 site on December 2011 and evaluated potential effects on 57 individual trees and clumps of trees that would be in the PEZ but not directly removed by the project.

Ruby 2 Site

Department survey crews measured 270 trees with a dbh of 10 inches or more within 100 feet of the existing roadway at the Ruby 2 site in 2007 and 2011. The measured trees included alder, big-leaf maple, redwood, and California bay.

Tree surveys were conducted at the Ruby 2 site on February 22, 2009, and identified 48 trees, which are in addition to those identified during the Department's tree surveys. The additional trees included 46 with a dbh of less than 12 inches. The species found in this survey included California bay, redwood, big-leaf maple, incense cedar, Douglas-fir, and white alder.

The arborist and forester team conducted surveys at the Ruby 2 site in December 2011, and evaluated potential effects on 91 individual trees and clumps of trees. The arborist/forest report did not analyze impacts on individual trees that would be removed by the preferred alternative.

Patrick Creek Narrows Location 1

Tree surveys were conducted between February 23 and 25, 2009, and identified 24 trees at Patrick Creek Narrows Location 1. The measured trees included eight with a dbh of less than 12 inches. The species included white alder, Pacific madrone, incense cedar, tanoak, Port Orford cedar, Douglas-fir, and canyon live oak. The Department biologist reviewed the tree survey at this location in August 2012 to update the current design details.

Patrick Creek Narrows Location 2

Tree surveys were conducted between February 23 and 25, 2009, and identified 218 trees at Patrick Creek Narrows Location 2. The measured trees included 73 with a dbh of less than 12 inches. The species included big-leaf maple, white alder, Pacific madrone, tanoak, Douglas-fir, canyon live oak, redwood, and California bay.

The arborist and forester team conducted surveys at the Patrick Creek Narrows Location 2 in December 2011 and evaluated potential effects on 16 individual trees and clumps of trees along the roadside and within the hillside cut-slope area.

Patrick Creek Narrows Location 3

Tree surveys were conducted between February 23 and 25, 2009, and identified 36 at Patrick Creek Narrows Location 3. The measured trees included 14 with a dbh of less than 12 inches. The species included big-leaf maple, tanoak, Douglas-fir, and canyon live oak.

The Narrows

Tree surveys were conducted between February 23 and 25, 2009, and identified five trees at the Narrows. All five trees identified had a dbh of less than 12 inches. The species included Pacific madrone, Douglas-fir and canyon live oak.

Tree surveys were conducted in May and July 2012 and identified 46 trees which may be removed by the project.

Washington Curve Site

Tree surveys were conducted between February 23 and 25, 2009, and identified 157 trees at the Washington Curve site. The measured trees included 33 with a dbh of less than 12 inches. The species included white alder, tanoak, knobcone pine, Douglas-fir, and canyon live oak. The arborist and forester team conducted surveys at the Washington Curve site in December 2011 and evaluated potential effects on 179 individual trees and clumps of trees within and above the hillside cut-slope area.

Wildlife Corridors and Fish Passage

The state and federally threatened marbled murrelet, discussed in more detail in Section 2.3.5, "Threatened and Endangered Species," uses the canyon of the Middle Fork Smith River as a migration and dispersal corridor. The Middle Fork Smith River is habitat for anadromous fish species and provides passage. None of the unnamed tributaries that would be modified support fish passage. They are all too steep. The project locations are adjacent to rivers that attract many terrestrial animal species; therefore, the entire area is subject to terrestrial wildlife crossings.

Natural Community Habitat Connectivity

Roads and highways create a barrier effect for wildlife movement, resulting in habitat fragmentation and habitat loss, the two leading causes of species decline. Habitat fragmentation occurs when highways are built in wildlife habitat, effectively barring natural ecological processes and movement.

Re-establishment of Native Natural Community Vegetation

Construction of the project will result in ground disturbance and clearing areas that are currently vegetated. These areas will need to be revegetated or planted for erosion control, aesthetic purposes, or mitigation. Erosion control seeding and revegetation will be designed to encourage re-establishment of regionally appropriate, native vegetation within the natural communities from which the vegetation was removed. Revegetation minimizes bare ground available for establishment of invasive plant species, helps maintain natural ecological processes, and minimizes habitat fragmentation and loss.

2.3.1.2 Environmental Consequences

Effects on Natural Communities

Construction of the proposed improvements would result in temporary and permanent impacts on natural communities at each project site. The area of natural communities affected at each location, by alternative, when applicable, is quantified in the tables below. Construction activities would also temporarily disturb natural communities. The area of temporary disturbance is included in the tables. Construction impacts are discussed in detail in Section 2.4, "Construction Impacts." Temporary effects include disturbances to plants and animals that are short term (1 to 2 years). Temporary impacts are typically due to activities of construction. If the effect is temporary, the pre-construction natural community is expected to re-establish (either by recolonization or planting/seeding) within 2 years after construction is complete. Temporary impacts include stream diversion and associated sediment discharges, soil excavation for trenching, and noise of construction (including blasting). Permanent effects include disturbances to plants and animals that are more long-term impacts (more than 2 years) or perpetual. This includes removal of mature trees, extending the length of culverts, and addition of impervious surface. Some permanent effects may be beneficial to natural communities, such as the removal of bridge piers from a river channel.

Table 2.3.1-2. Area of Natural Communities Affected at the Ruby 1 Site

Community	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
Coast Redwood Forest	0.05	0
Waters/Wetlands	0	0.002
Ruderal/Disturbed	0.1	0.05

Table 2.3.1-3. Area of Natural Communities Affected at the Ruby 2 Site

Community	Alternative	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
Coast Redwood Forest	Four-Foot Shoulder	0.55	0
	Two-Foot Shoulder	0.41	0

Community	Alternative	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
	Two-Foot Widening in Spot Locations	0.09	0
Waters/Wetlands	Four-Foot Shoulder	0.009	0.006
	Two-Foot Shoulder	0	0.006
	Two-Foot Widening in Spot Locations	0	0.006
Red Alder Forest	Four-Foot Shoulder	0.05	0
	Two-Foot Shoulder	0.06	0
	Two-Foot Widening in Spot Locations	0.06	0
Ruderal/Disturbed	Four-Foot Shoulder	0.4	0.3
	Two-Foot Shoulder	0.2	0.2
	Two-Foot Widening in Spot Locations	0.1	0.3

Table 2.3.1-4. Area of Natural Communities Affected at Patrick Creek Narrows Location 1

Community	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
Douglas-Fir Forest	0.01	0
Darlingtonia Seep	0	0
Waters/Wetlands	0	0.04
Ruderal/Disturbed	0.01	0.04
Sparsely Vegetated Slope	0.10	0

Table 2.3.1-5. Area of Natural Communities Affected at Patrick Creek Narrows Location 2

Community	Alternative	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
Douglas-Fir Forest	Upstream Bridge Replacement	1.0	0
	Downstream Bridge Replacement	0.3	0
	Bridge Preservation with Upslope Retaining Wall	0.5	0
White Alder Forest and Woodland	Upstream Bridge Replacement	0	0
	Downstream Bridge Replacement	0	0
	Bridge Preservation with Upslope Retaining Wall	0	0
Waters/Wetlands/ Riparian	Upstream Bridge Replacement	0.14	0.71
	Downstream Bridge Replacement	0.14	0.71
	Bridge Preservation with Upslope Retaining Wall	0.002	0.002
Ruderal/Disturbed	Upstream Bridge Replacement	0.6	1.4
	Downstream Bridge Replacement	0.1	1.4
	Bridge Preservation with Upslope Retaining Wall	0.6	0.9
Sparsely Vegetated Slope	Upstream Bridge Replacement	0.5	0
	Downstream Bridge Replacement	0.25	0
	Bridge Preservation with Upslope Retaining Wall	0.3	0

Table 2.3.1-6. Area of Natural Communities Affected at Patrick Creek Narrows Location 3

Community	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
Douglas-Fir Forest	0	0
Red Alder Forest	0	0

Bigleaf Maple Forest	0	0
Waters/Wetlands	0	0.002
Ruderal/Disturbed	0.1	0.05
Sparsely Vegetated Slope	0	0

Table 2.3.1-7. Area of Natural Communities Affected at the Narrows

Community	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
Waters/Wetlands	0	0.002
Ruderal/Disturbed	0	0.15
Sparsely Vegetated Slope	0.05	0

Table 2.3.1-8. Area of Natural Communities Affected at the Washington Curve Site

Community	Alternative	Area Permanently Affected (acres)	Area Temporarily Affected (acres)
Douglas-Fir Forest	Cut Slope	0.2	0
	Retaining Wall	0.1	0
Knobcone Pine Forest	Cut Slope	0.5	0
	Retaining Wall	0.2	0
Emergent Wetlands, including Roadside Seeps and Drainages	Cut Slope	0.003	0.003
	Retaining Wall	0.003	0.003
Ruderal/Disturbed	Cut Slope	0.1	0.1
	Retaining Wall	0.1	0.1
Sparsely Vegetated Slope	Cut Slope	0.1	0
	Retaining Wall	0.1	0

Effects on Trees

The forester/arborist report (Caltrans 2012) concluded that the project would have minimal effects on trees and forest resources. Tree effects fall into two categories: tree removal and effects on remaining trees. The removal of individual trees would have minimal effects on natural habitats within this largely forested landscape because they represent small slivers of low-quality edge habitat. Removal of trees and the associated loss of forest habitat, which are included in the habitat acreages in the tables above, did not rise to the level of significance under CEQA or NEPA.

Effects on the remaining individual trees and forest habitat were determined to be less than significant under the preferred alternatives. The report cited the resilience of redwoods in general, noting that trees adjacent to the current roadway were healthy and had survived earlier forest removal, residential development, and highway construction at the sites. Most healthy trees can withstand impacts (including severing or compacting) on 30% of their root zone. Redwoods in particular are resistant to root impacts; Douglas-fir are more sensitive, and this was reflected in the methodology of the forester/arborist report. Although some trees would be removed with implementation of the proposed project, the removal of those trees would not be a significant effect. The remaining trees would not experience significant effects. Ecological effects due to the removal of trees were considered above in the habitat effects. Impacts related

to the narrow slivers of habitat that would be lost along the roadway do not constitute significant effects on natural communities because the roadway and other developments (residential and quarry) fragment the habitat and detract from the ecological value of the landscape.

Ruby 1 Site

Work proposed at the Ruby 1 site would include the removal of two redwood trees with a dbh of 17 and 18 inches, three alder trees with a dbh of 14 inches (two trees) and 16 inches, and a cluster of California bay trunks with a dbh of approximately 42 inches. These tree removals would not be a significant impact because no large redwood trees would be removed, and the removal of other tree species would not rise to the level of significance under CEQA or NEPA.

Potential effects on trees outside the project footprint (the area with ground-disturbing activities that would result in tree removal) were assessed. A total of 19 trees or clumps of trees had a dbh greater than 36 inches within the PEZ. Of these, 10 trees/clumps had no potential effects in the "five times" dbh root zone, seven had potential effects on 1% to 10% of this root zone, and two had potential effects on 10% to 20% of the root zone. There would be no significant root effects on these trees resulting from this project. None of the other effects quantified in the analysis (such as increased wind or light) would have any significant effect on these large trees.

Ruby 2 Site

Each of the three alternatives proposed for the Ruby 2 site would involve the removal of several mature trees and some large stumps. These impacts are summarized below. Specific tree species and dbh measurements are listed in Table 2.3.1-9.

Four-Foot Shoulders Alternative

Twelve redwood trees with a dbh of 36 inches or more would be removed (144 inches, 126 inches, 120 inches (two trees), 94 inches, 60 inches (two trees), 48 inches (two trees), and 36 (three trees) inches). The removal of these large redwood trees would be a significant impact under CEQA.

The forester/arborist report evaluated and analyzed potential effects on trees and tree roots, including effects related to tree removal and wind, resulting from the Two-Foot Widening in Spot Locations Alternative, concluding that potential effects under this alternative would be none, minimal, or slight. Based on that analysis, a determination was made that the Four-Foot Shoulders Alternative would most likely result in similar impacts. Although it is likely that there would be only minimal impacts on the remaining trees, because the analysis was conducted on a tree-by-tree basis, there is the potential for this alternative to have moderate to severe impacts on the remaining individual trees. Thus, overall, the effect of this alternative would be the removal of 10 redwoods with a dbh greater than 36 inches and the potential for significant effects on other individual trees adjacent to the project footprint.

Two-Foot Shoulders Alternative

Five redwood trees with a dbh of 36 inches or more would be removed, the largest with a dbh of 48 inches. The removal of five large old redwood trees would be a significant impact under CEQA.

The forester/arborist report evaluated and analyzed potential effects on trees and tree roots, including effects related to tree removal and wind, resulting from the Two-Foot Widening in Spot Locations Alternative, concluding that potential effects under this alternative would be

none, minimal, or slight. Based on that analysis and methodology, which would be applied similarly under all alternatives at the Ruby 2 site, a determination was made that the Two-Foot Shoulders Alternative would result in similar impacts. Because the analysis was conducted on a tree-by-tree basis, there is the potential for this alternative to have significant impacts on the remaining individual trees. Thus, overall, the effect of this alternative would be the removal of four redwoods with a dbh greater than 36 inches and the potential for significant effects on other individual trees adjacent to the project footprint.

Two-Foot Widening in Spot Locations Alternative (Preferred Alternative)

No redwood trees with a dbh of 36 inches or more would be removed. This alternative would remove three redwoods, one California bay, two big-leaf maples, and nine red alders. The redwoods that would be removed under this alternative have a dbh of 31 inches, 23 inches, and 18 inches. Tree removal would not represent a significant impact because no large old redwoods would be removed, and the removal of other tree species would not rise to a level of significance under CEQA or NEPA.

The forester/arborist report analyzed potential effects on trees outside the project footprint. There include 38 trees and clumps of trees (two California bays and 35 redwoods) greater than 36 inches dbh within the PEZ. Of these, 19 trees/clumps had no potential effects in the "five times" dbh root zone, nine had potential effects in 1% to 10% of this root zone, and nine had potential effects in 10% to 20% of the root zone. None of the other indirect effects quantified in the analysis (such as increased wind or light) had any significant effects on large trees.

The Two-Foot Widening in Spot Locations Alternative would have the least impact on trees. It would not require the removal of large old redwood trees with a dbh greater than 36 inches, and it would not have significant impacts on remaining trees with a dbh greater than 36 inches.

Table 2.3.1-9. Tree Removal Impacts at the Ruby 2 Site by Alternative (bullets indicate trees that will be removed)

		Dbh (inches)	Four-Foot Shoulders Alternative	Two-Foot Shoulders Alternative	Two-Foot Widening in Spot Locations Alternative
1	Stump	72	○	○	○
2	Redwood	23	•	•	•
3	California bay	16			•
4	Redwood	126	•		
5	Bigleaf maple	12	•		•
6	Bigleaf maple	12	•		•
7	California bay	16	•		
8	Redwood	60	•		
9	Redwood	94	•		
10	Douglas-fir	20	•		
11	Redwood	144	•		
12	Stump	180	○		
13	Redwood	14	•		
14	Stump	120	○	○	
15	Red alder	17			•

		Dbh (inches)	Four-Foot Shoulders Alternative	Two-Foot Shoulders Alternative	Two-Foot Widening in Spot Locations Alternative
16	Red alder	14			•
17	Red alder	10			•
18	Red alder	10			•
19	Red alder	10			•
20	Red alder	10			•
21	Red alder	10			•
22	Red alder	10			•
23	Stump	120			O
24	Redwood	120	•		
25*	Red alder	6–12			•
26	Redwood	23	•	•	
27	Redwood	24	•	•	
28*	Redwood	6–12	•	•	
29	Stump	144	O		
30	Redwood	36	•	•	
31	California bay	24	•	•	
32*	Redwood	6–12	•	•	
33	Stump	72	O	O	
34	Redwood	12	•	•	
35	Redwood	12	•	•	
36	Redwood	48	•	•	
37	Redwood	36	•	•	
38	Stump	120	O	O	
39	Stump	54	O	O	
40	Redwood	19	•	•	
41	Stump	96	O	O	
42	Redwood	120	•	•	
43*	Bigleaf maple	6–12	•	•	
44*	Bigleaf maple	6–12	•	•	
45	Redwood	12	•	•	
46	Redwood	36	•	•	
47	Redwood	12	•	•	
48	Redwood	31	•	•	•
49	California bay	12	•	•	
50*	California bay	6–12	•	•	
51*	Redwood	6–12	•	•	
52	Redwood	48	•		
53	Tanoak	48	•		
54	Red alder	12	•		
55	Redwood	60	•		
56	Stump	60	O		
57	Redwood	18	•	•	•
58	Stump	48	O		
59	Stump	72	O	O	O
60*	Red alder	6–12	•		

		Dbh (inches)	Four-Foot Shoulders Alternative	Two-Foot Shoulders Alternative	Two-Foot Widening in Spot Locations Alternative
61	Redwood	16	•		
62	Stump	72	O	O	O
63*	Red alder	6–12	•		
64*	Redwood	6–12	•		
65*	Red alder	6–12	•		
66*	Red alder	6–12	•		
67*	Red alder	6–12	•		
68*	Red alder	6–12	•		
69*	Red alder	6–12	•		
70*	Red alder	6–12	•		
71*	Red alder	6–12	•		
72*	Red alder	6–12	•		
73*	Incense cedar	6–12	•		
Trees/Alt.:			**50**	**23**	**15**
Stumps/Alt.:			**12**	**8**	**4**

* Indicates survey data from ICF; the rest are Department survey data.
O Indicates a stump.

Patrick Creek Narrows Location1

The work proposed at Patrick Creek Narrows Location 1 would require the removal of approximately 18 trees (two Douglas-fir and 16 white alder) between 6 and 8 inches dbh. The removal of these trees would not rise to a level of significance under CEQA or NEPA.

Patrick Creek Narrows Location 2

The work proposed at Patrick Creek Narrows Location 2 would involve the removal of a number of trees. Species that would be affected include bigleaf maple (*Acer macrophyllum*), California bay (*Umbellularia californica*), Canyon live oak (*Quercus chrysolepis*), white alder (*Alnus rhombifolia*), coast redwood (*Sequoia sempervirens*), tanoak (*Lithocarpus densiflora*), Douglas-fir (*Pseudotsuga menziesii* sp. *menziesii*), and Pacific madrone (*Arbutus menziesii*). These impacts are summarized in Tables 2.3.1-10 and 2.3.1-11.

There is a stand of late-seral Douglas-fir east of Patrick Creek Narrows Location 2. Some of these Douglas-fir are considered large trees because of their size (greater than 24 inches dbh); however, the removal of individual large Douglas-fir trees is not considered a significant impact because of the extensive range of Douglas-fir (extending north through Washington and Oregon into British Columbia), and there are more stands of late-seral Douglas-fir remaining than redwood stands.

The forester/arborist report analyzed the Downstream Bridge Replacement Alternative, which is the preferred alternative. The results showed some potential root effects on individual trees adjacent to the proposed project footprint. The loss of these individual trees is not considered a significant effect in this analysis. The sum of the loss of these trees would be considered a loss of forest habitat, and significance would be determined by the rarity of the habitat and its use by species of special concern (plant and animal). The small amount of habitat affected by the

proposed project, compared with the habitat available within the watershed, makes any habitat-level effects insignificant.

Although the forester/arborist report analyzed only the Downstream Bridge Replacement Alternative, the results can be extrapolated to the other two alternatives. Assuming that there would be similar effects, there may be a few additional trees with substantial impacts on their root zones, and thus, the number of trees to be removed could increase by a few trees. Nevertheless, the current estimates for the other alternatives give a reasonable characterization for comparing the effects of the alternatives.

Work proposed under the Downstream Bridge Replacement Alternative would require the removal of 109 trees. Six Douglas-fir trees greater than 24 inches dbh would be removed under this alternative (dbh sizes of 52, 34, 33, 26, 24, and 24 inches). (The tree with a dbh of 33 inches would have substantial root impacts but may not need to be removed.) Other large Douglas-fir trees (dbh greater than 24 inches) would have effects on their root zones. Two trees, 40 and 35 inches dbh, would have moderate root effects (20% to 30% of root zone disturbed); two trees, 53 and 33 inches dbh, would have slight root effects (10% to 20% of root zone disturbed); one 29-inch dbh tree would have minimal root effects (less than 10% of root zone disturbed); and three trees, 51, 37, and 31 inches dbh, would have no root effects. Because of the nature of the work and the slopes involved, the 40-inch dbh tree with moderate root effects may need to be removed. Overall, six large Douglas-fir trees would be removed, and eight would have root impacts.

Work proposed under the Upstream Bridge Replacement Alternative would require the removal of 173 trees. Eleven Douglas-fir trees with a dbh greater than 24 inches would be removed (one with a dbh of 42 inches, one with a dbh of 38 inches, two with a dbh of 36 inches, one with a dbh of 34 inches, one with a dbh of 32 inches, three with a dbh of 28 inches, and two with a dbh of 24 inches). None of the remaining 162 trees that would be removed under the Upstream Bridge Replacement Alternative has a dbh of more than 24 inches. Root effects on trees adjacent to construction activities may occur, which could result in a few additional tree losses.

The Bridge Preservation with Upslope Retaining Wall Alternative require the removal of 165 trees. Nine Douglas-firs with a dbh greater than 24 inches would be removed (two with a dbh of 36 inches, one with a dbh of 34 inches, one with a dbh of 32 inches, three with a dbh of 28 inches, and two with a dbh of 24 inches). Root effects on trees adjacent to construction activities may occur, which could result in a few additional tree losses.

Table 2.3.1-10. Tree Removal Impacts at Patrick Creek Narrows Location 2 by Alternative South and West of the Bridge (dbh in inches)

Quantity	Species	Dbh (inches)	Downstream Bridge Replacement	Upstream Bridge Replacement	Preservation with Upslope Retaining Wall
2	Canyon live oak	12	•	•	•
1	California bay	5	•	•	•
4	Bigleaf maple	6-8	•	•	•
1	Douglas-fir	6	•	•	•

Quantity	Species	Dbh (inches)	Downstream Bridge Replacement	Upstream Bridge Replacement	Preservation with Upslope Retaining Wall
26	Canyon live oak	6–12	•	•	•
1	Canyon live oak	14	•	•	•
6	Pacific madrone	6–10	•	•	•
10	Canyon live oak	8	•	•	•
1	Douglas-fir	16		•	•
2	Douglas-fir	8–10	•	•	•
1	Douglas-fir	14		•	•
2	Douglas-fir	6–12		•	•
1	Canyon live oak	10	•	•	•
12	Canyon live oak	6–8	•	•	•
1	Canyon live oak	12		•	•
2	Douglas-fir	12		•	•
1	Douglas-fir	14		•	•
38	Douglas-fir	6–12		•	•
4	White alder	8		•	•
8	Canyon live oak	6–12		•	•
2	Douglas-fir	24		•	•
1	Douglas-fir	34		•	•
2	Douglas-fir	36		•	•
1	Douglas-fir	32		•	•
3	Douglas-fir	16		•	•
3	Douglas-fir	28		•	•
1	Douglas-fir	17		•	•
1	Canyon live oak	12		•	•
8	Canyon live oak	6-8		•	•
1	Canyon live oak	12	•	•	•
2	Douglas-fir	12		•	•
2	Douglas-fir	24–26	•	•	•
1	Douglas-fir	18		•	•
1	Douglas-fir	15	•	•	•
1	Canyon live oak	10	•	•	•
2	Tanoak	10	•	•	•
1	Douglas-fir	17	•	•	•
1	Tanoak	6	•	•	•
2	White alder	6–12		•	•
1	Bigleaf maple	10	•		
4	Tanoak	8–10	•		
1	Douglas-fir	34	•		
1	Douglas-fir	24	•		
2	Pacific madrone	12	•		

Quantity	Species	Dbh (inches)	Downstream Bridge Replacement	Upstream Bridge Replacement	Preservation with Upslope Retaining Wall
1	Douglas-fir	21	•		
1	Douglas-fir	36			
Tree Removal South of Bridge/Alt			**85**	**160**	**160**

Table 2.3.1-11. Tree Removal Impacts at Patrick Creek Narrows Location 2 by Alternative North and East of the Bridge (dbh in inches)

Quantity	Species	Dbh inches	Downstream Bridge Replacement	Upstream Bridge Replacement	Preservation with Upslope Retaining Wall
2	White alder	14		•	
1	Douglas-fir	8		•	
1	Bigleaf maple	14		•	
1	Bigleaf maple	6		•	
1	Douglas-fir	42		•	
1	Canyon live oak	12		•	
1	Douglas-fir	14		•	
1	White alder	6		•	
2	Canyon live oak	11		•	
2	Douglas-fir	38		•	
1	Big leaf maple	14	•		
1	Tanoak	8	•		
2	Canyon live oak	9	•		
1	Canyon live oak	13	•		
2	Big leaf maple	10+8*	•		
1	Tanoak	18	•		•
1	Douglas-fir	6	•		
1	Mountain dogwood	9			•
1	California bay	10	•		•
2	Bigleaf maple	15+20*	•		•
1	Douglas-fir	52	•		
2	Tanoak	10+6*	•		
1	Tanoak	8	•		
1	Tanoak	8	•		
3	Tanoak	6	•		
2	Tanoak	15	•		
2	Tanoak	13+12*	•		
Tree Removal North of Bridge/Alt			**24**	**13**	**5**
TOTAL TREE REMOVAL / ALT			**109**	**173**	**165**

* Indicates trees with multiple trunks

Patrick Creek Narrows Location 3

The work proposed at Patrick Creek Narrows Location 3 would not involve tree removal. No effects on trees would occur.

The Narrows

The work proposed at the Narrows would remove approximately 46 trees (Douglas-fir, canyon live oak, and Pacific madrone), consisting of:

- one Douglas-fir, 24-inch dbh
- five Douglas-firs, 20-inch dbh
- 15 Douglas-firs, 6- to 12-inch dbh
- 15 Canyon live oaks, 6 to 12-inch dbh
- 10 Pacific madrones, 6 to 12-inch dbh

Washington Curve Site

Two alternatives are being considered for the work proposed at the Washington Curve site.

The Cut Slope Alternative would include the removal of approximately 138 tree stems (or 55 clumps of trees), consisting of:

- four knobcone pine, 13- to -16-inch dbh
- 28 knobcone pine, 6- to 12-inch dbh
- two Douglas-fir, 26- to 28-inch dbh
- 10 Douglas-fir, 12- to 22-inch dbh
- 14 Douglas-fir, 5- to 11-inch dbh
- 22 Canyon live oak 5- to 15-inch dbh
- 56 tanoak, 5- to 10-inch dbh
- two Pacific madrone, 7-inch dbh

Thirty nine trees near the top of the cut will have potential root effects, and some near the edge of the cut will also need to be removed.

The Retaining Wall Alternative would include the removal of approximately 15 trees, consisting of:

- two knobcone pine, 6- to 12-inch dbh
- eight Douglas-fir, 6- to 12-inch dbh
- four tanoak, 6- to 12-inch dbh
- one canyon live oak, 6- to 12-inch dbh

The Retaining Wall Alternative would have the least impact because it would involve less ground disturbance and fewer trees; however, neither alternative would have adverse effects.

Summary of Effects to Trees for Locations on SR 199

Tree removal at the project sites along US 199 (Patrick Creek Locations, the Narrows, and Washington Curve) would not significantly affect forest resources and habitat. These trees represent forest habitat types that are well represented within the watershed. The proposed alternatives would affect small slivers of edge habitat along the current roadway. None of the tree removals proposed at Patrick Creek Narrows Locations 1, 2 and 3, the Narrows, and Washington Curve, discussed above, rise to the level of a significant adverse effect under CEQA or NEPA.

Effects on Wildlife Corridors for Marbled Murrelet

Construction activities, including blasting at the Narrows site, could disturb marbled murrelets during prey deliveries to the nest as they fly along the river corridors at dusk and dawn. This species uses the Middle Fork Smith River canyon as a prey delivery corridor during the breeding season. Disruption of prey delivery is considered an adverse effect. Consequently, measures will be implemented to avoid disruption of prey delivery to the nest. This species is discussed further in Section 2.3.5, "Threatened and Endangered Species." Effects on marbled murrelet as a result of this project are expected to be negligible. With the implementation of avoidance and minimization measures (section 2.3.5.4) the action may affect, but is not likely to adversely affect marbled murrelet.

Effects on Fish Passage

Work within the Middle Fork Smith River could restrict the passage of fish species, including anadromous fish. At Patrick Creek Narrows Location 2, no stream diversions are proposed during construction of the Upstream Bridge Replacement Alternative or the Downstream Bridge Replacement Alternative; therefore, no impacts related to fish passage in the river are anticipated. Effects on fish are discussed further in Section 2.3.4, "Animal Species," and 2.3.5, "Threatened and Endangered Species."

Effects on Habitat Connectivity (Fragmentation)

The highways in the area act as barrier to terrestrial wildlife and fragment their habitat. The modifications proposed by this project would neither improve nor substantially exacerbate habitat fragmentation. The proposed project would result in minor roadway widening and some vegetation removal. However, the project is not anticipated to result in increased traffic levels. In addition, it would not result in a substantial increase in habitat fragmentation. Effects on habitat connectivity as a result of this project are expected to be negligible.

Re-establishment of Native Species Composition in Existing Natural Communities

Ground disturbance resulting from proposed project activities would expose bare soil. In the absence of erosion control seeding and/or plant installation after construction is complete, non-native and invasive plant species may colonize and eventually dominate areas of ground disturbance. Permanent enhanced erosion control seeding and revegetation will be used to re-

establish native species composition of existing natural communities in which ground disturbance is proposed. This would minimize open ground available for establishment of invasive plant species, in compliance with Presidential Executive Order 13112 on Invasive Species (February 3, 1999), and it would help maintain natural ecological processes and minimize habitat fragmentation and loss. It would also help re-establish natural communities in areas that are difficult to plant and maintain due to extreme conditions (e.g., dry soils, sometimes steep soil and rock slopes, nutrient-poor soils), while also meeting the goals of minimizing soil erosion and discharge of sediments to receiving waters. Permanent enhanced erosion control seeding is planned at all locations of disturbed soil, and refers to using a more diverse species selection in the seed mix, including a variety of regionally appropriate native trees, shrubs, and herbs. Revegetation refers to the planting of containerized native trees, shrubs, and/or herbs in disturbed soil areas. This is proposed in front of private parcels at Ruby 2 as a visual screen, with permission from property owners. Revegetation would also likely occur at Patrick Creek Narrows Location 2. Adverse effects on native species composition in existing natural communities as a result of this project are expected to be minor and temporary, except the removal of large trees, which would be a permanent effect.

Effects on Water Quality (Turbidity)

Bridge work and culvert replacement may result in temporary sediment discharge into receiving waters. This discharge would be temporary and minimal. Adverse effects to water quality as a result of this project are expected to be negligible. To reduce long-term erosion and sediment discharge into receiving waters, RSP would be placed at up to 13 culvert outlets. Typically, a 6-foot by 14-foot area of RSP is placed in the drainage channel. The RSP consists of 1/4-ton crushed rock (approximately 1.8 feet in diameter).

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no construction and therefore no effects on habitat connectivity (fragmentation), natural communities, wildlife corridors, or fish passage.

2.3.1.3 Avoidance, Minimization, and/or Mitigation Measures

Enhanced Erosion Control Seeding and Revegetation

Enhanced Erosion Control: Enhanced erosion control seeding would be implemented at all project locations after construction is complete. For the purposes of this project, enhanced erosion control seeding refers to using a more diverse species selection in the seed mix, including a variety of regionally appropriate native trees, shrubs, and herbs. This permanent erosion control will be applied to all disturbed soils consistent with the North Coast Regional Water Quality Control Board 401 Certification for the project and the Department's current *Storm Water Quality Handbook Construction Site Best Management Practices Manual*. Seed mixes would be customized to address habitat variation at the different project sites and to be ecologically suitable for the site conditions after soil disturbance from construction activities. The potential seeding species to be collected are the native species listed by occurrence at each location in Appendix N, overseen by a botanist, plant ecologist, or qualified staff with knowledge of flora of the SR 197 and US 199 region. In case seed collection does not provide enough seed for each location, an adequate quantity of a regional native grass species (northwest California), such as

wildrye (*Elymus glaucus*) or Idaho fescue (*Festuca idahoensis*) will supplement collected seed and ensure short-term soil stabilization during establishment of long-term native revegetation.

Revegetation: Revegetation, for the purposes of this project, refers to the planting of containerized native trees, shrubs, and/or herbs in disturbed soil areas. This is proposed at Ruby 2 in front of private parcels as a visual screen, with permission from property owners, and it would also likely occur at Patrick Creek Narrows Location 2. The revegetation species list would include regionally appropriate (Del Norte County) trees, shrubs, and herbs that are suited to the habitats of the project area. Planting would reflect natural vegetation patterns, groupings, strata, and species diversity. The species selection and quantity would be determined based on habitat, disturbance tolerance, and desired spacing, without over-planting, and as evaluated by a qualified botanist, plant ecologist, or similarly qualified staff. The potential container plants that would be used are the native plants listed by occurrence at each location, in Appendix N.

Invasives: No invasive plant species would be used at any location. During the revegetation monitoring period, invasive species such as Himalayan blackberry (*Rubus armeniacus*, formerly *R. discolor*) and French broom (*Genista monspessulana*) will be eliminated or controlled per the Invasive Plants Avoidance, Minimization, and Mitigation Measures section (see Section 2.3.6.4).

Site Preparation: On-site topsoil and/or duff (i.e., leaf litter and small branches) will be collected prior to construction whenever feasible, stockpiled, then reapplied in disturbed soils in project areas, such as along the old highway alignment that would be decommissioned if a bridge replacement alternative is selected at Patrick Creek Narrows Location 2. Off-highway staging and old highway alignment areas, where seeding or revegetation is anticipated, will require approximately 18 to 24 inches of ripping, where feasible, to decompact soils and facilitate revegetation prior to topsoil/duff application and seeding/revegetation.

Monitoring of Enhanced Erosion Control: Enhanced erosion control seeding would be monitored for 2 years, starting approximately 1 year after hydroseeding and preferably during the blooming season. There would be three monitoring success criteria: a minimum of approximately 20% absolute cover[4] along road shoulders, a minimum of approximately 1% to 5% absolute cover on steep slopes (except rock faces), and presence of at least 30% native species. These success criteria are based on visual estimates of absolute cover in exposed areas at Patrick Creek Narrows Location 2 where vegetative cover is relatively low (i.e., approximately 30% absolute cover in exposed road shoulders and up to approximately 5% on shady and exposed steep slopes). If the success criteria are not met, a review will be conducted by a qualified botanist, plant ecologist, or similarly qualified staff to determine potential reason(s) for failure to meet the success criteria and to develop and implement remedial measures as needed; remedial measures may not be needed if native recruitment provides adequate ground coverage, compared with vegetative cover prior to project construction. Potential remedial measures may include additional native seed collection and re-seeding the project location.

Revegetation Monitoring: Revegetated areas (i.e., Ruby 2 and likely Patrick Creek Narrows Location 2) will be annually census monitored. Survival will be assessed approximately one year

[4] "Absolute cover refers to the actual percentage of the ground (surface of the plot or stand) that is covered by a species or group of species. Absolute cover of all species or groups if added in a stand or plot may total greater or less than 100 percent because it is not a proportional number" (Evens, J.M, S. San, J. Taylor, and J. Menke. 2004. *Vegetation Classification and Mapping of Peoria Wildlife Area, South of New Melones Lake, Tuolumne County, California.* Accessed from http://www.cnps.org/cnps/vegetation/pdf/1_CNPS_TableMtn_Final_Report.pdf on 8/4/12.)

after planting and for two subsequent years to assess the survival of installed plants (three years total). The monitoring success criterion will be that greater than 70% of plants installed at the end of the monitoring period will have survived or, at the end of the monitoring period, installed plants and plants arising from native recruitment in the vicinity of the planted area will be greater than 70%. If these criteria are not met, a review will be conducted by a qualified botanist, plant ecologist, or similarly qualified staff to determine potential reason(s) for failure to meet the success criteria and to develop and implement remedial measures as needed. Potential remedial measures may include re-planting, if native plant recruitment has not adequately ameliorated poor planting success.

Further details regarding enhanced erosion control seeding and revegetation are listed in Appendix R, Enhanced Erosion Control Seeding and Revegetation Plan.

Invasive Plant Removal

The Department will conduct invasive plant species removal to increase the resiliency of mature forest within the project footprint and the watershed.

Delineate Environmentally Sensitive Areas with Exclusionary Fencing

The Department will establish, as indicated on project plans, specifications to avoid potential construction impacts on sensitive biological resources (i.e., sensitive natural communities and plant and lichen locations) adjacent to the construction sites and staging areas. Temporary exclusionary fencing will be placed around areas of sensitive natural communities and special-status and sensitive plant and lichen species that are adjacent to proposed staging/storage and construction areas, thereby prohibiting construction activities in those areas.

Control Plant Pathogens

To avoid the spread of plant diseases such as sudden oak death and Port Orford cedar (POC) root disease, best management practices will be implemented. These include the following:

- washing heavy equipment before and after ground-disturbing activities,
- removing POC from road areas to reduce the risk of infection (sanitation logging),
- directing water runoff away from POC areas, and
- using pathogen-free water for dust control, such as from a commercial or municipal water source.

Protect Roots of Large Trees

There are many large old redwood trees (greater than 36-inch dbh) and large Douglas-fir trees (greater than 24-inch dbh) within the project areas. To minimize potential impacts on these trees, only hand tools or a pneumatic excavation tool (such as an air spade) will be used for excavation within the Structural Root Zone of large trees. The Structural Root Zone of a tree is a circular area (the tree trunk is at the center of the circle) with a radius three times the dbh of the trunk. Only an air spade or handwork will be used for excavation within the Structural Root Zone of redwood trees that have a dbh of 36 inches or greater and Douglas-fir trees that have a dbh of 24

inches or greater. The pneumatic excavation tool turns compressed air into a high-speed air jet, which dislodges soil particles but does not harm solid material, such as tree roots. This tool is commonly used by arborists when it is necessary to excavate within the root zone of a tree. Within the Structural Root Zone, any root encountered that needs to be removed will be cut cleanly to optimize healing potential.

The following avoidance and minimization measures will be implemented for work near large trees:

- An arborist shall be present to monitor any ground-disturbing construction activities within the Structural Root Zones of large trees.
- All excavation below the finish grade within a setback equal to three times the diameter of any large old trees shall be conducted with hand tools, air spade, or other methods approved by the construction engineer and arborist to minimize disturbance or damage to the roots, with exception of culvert work. Mechanized equipment can be used at the culvert locations upon approval of the construction engineer and arborist.
- The contractor will be required to use a pneumatic excavator (such as an air spade) while excavating the soil within the structural root zone of trees greater than 36 inches dbh to minimize physical injury to the tree roots.
- Within the Structural Root Zone, smaller roots, less than 2 inches in diameter, that must be cut shall be cut cleanly with sharp instruments to promote healing. Roots larger than 2 inches in diameter will not be cut without approval of the on-site arborist.
- After construction, cut-and-fill slopes will be replanted.
- Prior to excavation or fill, the upper 4 to 6 inches of duff and native soil will be set aside for placement on the finished slopes to provide the nutrients and seedbank for natural revegetation.
- To help minimize potential stress on the large trees during construction, watering will be provided. In areas where roadway excavation will take place below the finish grade within the Structural Root Zone of trees (redwoods 36 inches dbh or greater, Douglas-fir 24 inches dbh or greater), watering equivalent to ½ inch in depth to an area defined as from the edge of existing pavement to 25 feet beyond the edge of pavement shall be performed. Watering shall be performed not more than 24 hours after the roadway excavation work at a site and shall occur weekly thereafter between the dates of June 1 and September 30.
- Any duff layer shall be raked off the area within the clearing limits, stored, and replaced as erosion control. For areas within the Structural Root Zone of trees measuring 36 inches dbh or greater, the duff will be hand raked.
- Where feasible and appropriate, structural fill will use one of the following methods to increase air and water porosity, minimize compaction of roots, decrease the thickness of structural section, and/or minimize thermal exposure to roots from hot-mix asphalt paving:
    - a 0.75-foot-thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill to increase water infiltration and air circulation, or
    - Cement Treated Permeable Base (CTPB) will be considered, or

  - Cornell Mix or CU-Structural Soil will be considered.

- In locations where greater than 4 inches of fill would be placed next to the trunk of a tree greater than 36 inches dbh, a brow log shall be used to keep the soil from the tree trunk and increase air circulation.
- Equipment staging areas/storage areas shall be on paved roadways or on existing unvegetated gravel/paved pullouts so that staging does not occur in sensitive natural communities.
- The contract will state that no heavy equipment will be staged or parked within the drip line of large old trees, except in improved areas (paved or graveled).

Mitigation for Impacts on Large Redwood Trees

If one of the Ruby 2 alternatives that would remove large redwood trees is selected, off-site or out-of-kind mitigation would be required. This would include measures that indirectly benefit large redwoods and associated plant and animal species. Some options for off-site or out-of kind mitigation include:

- Purchasing acreage of existing large old redwoods in nearby private ownership and transferring it to a non-profit conservation organization (such as Save-the-Redwoods League), or to a County, State, or National Park.
- Removal of invasive exotic plant species within the Department's right-of way in the Ruby 2 project vicinity to enhance habitat for native redwood forest species.
- Provide corvid-proof trash containers in nearby Ruby Van Deventer Park (corvids such as crows, ravens, and jays that eat the eggs of marbled murrelets).

2.3.2 Wetlands and Other Waters of the United States

2.3.2.1 Regulatory Setting

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

Section 404 of the CWA establishes a regulatory program that provides that the discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded.

The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE), with oversight by the U.S. Environmental Protection Agency (U.S. EPA).

USACE issues two types of 404 permits: Standard and General permits.

There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

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

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as the Federal Highway Administration (FHWA) and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

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

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCBs also issue water quality certifications for impacts on wetlands and waters in compliance with Section 401 of the CWA. Please see Section 2.2.2, "Water Quality and Storm Water Runoff," for additional details.

2.3.2.2 Affected Environment

This section is summarized from the natural environment study (NES) prepared for the proposed project (California Department of Transportation 2010a). Supporting documentation for the NES is provided by the *Ruby 1 and Ruby 2 (DN-197) and the Narrows (DN-199) Delineation of Wetlands and Other Waters* report (ICF International 2010) and the *Wetlands and Other Waters of the U.S. Delineation Report Del Norte STAA Project, Route 199 Locations* report (California Department of Transportation 2010b). Maps of wetlands and other waters are provided in Appendix M.

Aquatic habitats present in the BSA include wetlands, rivers and tributaries, roadside drainages, and seeps. The SR 197 sites, Ruby 1 and 2, are in the Smith River drainage. The US 199 locations are in the Middle Fork Smith River drainage.

Wetlands, seeps, riparian corridors, and watercourses are considered sensitive natural communities because their distribution is limited in California and they provide important habitat for special-status wildlife and plant species.

Potential waters of the United States were delineated in the project area in 2008 and 2009. The delineation of wetlands and other waters of the United States in the project area was completed using the 1987 *Corps of Engineers Wetlands Delineation Manual* routine on-site determination methods (Environmental Laboratory 1987) supplemented by the *U.S. Army Corps of Engineers Draft Interim Regional Supplement to the Corps of Engineers 1987 Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers 2008). This method uses a three-parameter approach to determine whether the soils, vegetation, and hydrology meet the criteria for a jurisdictional wetland. Positive indicators for all three of these parameters, as well as connectivity to a water of the United States, must be present for a wetland area to be considered jurisdictional by the USACE. Other waters were mapped and delineated in the field in accordance with the guidelines in USACE Regulatory Guidance Letter 05-05, dated December 7, 2005 (U.S. Army Corps of Engineers 2005).

Seeps are present at some of the project locations. Seeps are essentially springs and are delineated as waters of the United States. The USACE has not yet verified the jurisdictional determination. A field meeting to discuss the project and CWA Section 404 permitting requirements was held with Carol Heidsiek of the Arcata Office of the USACE. A field meeting was also held with Jeremiah Puget of the NCRWQCB to assess CWA Section 401 requirements. The Department will continue coordinating with these agencies to discuss avoidance and minimization measures as the project progresses.

Table 2.3.2-1 lists the locations and surface areas of wetlands and other waters delineated in the project area. Additional discussion of the wetlands and waters at each project location follows the table.

Table 2.3.2-1. Wetlands and Other Waters of the United States in the Project Area

Project Location	PM or Station (Type)	Width (feet)	Length (feet)	Area (acres)
Ruby 1	4.47 (drainage)	2	50	0.002
	4.54 (drainage)	2	50	0.002
Ruby 2	3.27 (wetland)	–	–	0.032
	3.27 (drainage)	2.5	425	0.024
	3.37 (drainage)	1.5	240	0.008
	3.40 (drainage)	2	204	0.009
	3.50 (wetland)	–	–	0.024
	~3.50 (drainage)	1.5	320	0.011
	3.50 (wetland)	–	–	0.002
Patrick Creek Narrows Location 1	20.31 (drainage)	2	850	0.039
	20.52 (drainage)	3	313	0.022
	20.57 (seep)	1.5	147	0.005
	20.58 (seep)	1.5	87	0.003
	20.62 (drainage)	2	502	0.023
Patrick Creek Narrows Location 2	24.07 drainage)	2	–	0.007
	24.0 (river)	40	770	0.707
Patrick Creek Narrows Location 3	25.55 (drainage)	2	750	0.017
	25.61 (drainage)	1.5	1,050	0.024
	25.69 (drainage)	1.5	360	0.012
	25.75 (drainage)	1.5	130	0.004
The Narrows	22.90 (drainage)	2	70	–
	22.98 wetland	–	–	0.003
	~ 22.98 (seep)	1	15	<0.001
Washington Curve	26.31 (drainage)	2	120	0.006
	26.51 (drainage)	2	140	0.006
			Total Wetlands	*0.061*
			Total Drainages/Seeps	*0.225*
			Total Rivers	*0.707*
			Total	**0.993**

Ruby 1

Although there are no wetlands at the Ruby 1 site, there are two unnamed tributaries to the Smith River within the project area. These watercourses flow under the highway (PMs 4.47 and 4.54) through 24-inch-diameter corrugated steel pipes. Both systems are potentially jurisdictional waters of the United States. These drainage systems are not fish-bearing streams, but they support habitat for amphibians and other aquatic species.

Ruby 2

There are wetlands and other waters at the Ruby 2 site, as listed in Table 2.3.2-1. A 0.032-acre three-parameter wetland is present near the outlet of the culvert at 3.27 that would be affected by the Four-foot Widening Alternative. The four drainage systems at Ruby 2 are potentially jurisdictional waters of the United States. These drainage systems are not fish-bearing streams, but they support habitat for amphibians and other aquatic species.

Patrick Creek Narrows Location 1

Within the project impact area, Patrick Creek Narrows Location 1 contains an 850-foot-long, 2-foot-wide seasonal channel that flows along the edge of the westbound lane from the toe of the cut slope. At PM 20.31, this stream flows through a 24-inch-diameter corrugated steel pipe culvert under US 199 and into the Middle Fork Smith River. This channel is fed by surface runoff and flows into another channel before crossing US 199. This other channel provides habitat for rare plant species, including *Darlingtonia californica* (CRPR 1B.3) and *Pinguicula macrocerus* (CRPR 2.2).[5] This is not a fish-bearing stream. However, it provides suitable habitat for amphibians and other aquatic species.

A perennial channel at PM 20.52 flows down the slope from the northwest and under US 199 through a 36-inch-diameter corrugated steel pipe. A 316-foot length of this channel is within the project area. North of US 199, just east of the roadway, the riparian area of this stream provides habitat for *Salix delnortensis* (CRPR 4.3). The outlet of this channel is too steep to allow fish passage. However, it provides suitable habitat for amphibians and other aquatic species.

North of US 199, seeps from the face of the cut slope flow into a channel at the toe of the slope and into two 18-inch-diameter corrugated steel pipe culverts (PMs 20.57 and 20.58) before entering the Middle Fork Smith River. These seeps provide habitat for *Salix delnortensis* (CRPR 4.3), *Lomatium howellii* (CRPR 4.3), *Cypripedium californicum* (CRPR 4.2), and *Poa piperi* (CRPR 4.3). The waters of the channel within the project area at PM 20.57 are 1.5 feet wide and 147 feet long. At PM 20.58, the waters within the project area are 1.5 feet wide and 87 feet long. This is not a fish-bearing channel. However, it provides suitable habitat for amphibians and other aquatic species.

At PM 20.62, a perennial drainage from the cut slope on the north is joined along the northern shoulder of US 199 by a seep-fed drainage flowing to the west. The merged channel flows under the highway through a 24-inch-diameter corrugated steel pipe. At this site, the channel within the project area is 502 feet long and 2 feet wide. This is not a fish-bearing stream. However, it provides suitable habitat for amphibians and other aquatic species.

Patrick Creek Narrows Location 2

The potentially jurisdictional waters within the project area at Patrick Creek Narrows Location 2 include the Middle Fork Smith River, which is crossed by the Middle Fork Smith River Bridge at PM 24. The section of the Middle Fork Smith River within the project area is about 40 feet wide and 770 feet long. This river is a potentially jurisdictional water of the United States (a traditional navigable water). This river provides habitat for the state- and federally listed coho salmon (*Oncorhyncus kisutch*) and they are known to inhabit the river. The Middle Fork Smith River gorge is also a migratory route for breeding marbled murrelet (*Brachyramphus*

[5] Listing categories are defined in the notes section of Table 2.3.3-1.

marmoratus). It also provides suitable habitat for amphibians and other aquatic species. The riparian banks of the Middle Fork Smith River support some sensitive plants; *Cardamine nuttalli* var. *gemmata* (CRPR 3.3), *Lomatium martindalei* (CRPR 2.3), *Erigeron cervinus* (CRPR 4.3), and *Saxifraga howellii* (CRPR 4.3) have been found here.

A seasonal seep is present at the inlet of the culvert at PM 24.07. This system is a potentially jurisdictional water of the United States. This is not a fish-bearing drainage. However, it provides suitable habitat for amphibians and other aquatic species. This culvert would be abandoned.

Patrick Creek Narrows Location 3

Patrick Creek Narrows Location 3 contains two channels potentially subject to state and federal jurisdiction. With a width of about 2 feet, a seasonal stream (ditch) flows from the northeast for about 300 feet along the toe of the cut slope adjacent to the paved roadway, then through a 24-inch-diameter corrugated steel pipe culvert under US 199 at PM 25.55 and into the Middle Fork Smith River (total length within the project area is 750 feet). Another 1.5-foot-wide seasonal channel flows from the northeast along the toe of the cut slope adjacent to the paved roadway, then through an 18-inch-diameter corrugated steel pipe culvert under US 199 at PM 26.61 into the Middle Fork Smith River (total length within the project area is 1,050 feet). These drainage systems are not fish-bearing streams. However, they support habitat for amphibians and other aquatic species. *Lathyrus delnorticus* (CRPR 4.3) was found in a roadside drainage north of the highway near PM 25.68.

To reduce long-term erosion and sediment discharge into receiving waters, RSP will be placed at the two culvert outlets. Typically, 6-foot-wide by 14-foot-long area of RSP is placed in the drainage channel. The RSP consists of 1/4-ton crushed rock (approximately 1.8 feet in diameter).

The Narrows

The potentially jurisdictional waters within the project area at the Narrows site include one culverted drainage system at PM 22.9. This culvert conveys an unnamed seasonal tributary under the highway through a 24-inch-diameter corrugated steel pipe into to the Middle Fork Smith River. This drainage flows for 80 feet within the project area. This is not a fish-bearing drainage. However, it provides suitable habitat for amphibians and other aquatic species.

The second potentially jurisdictional water system within the proposed limits of construction is at PM 22.98. Here, a seasonal drainage arises as a seep approximately 15 feet above the road shoulder level and flows down the rock face into a linear roadside depression that supports a small wetland. From here, it overflows by sheet flow across the roadway to the Middle Fork Smith River. This is not a fish-bearing drainage. However, it provides suitable habitat for amphibians and other aquatic species. The seep provides habitat for *Cypripedium californicum* (CRPR 4.2), and the roadside depression provides habitat for *Salix delnorticus* (CRPR 4.3). The limits of the roadside depression are from Station 25.2-26.0, and it is approximately 2 feet wide and 75 feet long. The seep is a potentially jurisdictional other water of the United States, and the roadside depression is a potentially jurisdictional wetland (water of the United States). No culvert is present at this location.

Washington Curve

An unnamed perennial stream at PM 26.31 flows from the hills on the north through a 36-inch-diameter corrugated steel pipe under US 199 and into the Middle Fork Smith River. The length of channel within the project area is 130 feet. The outlet of this channel is too steep to allow fish passage. However, it provides suitable habitat for amphibians and other aquatic species.

An unnamed seasonal stream at PM 26.51 flows from the hills on the north through a 24-inch-diameter corrugated steel pipe under US 199 and into the Middle Fork Smith River. The length of channel within the project area is approximately 130 feet. This is not a fish-bearing drainage. However, it provides suitable habitat for amphibians and other aquatic species. The steep slope above the culvert provides habitat for *Poa piperi* (CRPR 4.3) and *Thermopsis gracilis* var. *gracilis* (CRPR 4.3).

Wetland Functions and Values

Wetland ecosystems possess unique functions and values that vary depending on the type of wetland, its size, surrounding land uses, and the degree to which it has been previously disturbed. Wetland functions are defined as the physical, chemical, and biological attributes of a wetland, such as flood storage, species habitat, or groundwater discharge. Other functions of wetlands may have specific "values" that are considered beneficial to society, such as groundwater recharge, recreation, or aesthetics. Wetlands in the project area were evaluated separately to determine general wetland functions and values.

Wetlands/waters in the project area have been classified according to the Cowardin Classification System (Cowardin 1979). This system recognizes five major wetland classifications: marine, estuarine, lacustrine, riverine, and palustrine. Marine and estuarine wetlands are associated with the ocean and include coastal wetlands, such as tidal marshes. Lacustrine wetlands are associated with lakes, while riverine wetlands are found along rivers and streams. Palustrine wetlands may be isolated or connected wet areas and include marshes, swamps, and bogs. The project area contains riverine and palustrine wetlands. The evaluation of wetland functions and values is based on the Wetland Evaluation Technique (WET) developed by the USACE for the FHWA (Adamus et al. 1987). This report utilizes a qualitative approach that addresses each of the following standard functions for each wetland type:

- Groundwater recharge
- Groundwater discharge
- Flood flow alteration
- Sediment/toxicant retention
- Nutrient removal/transformation
- Production export
- Wildlife diversity/abundance
- Aquatic diversity/abundance
- Uniqueness/heritage
- Recreation, open space, and visual quality

Functions and values of the wetlands in the project area were evaluated based on field observations and other available data. Results of other project-related studies were used to assess some of the potential functions, such as habitat and water quality. Specific criteria used to evaluate the functions and values of the wetlands included wetland condition, whether the wetland was natural or artificial, commonness or rarity and presence or absence of sensitive species, size, magnitude of potential impacts, and regional status of the wetland type.

This analysis is based on the assumption that the wetland functions are related to the wetland types. For instance, isolated freshwater seeps are likely to have functions and values that differ from the functions and values of a riparian wetland type where saturation or inundation occurs all year. Other factors that affect the functional assessment of wetland types are vegetative development of the wetland site, barriers between the wetland and adjoining uplands, and adjacent land uses. Factors that affect the social significance, or value, of a wetland include the presence of one or more of the following: a special-status species, "unique" wetland types, a source of drinking water, or publicly owned lands designated for conservation, preservation, or research.

The probability that a particular wetland type performs a specific function was assessed using the WET as a guideline. This approach assigns a value of "High," "Moderate," or "Low," depending on the presence or absence of certain indicators of wetland function (e.g., a value of High means there is a high probability that the wetland performs a particular function). The table shown in Appendix L presents the criteria defined by Adamus et al. (1987) for WET assessments. This WET was supplemented with site-specific details for the project area.

The Cowardin Classification System Wetlands/Waters in the project area include Riverine Upper Perennial Isolated Freshwater Seeps, Riverine Upper Perennial Rock Bottom Waters, Riverine Perennial/Intermittent Waters, and Palustrine Emergent Wetlands (Cowardin 1979).

Riverine Upper Perennial Isolated Freshwater Seeps within the project area are found at Patrick Creek Narrows Locations 1 and 2 and the Narrows site. These areas are on the faces of the steep cliffs north of the roadway. The seeps at Patrick Creek Narrows Location 1 and the Narrows site are perennial; the seep at Patrick Creek Narrows Location 2 is seasonal. Within the project area, this type of wetland has moderate overall function and value (Appendix L). They rate high in aquatic diversity because of the presence of rare plants.

The Middle Fork Smith River at Patrick Creek Narrows Location 2 is defined as Riverine Upper Perennial Rock Bottom Waters. Within the project area, this type of wetland/water has moderate overall function and value (Appendix L). The Middle Fork Smith River rates high for recreational value and in aquatic diversity because of the presence of listed fish and diversity of aquatic species, but low in water quality functions.

Riverine Perennial/Intermittent Waters are present in the drainage systems at all the project locations. Some are perennial, and some are seasonal. Within the project area, this type of wetland/water has low overall function and value (Appendix L).

Palustrine Emergent Wetlands are present at the Ruby 2 site and the Narrows site. Within the project area, this type of wetland/water has moderate overall function and value (Appendix L). Water quality values are high, but aquatic species diversity is low.

2.3.2.3 Environmental Consequences

Temporary Impacts on Wetlands and Permanent Placement of Fill in Other Waters

Some alternatives of the proposed project would result in temporary impacts on wetlands and permanent placement of fill in other waters (Appendix M). To reduce long-term erosion and sediment discharge into receiving waters, RSP will be placed at culvert outlets as needed. Typically, 6-foot-wide by 14-foot-long area of RSP is placed in the drainage channel. The RSP consists of 1/4 ton of crushed rock (approximately 1.8 feet in diameter). A 0.032-acre three-parameter wetland is present near the outlet of the culvert at SR 197 PM 3.27 (Ruby 2). No RSP will be placed here, however the Four-Foot Shoulders Alternative would temporarily affect this wetland. Temporary effects on watercourses include extending the length of culverts at some locations and placing RSP at the outlets of culverts to prevent erosion. Drainage work includes replacing 10 culverts, lengthening three culverts (two at the Ruby 1 site, one at the Ruby 2 site), and installing three new culverts (one at the Narrows and two at Patrick Creek Narrows Location 2). Work on the 14 existing culverts would temporarily affect approximately 903 linear feet of waters of the United States. Temporary effects include short-term (less than 2 years) disturbances to drainage channels. Temporary impacts are typically due to construction activity. If the effect is temporary the pre-construction watercourse is expected to naturally return to pre-project conditions within two years after construction is complete. Temporary impacts include stream diversion and associated sediment discharges, and soil excavation for trenching.

Consideration of Waters/Wetland Avoidance

The roadway widening and realignment associated with this project involves upgrading drainage systems. The drainage systems are being revised only if the culverts need to be lengthened either at the inlet or outlet, and/or if the culvert pipes are corroded, undersized, or in some other way insufficient. The impacts on the channel at the inlet and outlet will be temporary and minor—limited to what is required to replace the culvert.

The impacts on wetlands and watercourses/seeps are associated with widening for some alternatives under consideration. After the work has been completed, the seeps/watercourses are expected to remain, and over time vegetation will re-establish naturally. Plants will be salvaged from these locations if possible and replanted in the seep after construction.

A wetland would be affected by the Ruby 2 (SR 197, PM 3.2–4.0), Four-Foot Shoulders Alternative. However, the preferred alternative for Ruby 2 is the Two-Foot Widening in Spot Alternative. This alternative has no wetland effects. Additionally, the Ruby 2 Four-Foot Shoulders Alternative would have additional impacts on trees.

A temporary impact on the Middle Fork Smith River (if one of the bridge replacement alternatives is selected) may result from placing falsework platforms required for the new bridge and for the demolition containment when the old bridge is removed. However, there will be no falsework or equipment in the active river channel.

A summary of the effects of the proposed project on riparian areas is provided in Table 2.3.2-2.

Table 2.3.2-2. Permanent and Temporary Disturbance of Riparian Habitat

Riparian (type)	Area of Permanent Fill (acres)	Area of Temporary Disturbance (acres)
Drainages/Seep	0	0.08
River	0	0.27

Placement of fill in wetlands and other waters is considered potentially adverse. The areas of wetlands and other waters affected (by project location) and a comparison of the effects of each proposed alternative are presented in Table 2.3.2-3. These effects have changed since the circulation of the DEIR/EA. As the project design was refined, some of the impacts to wetlands described in the DEIR/EA have been avoided, and this table reflects the current design.

Table 2.3.2-3. Areas of Effects on Wetlands and Other Waters by Project Location and Alternative

Project Location and Alternative	Area of Temporary Disturbance (acres)		
	Drainage/Seep	River	Wetland
Ruby 1	0.002	**0**	**0**
Ruby 2			
Four-Foot Shoulders Alternative	0.006	0	0.002
Two-Foot Shoulders Alternative	0.006	0	0
Two-Foot Widening in Spot Locations Alternative	0.004	0	0
Patrick Creek Narrows Location 1	0.003	0	0
Patrick Creek Narrows Location 2			
Upstream Bridge Replacement Alternative	0.002	0.7	0
Downstream Bridge Replacement Alternative	0.002	0.7	0
Bridge Preservation with Upslope Retaining Wall Alternative	0.002	0.7	0
Patrick Creek Narrows Location 3	0.002	0	0
The Narrows	0.001	0	0
Washington Curve			
Cut Slope Alternative	0.001	0	0
Retaining Wall Alternative	0.001	**0**	0

The Department has identified the following combination of alternatives by location to be the least environmentally damaging practicable alternative for the project:

- Ruby 1: Build Alternative
- Ruby 2: Two-Foot Widening in Spot Locations Alternative
- Patrick Creek Narrows Location 1: Build Alternative
- Patrick Creek Narrows Location 2: Downstream Bridge Replacement Alternative
- Patrick Creek Narrows Location 3: Build Alternative
- The Narrows: Build Alternative
- Washington Curve: Cut Slope Alternative

This combination of alternatives would have the least effect on wetlands and other waters as well as the least effect on large redwood trees and lower levels of visual impacts compared with other alternative combinations. The selection of the preferred alternative is discussed further in Chapter 1, Section 1.3.7, "Identification of a Preferred Alternative."

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no construction. Therefore, there would be no effects on wetland and other waters.

2.3.2.4 Avoidance, Minimization, and/or Mitigation Measures

Limit Construction in Waters of the State/United States to the Dry Season

To minimize and avoid impacts on waters of the United States, work in watercourses will be scheduled to take place during periods of low flow or when the watercourse is dry, which can be as early as May 2 and as late as October 15. When watercourses are dry, no stream diversion is required; sediment discharge is avoided. Many frog and salamander species move to other areas when seasonal streams dry-up. Therefore, impacts to these species would be avoided by working when the watercourse is dry. Specific work windows and limitations on construction will be determined as a result of Endangered Species Act Section 7 consultations and permits from federal and state regulatory agencies.

Implement Erosion and Pollution Control Measures

To maintain water quality and minimize the movement of soils and sediment into and within the project watercourses, effective erosion and pollution control measures will be developed and implemented. These measures will be implemented for all ground disturbing activities during and after construction as is practicable. It is expected that minor amounts of sediment discharge due to this project are unavoidable. However, the Department will ensure that applicable BMPs are used to stabilize all disturbed soil areas to minimize adverse effects on water quality, aquatic habitat, and listed fish species. The following measures and BMPs are applicable to the proposed project.

- Temporary construction BMPs will include the following measures and features:
  - Soil stabilization and wind erosion control: scheduling, preservation of existing vegetation, hydraulic mulch, erosion control blankets, and stream bank stabilization
  - Sediment control: silt fences, check dams, fiber rolls, gravel bag berms, street sweeping, and storm drain inlet protection
  - Tracking control: stabilized construction entrances/exits; non-stormwater management measures to address paving and grading operations; temporary dewatering and clear water diversions, and structure demolition/removal over or adjacent to water
  - Waste management and material pollution control: material handling and storage, concrete waste management, and sanitary waste management
- Site-specific temporary construction BMPs will be identified in a Water Pollution Control Program or Storm Water Pollution Prevention Plan developed by the Contractor and approved by the Resident Engineer.

- Pollution BMPs measures considered will include flow conveyance systems such as dikes, overside drain outlet protection and velocity dissipation devices; slope and surface protection systems such as vegetated surfaces and hard surfaces.
- To reduce long-term erosion and sediment discharge into receiving waters, RSP will placed at culvert outlets. Typically, 6-foot-wide by 14-foot-long area of RSP is placed in the drainage channel. The RSP consists of 1/4-ton crushed rock (approximately 1.8 feet in diameter).
- On-site duff, composed of leaf litter and small branches, will be collected prior to construction whenever feasible, stockpiled, then reapplied. All trees removed, that are not used for other purposes for the project, will be put through a chipper and the chips applied to the areas of exposed soil within the project area as a soil-stabilizing mulch.
- Disturbed soils will be seeded with an enhanced erosion control seed mix appropriate to the habitat(s) at each project location, using regionally appropriate, native species (also see Section 2.3.1.4).
- Excess material excavated from the work sites will be disposed of off-site at an appropriately permitted, state-owned or private, disposal site or placed in the typical limits of work, as shown on the project layouts, in accordance with the Department's specifications.

Evaluate and Implement Permanent Storm Water Treatment Options

Approximately 1–2 acres of additional impervious surface will be added to the highway facility as a result of the proposed project. Storm water treatment BMPs will be incorporated to address pollutant removal from stormwater runoff. Treatment BMPs evaluated will include Low-Impact Development–type BMPs such as biofiltration strips and swales. Because traction sand is applied occasionally, traction sand traps will be evaluated and constructed where feasible. Treatment BMPs will be designed to meet approved guidelines.

Compensate for Temporary and Permanent Impacts on Wetlands and Other Waters

Compensation may be a combination of onsite restoration/creation, offsite restoration, or mitigation credits. Compensation ratios (number of acres restored or created for every 1 acre filled) will be based on site-specific information and determined through coordination with state and federal agencies, as part of the permitting process for the project. The Clean Water Act (CWA) Section 404 Dredge and Fill Permit issued by the Army Corp of Engineers and the CWA Section 401 Water Quality Permit issued by the North Coast Regional Water Quality Control Board are both required prior to construction and will detail compensatory measures for impacts to wetlands, waters and water quality. Concurrent measures such as working when a site is dry (seasonal avoidance) and erosion control BMP's along with post-project mitigation measures will be implemented.

2.3.2.5 Only Practical Finding

The Executive Order for the Protection of Wetlands (Executive Order 11990) states that a federal agency, such as FHWA and/or the Department, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds 1) that

there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

A wetland would be affected by the Ruby 2 (SR 197, PM 3.2–4.0) Four-Foot Shoulders Alternative. However, the preferred alternative for Ruby 2 is the Two-Foot Widening in Spot Locations Alternative. This alternative has no wetland effects (see Table 2.3.2-3). The other location alternatives do not affect wetlands. Therefore, the preferred combination of alternatives for the project (Chapter 1, Section 1.3.7, "Identification of a Preferred Alternative") is also the practicable alternative to avoid construction in, and minimize harm to, wetlands.

2.3.3 Plant Species

2.3.3.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and CDFW have regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA). Please see Section 2.3.5, "Threatened and Endangered Species," for detailed information regarding 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 Rare Plant Rank rare and endangered plants, which are not state or federally listed. Special-status bryophytes, lichens, and fungi, as listed by the Forest Service for Six Rivers National Forest, are also discussed.

The regulatory requirements for the federal ESA can be found at 16 USC Section 1531, et seq. (see also 50 CFR Part 402). The regulatory requirements for CESA can be found at 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, California Public Resources Code Sections 2100–21177.

Special-status plants are species that are legally protected under the CESA, the ESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. For the purposes of this environmental document, special-status plants include the following:

- Species listed or proposed for listing as threatened or endangered under ESA (50 CFR 17.12 [listed plants] and various notices in the FR [proposed species]); species that are candidates for possible future listing as threatened or endangered under ESA (72 FR 69034, December 6, 2007; 73 FR 55175, December 10, 2008).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.5).

- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.).
- Plants considered by CNPS and CDFW to be "rare, threatened, or endangered in California" (California Rare Plant Rank [formerly CNPS List] 1B and 2) (California Native Plant Society 2007, 2008, 2009; California Department of Fish and Game 2012; State CEQA Guidelines Section 15381[d]).
- Plants with California Rare Plant Rank (formerly CNPS List) 3 and 4 (plants about which more information is needed to determine their status and plants of limited distribution [California Native Plant Society 2007, 2008, 2009; California Department of Fish and Game 2012] may be included as special-status species on the basis of local significance or recent biological information).
- Plants considered sensitive by Forest Service Region 5 that may occur in the Six Rivers National Forest (U.S. Forest Service 2006).

2.3.3.2 Affected Environment

This section is summarized from the NES (California Department of Transportation 2010). Supporting documentation for the NES is provided by the *Special-Status Plants Survey Report* (ICF International 2010) prepared for the project.

Qualified botanists conducted surveys and reviewed specific habitat requirements, life history notes, elevation, species distribution, and species lists to determine if any special-status plant, bryophyte, lichen, or fungi species were present in the project area. Existing records of special-status plant, bryophyte, lichen, and fungi species occurrences were consulted prior to conducting field surveys to assist in determining which species have the potential to occur in the project area. The following sources were consulted:

- USFWS species list for Del Norte County.
- CNDDB (California Department of Fish and Game 2008, 2009) occurrence records from the project vicinity and surrounding USGS 7.5-minute quadrangles (Appendix N).
- Six Rivers National Forest Sensitive Plant and Fungi Species (U.S. Forest Service 2006).
- CNPS Electronic Inventory (California Native Plant Society 2008, 2009) occurrence records from the project vicinity and surrounding USGS 7.5-minute quadrangles (Appendix N).

Based on the above sources, it was determined that suitable habitat for a number of special-status plant species is present within the proposed area of direct impact. In addition, habitat for Six Rivers National Forest sensitive cryptogams (i.e., bryophytes, fungi, and lichen) was also identified within the proposed area of direct impact. Floristic surveys were conducted throughout the proposed area of direct impact during the blooming periods of all potentially occurring special-status plants (summarized in Table 2.3 of the NES). Tables 2.3.3-1 and 2.3.3-2 list the species identified with habitat in the proposed area of direct impact. A list of all plant species found during vascular plant surveys is included in Appendix N. For vascular plants and

cryptogams, only species observed or those with moderate to high likelihood of occurrence in the project area are included in Tables 2.3.3-1 and 2.3.3-2. Vascular plants and cryptogams with low or no potential to occur in the project area are not included in the tables.

Table 2.3.3-1. Special-Status Vascular Plant Species Known or with Potential to Occur in the Proposed Area of Direct Impact and California Rare Plant Rank 3 and 4 Species Known to Occur in the Proposed Area of Direct Impact

Scientific Name	Common Name	Status	Habitat/Species Presence/Absence	Rationale
Arabis macdonaldiana	McDonald's rock cress	FE/SE/CRPR 1B.1	Absent	Not found in area floristic surveys
Arabis koehleri var. *stipitata*	Koehler's stipitate rock cress	CRPR 1B.3/FSS	Absent	Not found in area floristic surveys
Asarum marmoratum	Marbled wild-ginger	CRPR 2.3	Absent	Not found in area floristic surveys
Boschniakia hookeri	Small groundcone	CRPR 2.3	Absent	Not found in area floristic surveys
Cardamine nuttallii var. *gemmata*	Yellow-tubered toothwort	CRPR 3.3	Present	**Found during floristic surveys**
Carex leptalea	Bristle-stalked sedge (formerly flaccid sedge)	CRPR 2.2	Absent	Not found in area floristic surveys
Carex serpenticola	Serpentine sedge	CRPR 2.3	Absent	Not found in area floristic surveys
Carex viridula var. *viridula*	Green yellow sedge (formerly green sedge)	CRPR 2.3	Absent	Not found in area floristic surveys
Castilleja miniata ssp. *elata*	Siskiyou Indian paintbrush	CRPR 2.2	Absent	Not found in area floristic surveys
Coptis laciniata	Oregon goldthread	CRPR 2.2	Absent	Not found in area floristic surveys
Cypripedium californicum	California lady's-slipper	CRPR 4.2	Present	**Found during floristic surveys**
Cypripedium fasciculatum	Fascicled lady's-slipper	CRPR 4/ FSS	Absent	Not found in area floristic surveys
Cypripedium montanum	Mountain lady's-slipper	CRPR 4/FSS	Absent	Not found in area floristic surveys
Darlingtonia californica	California pitcherplant	CRPR 4.2	Present	**Found during floristic surveys**
Erigeron cervinus	Siskiyou daisy	CRPR 4.3	Present	**Found during floristic surveys**
Eriogonum pendulum	Waldo wild buckwheat	CRPR 2.2	Absent	Not found in area floristic surveys
Erythronium howellii	Howell's fawn lily	CRPR 1B.3	Absent	Not found in area floristic surveys
Erythronium revolutum	Coast fawn lily	CRPR 2.2	Absent	Not found in area floristic surveys
Gilia capitata ssp. *pacifica*	Pacific gilia	CRPR 1B.2	Absent	Not found in area floristic surveys
Horkelia congesta ssp. *nemorosa*	Josephine horkelia	CRPR 2.1	Absent	Not found in area floristic surveys
Iris bracteata	Siskiyou iris	CRPR 3.3	Present	Not found flowering in area floristic surveys prior to DED; **Found flowering in May 2011**
Lathyrus delnorticus	Del Norte pea	CRPR 4.3	Present	**Found during floristic surveys**
Lewisia oppositifolia	Opposite-leaved lewisia	CRPR 2.2/FSS	Absent	Not found in area floristic surveys
Lomatium howellii	Howell's lomatium	CRPR 2.3	Present	**Found during floristic surveys**
Lomatium martindalei	Coast Range lomatium	CRPR 2.3	Present	**Found during floristic surveys**
Monotropa uniflora	Ghost-pipe	CRPR 2.2	Absent	Not found in area floristic surveys
Packera bolanderi var. *bolanderi* (formerly genus *Senecio*)	Seacoast ragwort	CRPR 2.2	Absent	Not found in area floristic surveys
Pedicularis howellii	Howell's lousewort	CRPR 4/FSS	Absent	Not found in area floristic surveys
Pinguicula macroceras	Horned butterwort	CRPR 2.2	Present	**Found during floristic surveys**

Scientific Name	Common Name	Status	Habitat/Species Presence/Absence	Rationale
Piperia candida	White-flowered rein orchid	CRPR 1B.2	Absent	Not found in area floristic surveys
Poa piperi	Piper's bluegrass	CRPR 4.3	Present	**Found during floristic surveys**
Pyrrocoma racemosa var. *congesta*	Del Norte pyrrocoma	CRPR 2.3	Absent	Not found in area floristic surveys
Sagittaria sanfordii	Sanford's arrowhead	CRPR 1B.2	Absent	Not found in area floristic surveys
Salix delnortensis	Del Norte willow	CRPR 4.3	Present	**Found during floristic surveys**
Sanguisorba officinalis	Great burnet	CRPR 2.2	Absent	Not found in area floristic surveys
Saxifraga howellii	Howell's saxifrage	CRPR 4.3	Present	**Found during floristic surveys**
Silene serpenticola	Serpentine catchfly	CRPR 1B.2/FSS	Absent	Not found in area floristic surveys
Streptanthus howellii	Howell's jewel-flower	CRPR 1B.2/FSS	Absent	Not found in area floristic surveys
Thermopsis gracilis var. *gracilis*	Slender false lupine	CRPR 4.3	Present	**Found during floristic surveys**
Viola primulifolia ssp. *occidentalis*	Western bog violet	CRPR 1B.2	Absent	Not found in area floristic surveys

CE: CA Endangered **CT:** CA Threatened **FE:** Federal Endangered **FT:** Federal Threatened **FC**: Federal Candidate for Listing **CSC:** State Species of Concern **FSS:** Forest Service Sensitive Species (Six Rivers National Forest). **FSS&M**: Forest Service Survey and Manage Species. **California Rare Plant Rank (CRPR):** CRPR 1A: Plants Presumed Extinct in California; CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere; CRPR 2: Plants Rare, Threatened, or Endangered in California, but more common elsewhere; CRPR 3: Plants About Which We Need More Information – A Review List; CRPR 4: Plants of Limited Distribution – A Watch List; Threat Ranks: 0.1 – Seriously threatened in California (high degree/immediacy of threat); 0.2 – Fairly threatened in California (moderate degree/immediacy of threat); 0.3 – Not very threatened in California (low degree/immediacy of threats or no current threats known).

Table 2.3.3-2. Bryophytes, Fungi, and Lichen Species with Potential to Occur in the Proposed Area of Direct Impact

Scientific Name	Common Name (type)	Status	Habitat/Species Presence/Absence	Rationale
Boletus pulcherrimus	(fungus)	FSS & Survey & Manage Category B	Absent	Not found in area cryptogamic surveys
Buxbaumia viridis	(bryophyte)	Survey & Manage Category E	Absent	Not found in area cryptogamic surveys
Calicium adspersum	(lichen)	FSS & Survey & Manage Category E	Absent	Not found in area cryptogamic surveys
Cantharellus subalbidus	Montane chanterelle (fungus)	Survey & Manage Category D	Present	**Found during cryptogamic surveys**
Dendrocollybia racemosa	(fungus)	FSS	Absent	Not found in area cryptogamic surveys
Fissidens pauperculus	Minute pocket-moss	CNPS 1B.2/FSS	Absent	Not found in area cryptogamic surveys
Lobaria oregana	Lettuce lichen	Survey & Manage	Present	**Found during cryptogamic surveys**
Otidia smithii	(fungus)	FSS & Survey & Manage Category B	Absent	Not found in area cryptogamic surveys
Phaeocollybia olivacea	(fungus)	FSS & Survey & Manage Category E	Absent	Not found in area cryptogamic surveys
Ptilidium californicum	(bryophyte)	Survey & Manage Category A	Absent	Not found in area cryptogamic surveys
Schistostega pennata	(bryophyte)	Survey & Manage Category A	Absent	Not found in area cryptogamic surveys
Sowerbyella rhenana	(fungus)	FSS & Survey & Manage Category B	Absent	Not found in area cryptogamic surveys
Teloschistes flavicans	(lichen)	Survey & Manage Category A	Absent	Not found in area cryptogamic surveys
Tetraphis geniculata	(bryophyte)	Survey & Manage Category A	Absent	Found during cryptogamic surveys
Usnea longissima	Long-beard lichen	FSS	Absent	Not found in area cryptogamic surveys

CE: CA Endangered **CT:** CA Threatened **FE:** Federal Endangered **FT:** Federal Threatened **FC**: Federal Candidate for Listing **CSC:** State Species of Concern **FSS:** Forest Service Sensitive Species (Six Rivers National Forest). **Survey and Manage**: Forest Service Survey and Manage Species. **California Rare Plant Rank (CRPR) 1A: Plants Presumed** Extinct in California; CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere; CRPR 2: Plants Rare, Threatened, or Endangered in California, but more common elsewhere; CRPR 3: Plants About Which We Need More Information – A Review List; CRPR 4: Plants of Limited Distribution – A Watch List; Threat Ranks: 0.1 – Seriously threatened in California (high degree/immediacy of threat); 0.2 – Fairly threatened in California (moderate degree/immediacy of threat); 0.3 – Not very threatened in California (low degree/immediacy of threats or no current threats known).

Survey Results

Special-Status and CRPR 3 and 4 Plants

Several locations with special-status and CRPR 3 and 4 plant species were found in the proposed area of direct impact during the field surveys. No special-status or CRPR 3 or 4 plants were found at the Ruby 1 and Ruby 2 sites. Three special-status plant species, one CRPR 3 species, and nine CRPR 4 species, which do not meet the definition of special status but may be considered uncommon and sensitive, were found in the proposed area of direct impact along US 199. The plant species, their population sizes, and occurrence locations are listed by species in Table 2.3.3-3, and the species are summarized by project location below. Occurrences of special-status and CRPR 3 and 4 plants that were found at or near potential staging areas are listed in Table 2.3.3-3, but not described in the text below.

Plant species with a ranking of CRPR 3 are considered plants about which the CDFW California Natural Diversity Database and Rare Plant Status Review groups (300+ botanical experts from government, academia, non-governmental organizations, and the private sector) need more information to assign them to one of the other rare plant ranks or to reject them as a special-status species.[6] Species in this rare plant rank are typically taxonomically problematic. As with the other rare plant ranks and state and global rankings, a threat rank is assigned after the rank 3 as a decimal value (i.e., 3.1, 3.2, 3.3). The threat code definitions are included at the end of Table 2.3.3-1, above.

Although CRPR 4 plants do not meet the definition of "rare, threatened, or endangered," they are considered "of limited distribution or infrequent throughout a broader area in California, and their vulnerability or susceptibility to threat appears low at this time." These species are uncommon enough that their status should be monitored regularly. Specific CRPR 4 species in a project area may be considered of local concern or rare or unique to a region and therefore qualify as special-status species under CEQA (CEQA Guidelines Sections 15380 and 15125[a]) if, for example, they are at the periphery of the species' range, occur in an area where the taxon is particularly uncommon, or occur in unusual habitats or elevations. The CRPR 4 species at the project were evaluated under these criteria by reviewing distributional information available from herbarium records in the Consortium of California Herbaria online specimen database (Regents of the University of California 2009), Calflora (Calflora 2009), the PLANTS database (U.S. Department of Agriculture, Natural Resources Conservation Service 2009), and any recent biological information. A threat rank is also assigned after the rank 4 as a decimal value (i.e., 4.1, 4.2, 4.3).

As a generality, the CRPR 3 and 4 species that occur in the project share several characteristics: They are mostly associated with serpentine soils; geographically, many of them range from southern Oregon to northern California; and several of the species reach their southern or southwestern distributional limits close to the project area. While some of the species are more common in the northern portions of their ranges, others are state listed in Oregon. It is concluded that, while these plant species may be considered sensitive, they are not rare or unique in the project area (see ICF International 2010 for further details).

[6] California Department of Fish and Game. 2012. *Special Vascular Plants, Bryophytes, and Lichens List.* Available: <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf>. Accessed: July 12, 2012.

Table 2.3.3-3. Special-Status and California Rare Plant Rank (CRPR) 3 and 4 Plant Species Observed during Botanical Surveys

Species	CRPR Status[a]	State and Global Rank[a]	Project Site[b]	Location and Habitat (label per species polygon[c])
CRPR 1B and CRPR 2 (Special Status)				
Cardamine nuttalli var. *gemmata* Yellow-tubered toothwort	3.3	S2.2, G5T3	Patrick Creek Narrows Location 1	Southwest of road, at top of slope behind guard rail, in Douglas-fir forest; 20–30 scattered plants (PC1-CANUG-1 and -2 combined)
Cardamine nuttalli var. *gemmata* Yellow-tubered toothwort	3.3	S2.2, G5T3	Patrick Creek Narrows Location 2	Southeast of road, at curve south of bridge on gentle slope of ridge, in Douglas-fir forest; approximately 5 plants found during spring 2008 surveys; an additional approximately 70 plants were found in May 2011 site review (PC2-CANUG-1)
				West of road and south of bridge, on lower part of very steep (60°) slope, very rocky, partly shaded; 30–40 plants (PC2-CANUG-2)
				West of road and south of bridge, on lower part of very steep (60°) slope, very rocky, open; ~5 plants (PC2-CANUG-3)
				Large area east of road and north of bridge, on flat area and on lower rock-covered slope, partly shaded, in old Douglas-fir forest; approximately 1,000–2,000 plants (PC2-CANUG-4)
				West of road and north of bridge, and north of dirt river access road, flat to steep slope (45°), shaded, in Douglas-fir forest; ~50 plants (PC2-CANUG-6)
				West of road and north of bridge in areas between road and river, flat to gently sloping, partly shaded, rocky, in open Douglas-fir forest; ~30 scattered plants (PC2-CANUG-5)
Cardamine nuttalli var. *gemmata* Yellow-tubered toothwort	3.3	S2.2, G5T3	Patrick Creek Narrows Location 3, Potential Staging Area PM 25.44	On edge of road shoulder on gentle slope (10°), shaded; 121 plants (PC3-CANUG-1)
			Patrick Creek Narrows Location 3, Northeast of Potential Staging Area PM 25.55	Northeast of unofficial pullout and private driveway on very steep (55°) slope, rocky, in big-leaf maple–dominated forest; 6 plants (PC3-CANUG-2)
			Patrick Creek Narrows Location 3, Potential Staging Area PM 25.69	Edge of pullout at southwest side, on gravelly gentle slope, partly shaded; 50 plants (PC3-CANUG-3)
			Patrick Creek Narrows Location 3, Potential Staging Area PM 25.00	Edge of open area on rocky, mossy bank, moderate slope (20°); 7 plants (PC3-CANUG-4)
			Patrick Creek Narrows Location 3, Potential Staging Area PM 26.15	Edge of pullout, gentle slopes, gravelly soils; 7 scattered plants (PC3-CANUG-5 and -6 combined)
			Patrick Creek Narrows Location 3, Potential Staging Area PM 25.55	South of private driveway, in vegetated area beyond the road shoulder (a potential staging area), approximately 30 plants (PC3-CANUG-7)

Species	CRPR Status[a]	State and Global Rank[a]	Project Site[b]	Location and Habitat (label per species polygon[c])
Pinguicula macroceras Horned butterwort	2.2	S3.2, G5	Patrick Creek Narrows Location 1	One small patch at west end of project site on north side of road, at edge of serpentine-influenced stream that parallels road shoulder; 20 plants (ramets) (PC1-PIMA-1)
			Patrick Creek Narrows Location 1, Staging Area PM 19.80	On nearly vertical slope at back of large pullout, on edge of small waterfall; 5–10 plants (ramets) (PC1-PIMA-2)
Lomatium martindalei Coast Range lomatium	2.3	S2.3, G5	Patrick Creek Narrows Location 2	In Douglas-fir forest in small patch at the north end of the project site north of the bridge on west side of road south of dirt access road to river; 25 plants (PC2-LOMA-1)
CRPR 3				
Iris bracteata Siskiyou iris	3.3	S3.3?, G4G5	Patrick Creek Narrows Location 1	Approximately 200 plants on steep, uphill slope with open canopy at potential staging area at PM 19.80 (PC1-IRBR-1)
				Approximately <0.5% aerial cover in the polygon labeled PC1-IRBR-2 on the Locations of Rare Plants map. Plants are under and behind the metal beam guard rail to be replaced on the south side of the road, west of the proposed retaining wall.
				Approximately 2% cover in the polygon labeled PC1-IRBR-3. Plants are scattered north of roadside ditch, within 1st 10-20 ft from ground and going up the slope, west of western scarp on the north side of the road.
				Fewer than 10 plants scattered in the polygon labeled PC1-IRBR-4. Plants are north of roadside ditch, within 1st 10-20 ft from ground and going up the slope, between 2 scarps on the north side of the road.
				Approximately <1% cover in the polygon labeled PC1-IRBR-5. Plants are north of ditch, within 1st 10-20 ft from ground and going up the slope, west of large eastern scarp on the north side of the road.
Iris bracteata Siskiyou iris	3.3	S3.3?, G4G5	The Narrows	Approximately <0.5% cover in polygons labeled N-IRBR-1 through -4. Plants scattered on slope above (north of) the highway, including above proposed slope removal, and possibly on slope below highway
Iris bracteata Siskiyou iris	3.3	S3.3?, G4G5	Patrick Creek Narrows Location 2	Approximately 3% cover in an approximately 1000 sq ft area in the polygon labeled PC2-IRBR-1; the rest of the polygon has approximately <0.5% cover. Plants are on large proposed cut slope southwest of bridge on the west side of the road.
				Approximately 3% cover in the polygon labeled PC2-IRBR-3. Plants are on an existing cut slope, very close to the southwest corner of the existing bridge on the west side of the road.
				1 clump approximately ½ way from the bridge to the northern limits of the project, labeled as PC2-IRBR-9, on the west side of the road.

Species	CRPR Status[a]	State and Global Rank[a]	Project Site[b]	Location and Habitat (label per species polygon[c])
				In the polygon labeled PC2-IRBR-8 on the west side of the road, approximately 5-7% cover north of the short skid road extending from the highway to the river at an approximate 60 degree angle, and approximately 2% cover just west of the highway shoulder between the short skid road and the northern limits of the project to the highway curve.
				From south to north, on the east side of the road: 6 clumps of varying sizes (none greater than 1 ft diameter) in the vicinity of where the proposed retaining wall work will be (point labeled PC2-IRBR-4); 4 clumps (none greater than 1 ft diameter) in the vicinity of the road realignment (point labeled PC2-IRBR-5); 2 clumps approximately1-ft diameter on the face of the existing cut slope in the vicinity of the proposed road realignment (point labeled PC2-IRBR-6)
				In the polygon north of the proposed road disturbance (PC2-IRBR-7) on the east side of the road, percent cover varies from south to north within the polygon, from approximately 10%, to approximately 2%, to approximately ~3% cover. The center of the polygon is very shaded and may not provide adequate sunlight for this iris species.
Iris bracteata Siskiyou iris	3.3	S3.3?, G4G5	Patrick Creek Narrows Location 3	Approximately 8 plants on gentle slope in semi-open canopy, southeast of private driveway on northbound side of highway (PC3-IRBR-1)
Iris bracteata Siskiyou iris	3.3	S3.3?, G4G5	Washington Curve	Approximately 3-5% cover in an area west of the proposed cut limits on steep uphill slope(WC-IRBR-1). Approximately <0.5% cover within proposed cut limits (WC-IRBR-2).
Iris bracteata Siskiyou iris	3.3	S3.3?, G4G5	Outside of proposed project areas	Thousands of plants on slopes and road shoulders along US 199 (not shown on map; observed during spring 2011 site visits)
CRPR 4				
Cypripedium californicum California lady's-slipper	4.2	S3.2, G5	Patrick Creek Narrows Location 1	PM 20.57 along seep/stream on moist serpentine soils at base of steep cut bank on uphill (north) side of road; 25 plants (PC1-CYCA-1)
				PM 20.58 along seep/stream on moist serpentine soils at base and lower slope of steep cut bank on uphill (north) side of road; ~90 plants (PC1-CYCA-2)
			The Narrows	In seep on steep rocky bank on northwest side of road; ~10–20 plants (N-CYCA-1)
Darlingtonia californica California pitcherplant	4.2	S3.2, G3G4	Patrick Creek Narrows Location 1	Serpentine seep at the east end of the project site on north side of road, and along small stream that flows out from it parallel to road shoulder; approximately 50 plants, or ramets (PC1-DACA-1)
Erigeron cervinus Siskiyou daisy	4.3	S3.3, G3	Patrick Creek Narrows Location 2	On mossy rocks on the left bank of the Middle Fork Smith River, about 400 feet downstream from bridge; 1 plant (PC2-ERCE-1)
				On mossy rocks on the left bank of the Middle Fork Smith River, about 300 feet upstream from bridge; ~50 plants (PC2-ERCE-2)

Species	CRPR Status[a]	State and Global Rank[a]	Project Site[b]	Location and Habitat (label per species polygon[c])
Lathyrus delnorticus Del Norte pea	4.3	S3.3, G4	Patrick Creek Narrows Location 3	In roadside ditch at east end of project site; 1 plant (PC3-LADE-1)
Lomatium howellii Howell's lomatium	4.3	S3.3, G4G5	Patrick Creek Narrows Location 1	At base of cut bank on serpentine soils on uphill side of road at PM 20.52; ~55 plants (PC1-LOHO-1)
				At top of bank on south side of road, just below guard rail; 2 plants (PC1-LOHO-2)
				At base of cut bank on serpentine soils on uphill side of road at PM 20.62; 20 plants (PC1-LOHO-3)
Poa piperi Piper's blue grass	4.3	S3.3, G4	Patrick Creek Narrows Location 1	On road shoulder adjacent to guard rail on south side of road (PC1-POPI-1), and on steep slope below; 20 plants, and approximately 30 plants at potential staging area at PM 19.80 (PC1-POPI-2)
			The Narrows	At base of very steep slope on north side of road; 3 plants (N-POPI-1),
			Washington Curve	On steep cut bank above road near PM 26.5; ~ 10 plants (WC-POPI-1)
Salix delnortensis Del Norte willow	4.3	S3.3, G4	Patrick Creek Narrows Location 1	At base of cut bank and roadside swale on moist serpentine soils on uphill side of road at PM 20.52, 120 plants, mostly small (PC1-SADE-1); also approximately 15 plants on uphill slope at potential staging area at PM 19.80 (PC1-SADE-2)
			The Narrows	At base of very steep slope on north side of road; 1 plant (N-SADE-1)
Saxifraga howellii Howell's saxifrage	4.3	S3.3, G4	Patrick Creek Narrows Location 2	On mossy rocks on the left bank of the Middle Fork Smith River, about 100 feet downstream from bridge; hundreds of plants (PC2-SAHO-1)
				On mossy rocks on the left bank of the Middle Fork Smith River, about 300 feet upstream from bridge; hundreds of plants (PC2-SAHO-2)
Thermopsis gracilis var. *gracilis* Slender false lupine	4.3	S3.3, G4T3T4	Washington Curve	At top of steep cut bank near PM 26.50; dense patch of stems, approximately 3 x 1 meters (WC-THGRG-1)

[a] See Appendix N for explanation of CRPR status and global and state rank.

[b] Patrick Creek Narrows Location 1 and the Narrows are in Hurdygurdy Butte USGS 7.5-minute quadrangle; Patrick Creek Narrows Locations 2 and 3 and Washington Curve are in the Shelly Creek Ridge quadrangle.

[c] Label per species polygon refers to the label shown on each Locations of Rare Plants map (Addendum to NES 2012).

Patrick Creek Narrows Location 1

Two special-status plants were recorded at this location: yellow-tubered toothwort (along the highway shoulders to the west of the proposed retaining wall, 20–30 plants) and horned butterwort (25–30 plants in the Darlingtonia seep at the western end of the project location). More horned butterwort (5–10) plants occur on the steep slope at a seasonal seep at the potential staging area at PM 19.80.

Five CRPR 4 plants were recorded: Howell's lomatium, Piper's bluegrass, Del Norte willow, California lady's slipper, and California pitcher plant. Howell's lomatium (two plants) and Piper's bluegrass (20 plants) were identified during surveys south of US 199 on the slope between the highway and the Middle Fork Smith River. The seeps and ditches along the toe of the slope north of the highway provide habitat for Del Norte willow (120 plants), additional Howell's lomatium (approximately 75 plants), and California lady's-slipper (approximately 115 plants). The small Darlingtonia seep at the western end of the project location supports approximately 50 California pitcher plant plants. Del Norte willow (approximately 15 plants) and Piper's bluegrass (approximately 30 plants) were also found on the steep slopes at the potential staging area at PM 19.80 during a site visit in May 2011.

CRPR 3 plant, Siskiyou iris, was not flowering during botanical surveys conducted prior to circulation of the DEIR/EA, so these plants were recorded as an unknown species of iris (*Iris* sp.). A variety of factors influence whether plants bloom or emerge as seedlings in a given year, including availability and quantity of air and soil moisture, light, and temperature, plus weather patterns, competition by other plants, ground disturbance, and other factors. The iris plants were not observed blooming for several years, but they were observed flowering during a May 11, 2011, visit to check on the flowering and fruiting success of transplanted yellow-tubered toothwort at Patrick Creek Narrows Location 2. After the iris plants were identified as Siskiyou iris, field reviews were conducted on May 25 and August 26, 2011, to confirm the approximate areas occupied by this species at each location on US 199. This species of iris is unlikely to occur and was not observed occurring at Ruby 1 and Ruby 2 on SR 197 because this species tends to occur in shady (and drier) forests, such as pine forests (per online Flora of North America, http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101695, accessed on 8/7/12). It is reported to occur at 1,100–3,600 feet in the Klamath Ranges and southern Oregon. Siskiyou iris was scattered on both sides of the highway at Patrick Creek Narrows Location 1 in open and partially shaded canopies on gentle to steep slopes, with aerial percent cover ranging from less than 0.5% to approximately 2% in polygons on the Locations of Rare Plants map. Percent cover was generally used to quantify amount of Siskiyou iris because iris plants are clonal and the size of clumps varies. Counting the number of plants or clumps does not provide an indication of the area occupied by this species. Approximately 200 Siskiyou iris plants (percent cover was not assessed at the potential staging area) also occurred along the uphill slope at the potential staging area at PM 19.80.

Patrick Creek Narrows Location 2

Numerous (approximately 1,190 to 2,200) yellow-tubered toothwort (*Cardamine nuttallii* var. *gemmata*) plants were identified at this location between 2008 and 2011. This plant is a CRPR 3.3 plant (more information needed; not very threatened in California), and not very threatened in California (low degree/immediacy of threats or no current threats known). This plant is locally

abundant, but rare elsewhere. In an email to the Department on August 4, 2009, John McRae (Six Rivers National Forest Botanist) said there have been about 25 reported occurrences of this species in the project vicinity, and it has no special status there with the Forest Service.

One other special-status plant was recorded at this location: Coast Range lomatium (Lomatium martindalei) (25 plants).Two CRPR 4 plant species were recorded in the proposed area of direct impact at this location: Siskiyou daisy (about 51 plants) and Howell's saxifrage (100s of plants). Siskiyou iris, a CRPR 3 plant, was also found in May 2011 at this location. The occurrences were mapped as polygons on the Locations of Rare Plants map during the same site visits, as discussed for Patrick Creek Narrows Location 1. Siskiyou iris was scattered on both sides of the highway at Patrick Creek Narrows Location 2 in open and partially shaded canopies on gentle to steep slopes, with aerial percent cover ranging from less than 0.5% to approximately 10% in polygons on the Locations of Rare Plants map.

Patrick Creek Narrows Location 3

A small group of yellow-tubered toothwort plants (six plants) were found in the proposed area of direct impact in an area south of the proposed wall (east of the highway). A single Del Norte pea, a CRPR 4 plant, was found west of the highway at the north end of Patrick Creek Narrows Location 3.

The Narrows

No special-status plants were found in the proposed area of direct impact at this project location. Three CRPR 4 plants were found along the road shoulder on the north side of the road: Del Norte willow (one plant), Piper's bluegrass (three plants), and California lady's-slipper (and ~10–20 in a small hillside seep). Siskiyou iris was also found in May 2011 at this location. The occurrences were mapped as polygons on the Locations of Rare Plants map during the same site visits, as discussed for Patrick Creek Narrows Location 1. Siskiyou iris was scattered on the north side of the road on steep, open-canopied slopes, with less than 0.5% cover in polygons on the Locations of Rare Plants map.

Washington Curve

No special-status plants were found in the proposed area of direct impact at this project location. Two CRPR 4 plants were found on the steep bank on the north side of the road: slender false lupine (a dense patch of stems 3.5 feet by 15.5 feet) and Piper's bluegrass (three plants). Siskiyou iris was also found in May 2011 at this location. The occurrences were mapped as polygons on the Locations of Rare Plants map during the same site visits, as discussed for Patrick Creek Narrows Location 1. Siskiyou iris was scattered on the north side of the road on steep, partially closed- or closed-canopied slopes, with approximately 3% to 5% cover in an area west of the proposed cut limits and less than 0.5% cover within the proposed cut limits, in polygons on the Locations of Rare Plants map.

Bryophytes, Fungi, and Lichens

Surveys are required for specific Survey and Manage (S&M) species prior to disturbance on federal lands to be in compliance with the Presidential Record of Decision—Standards and Guidelines (ROD) of 1994, 2001, and 2003. S&M lichens, bryophytes, and fungi, collectively

known as cryptogams,[7] play many important roles in healthy ecosystems. The survey was conducted per 2001 protocol for the Department in project areas within Six Rivers National Forest on US 199 in fall 2008 and spring 2009.

Two S&M species were located during field surveys, one within the project boundary on US 199, the other just outside. The foliose lichen, lettuce lichen (*Lobaria oregana*) was found on the duff under old Douglas-firs and draping the understory at Patrick Creek Narrows Location 2. This small old grove is bound by road, river, and fire, with serious compaction and disturbance problems. In spite of this, the grove has good potential for S&M species and fits most criteria for suitable habitat.

The other S&M species, *Cantharellus subalbidus*, is a category D (uncommon) fungal species. It was found just beyond the boundary of the Washington Curve site, the most prolific location for fungi in the project area. Five different *Ramaria* species were also at the Washington Curve site, but none were S&M species. Although the fungal fruiting season was relatively good, there were few good potential mushroom habitats in the project area on US 199. Most terrestrial fungi require a decent organic layer and do not do well on scree slopes and rocky cliffs, the makeup of much of the BSA. Very few cryptogams were found on the snags or individual trees on those slopes.

2.3.3.3 Environmental Consequences

Effects on Non-Special-Status Plants

The impact of construction of the proposed project at all project locations on non-special-status plants would consist of the loss of habitat and displacement. The project would result in localized effects to plant species. The proposed project and area of impact are located at the edge of higher quality habitat for plant species.

The Patrick Creek Narrows (Locations 1, 2, and 3), the Narrows, and Washington Curve project sites are adjacent to the Six Rivers National Forest. This area supports a large variety of non-special-status species. The proposed project would affect edges of potential habitat along the highway and outside the areas of higher quality habitat. The areas of plant habitat that would be removed are listed in Table 2.3.3-4. However, construction activities would occur mostly in areas that are already currently disturbed.

Effects on Special-Status and CRPR 3 and 4 Plants and Bryophytes, Lichen, and Fungi

No effects on special-status or CRPR 3 and 4 plants, or special-status bryophytes, lichen, or fungi would occur at Ruby 1 or Ruby 2 because none were found at these sites. CRPR 1B, 3, and 4 plant species may be removed at all three Patrick Creek Narrows locations, but no special-status bryophytes, lichens, or fungi would be removed at these locations. There are no special-status bryophytes, or fungi at any of the Patrick Creek Narrows locations. The only special-status lichen species is at Location 2, and it would be avoided. CRPR 3 and 4 plant species would be permanently affected at the Narrows, as detailed below. No special-status plants, bryophytes, lichens, or fungi were found at the Narrows. No special-status plants, bryophytes, or lichens are within proposed construction areas at the Washington Curve site. The CRPR 3 and 4 sensitive

[7] *Cryptogams* are plants that reproduce by spores.

Table 2.3.3-4. Proposed Area of Plant Habitat to Be Disturbed and Removed at Each Project Site and Alternative

Project Location and Alternative	Proposed Area of Plant Habitat to Be Temporarily Disturbed and Restored (acres) by Location and Alternative	Proposed Area of Plant Habitat to Be Permanently Removed (acres) by Location and Alternative
Patrick Creek Narrows Location 1	0.25	0.01
Patrick Creek Narrows Location 2, Upstream Bridge Replacement Alternative	3.0	0.86
Patrick Creek Narrows Location 2, Downstream Bridge Replacement Alternative	0.4	0.70
Patrick Creek Narrows Location 2, Bridge Preservation with Upslope Retaining Wall Alternative	2.0	0.70
Patrick Creek Narrows Location 3	0.3	0.1
The Narrows	0.4	0.2
Washington Curve, Cut Slope Alternative	0.1	0.9
Washington Curve, Retaining Wall Alternative	0.6	0.9

plant populations and special-status fungus would be avoided. The special-status and CRPR 3 and 4 species outside of the construction areas, at/near potential staging areas, would not be disturbed because they are off of the paved and graveled surfaces where staging would occur.

Patrick Creek Narrows Location 1

Several populations of special-status and CRPR 3 and 4 plants were recorded at this location. The placement of the retaining wall south of the highway would affect two CRPR 4 species—Howell's lomatium (two plants) and Piper's bluegrass (20 plants)—that are present south of US 199 on the slope between the highway and the Middle Fork Smith River.

After circulation of the DEIR/EA, further design work lead to recognition by the Department that the entire length of metal beam guard rail needed to be replaced. This additional work may affect the approximately 20 to 30 scattered yellow-tubered toothwort plants (polygon PC1-CANUG-2 on the Location of Rare Plants map for this location) and approximately two or three clumps of Siskiyou iris (polygon PC1-IRBR-2) at this location. Most of the Siskiyou iris clumps in this polygon, as well as clumps in the other polygons of Siskiyou iris, would not be affected by proposed project activities. Also, further design work lead to a need to recontour the drainage ditch on the uphill side of the highway. This work would not affect the Del Norte willow on the slope as long as the recontoured ditch is compacted using hand tools rather than a heavy equipment roller. The lowest portions of the two polygons, PC1-LOHO-1 and -3, containing approximately 55 and 20 Howell's lomatium plants, respectively, on the uphill side of the road, may be affected by fill placed during recontouring of the adjacent drainage ditch. None of these plants were found during site visits on May 11, 2011, and May 25, 2011, by Department botanists. The reason for the absence of these plants is unclear; it may have been related to a later blooming season, as observed by multiple Department botanists in 2011, or conditions were unfavorable for blooming of this species in 2011 or the plants were covered by so much slide material during landslides that happened in 2009/2010 that they were killed or temporarily unable to emerge. This vicinity is known for being an active slide area and typically signed as

such during winter months. The California lady's-slipper orchid, California pitcher plant, and horned butterwort plants at this location are far enough away from proposed project activities that they would not be affected. Also, the drainage patterns and anticipated runoff would essentially be maintained as it currently exists, so the proposed project would not affect these plants hydrologically. The Siskiyou iris, Piper's bluegrass, horned butterwort, and Del Norte willow at the potential staging area at PM 19.80 would not be affected by proposed project activities because the plants found are on the uphill slope where no work would occur.

Patrick Creek Narrows Location 2

Several populations of special-status and rare plants were recorded at this location. Proposed bridge work and road realignment at Patrick Creek Narrows Location 2 would affect areas of one special-status plant, yellow-tubered toothwort. This plant is locally abundant, but rare elsewhere. In his email from August 2009, John McRae (Six Rivers National Forest Botanist) said there have been about 25 reported occurrences of this species in the project vicinity, and it has no special status with the Forest Service. All three alternatives involve a slope cut west of the highway that would remove approximately 30–40 yellow-tubered toothwort plants in polygon PC2-CANUG-2, south of the bridge. Each of the alternatives avoids effects on other polygons of yellow-tubered toothwort at Patrick Creek Narrows Location 2, except where noted below. One other special-status plant, Coast Range lomatium, would not be affected. Several populations of CRPR 4 plants, including Siskiyou daisy and Howell's saxifrage, were recorded at this location, but these would not be affected. None of the 3 alternatives would have an effect on the special-status lichen.

Siskiyou iris, a CRPR 3 species, would be affected by proposed bridge and road realignment activities. Of the polygons indicating Siskiyou iris on the Locations of Rare Plants map for this project location, irises in polygon PC2-IRBR-1 and a small portion of the plants on the face of the cut slope in the polygon labeled PC2-IRBR-2 (i.e., a sliver in the westernmost portion) would be removed to accommodate the proposed road realignment, regardless of alternative. Each of the alternatives avoids effects on other polygons of Siskiyou iris at Patrick Creek Narrows Location 2, except where noted below.

Upstream Bridge Replacement Alternative

In addition to the plants impacts listed above, this alternative would remove the most southerly 10% of an area that includes approximately 50 yellow-tubered toothworts in the polygon labeled PC2-CANUG-5, west of the highway and north of the bridge; therefore, proposed work would affect approximately five to 10 plants in this polygon. This alternative would also remove the five yellow-tubered toothwort plants in polygon PC2-CANUG-3 and the Siskiyou iris plants in polygon PC2-IRBR-3.

Downstream Bridge Replacement Alternative

In addition to the plant impacts listed under Patrick Creek Narrows Location 2 above, this alternative may affect about 10 % of the yellow-tubered toothwort population that occupies the habitat east of the highway and north of the bridge, in the polygon labeled PC2-CANUG-4. This polygon was estimated to contain 1,000 to 2,000 plants during pre-DED surveys; therefore, up to approximately 100 to 200 of these plants in this polygon would be removed. This alternative would avoid affecting the yellow-tubered toothwort plants in polygons PC2-CANUG-3 and PC2-CANUG-5 that the upstream alignment would remove.

After circulation of the DEIR/EA, further design work with computer modeling determined more exact alignment needs. That design work revealed that the alignment needed to be adjusted slightly at this location to accommodate STAA trucks and other large vehicles. A narrow sliver cut may be needed on the face of the cut slope southeast of the bridge where some yellow-tubered toothwort plants exist in polygon PC2-CANUG-1; effects on Siskiyou iris in this vicinity are discussed above. A site review was conducted on May 11, 2011, along the newly proposed curve adjustment to confirm the number of yellow-tubered toothwort plants in polygon PC2-CANUG-1 that might be affected. As mentioned in Table 2.3.3-3, approximately 70 additional plants were found that were not apparent during the spring 2008 survey; approximately 20 to 30 of those plants would be affected by the newly proposed curve adjustment.

Siskiyou iris plants represented by the points labeled PC2-IRBR-4, -5, and 6 on the Locations of Rare Plants map would be removed with the proposed downstream alignment, in addition to the iris plants noted to be removed regardless of alternative. This alternative would avoid the Siskiyou iris polygon PC2-IRBR-3 that the upstream alignment would remove.

Bridge Preservation with Upslope Retaining Wall Alternative

In addition to the plant impacts listed under Patrick Creek Narrows Location 2 above, this alternative affects about 5% of the yellow-tubered toothwort plants that occupy the habitat east of the highway and north of the bridge, in the polygon labeled PC2-CANUG-4. This polygon contains 1,000–2,000 plants. It is estimated that no more than 5% of these plants would be removed.

This alternative would also remove Siskiyou iris in the polygon PC2-IRBR-3 and possibly in polygons PC2-IRBR-5 and -6.

Patrick Creek Narrows Location 3

The downslope retaining wall or culvert work proposed at Patrick Creek Narrows Location 3 may affect the six yellow-tubered toothwort plants in polygon PC3-CANUG-2. A single Del Norte pea (CRPR 4.3) plant was found west of the highway at the northern post mile limits of Patrick Creek Narrows Location 3. This plant would not be affected because no work will be done in that area. A small portion of the yellow-tubered toothwort in polygon PC3-CANUG-7 would also possibly be affected if the area beyond the paved shoulder, south of the private driveway, was used as a potential staging area. The Siskiyou iris plants in polygon PC3-IRBR-1 would also possibly be affected by this same potential staging area. The other polygons of yellow-tubered toothwort (PC3-CANUG-3, -4, -5, and -6) included on the Locations of Rare Plants maps for this location would not likely be affected because they are beyond the paved or graveled surfaces of potential staging areas.

The Narrows

The slope cut at the Narrows would remove one Del Norte willow, three Piper's bluegrass, approximately 10 to 20 California lady's-slipper, and the Siskiyou iris polygons north of US 199. No other rare plants were found in the potential area of ground disturbance for this location. Special-status and CRPR 3 and 4 plant species that were observed to occur above and west and east of the limits of the proposed slope cut (not mapped) would not be affected by proposed project activities.

Washington Curve

Both alternatives proposed for Washington Curve would have no effect on two populations of CRPR 4 plant species: slender false lupine and Piper's bluegrass. No special-status or other rare plants were found in the botanical survey area at Washington Curve. Neither alternative would have an effect on the sensitive fungus. The Siskiyou iris plants in polygon WC-IRBR-1 would be avoided, but those in polygon WC-IRBR-2 would be removed by construction activities.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no construction and therefore no potential for construction activities to affect special-status or sensitive plants, bryophytes, lichens, and fungi.

2.3.3.4 Avoidance, Minimization, and/or Mitigation Measures

Minimize Effects on Special-Status and CRPR 3 and 4 Plants, Lichen, and Fungi

All special-status lichen and fungi identified during botanical surveys will be avoided.

Typically, mitigation is proposed when potential effects on special-status or listed plant species are anticipated to be adverse. All sensitive plant species that would be affected by proposed construction activities (i.e., yellow-tubered toothwort, California lady's-slipper, Howell's lomatium, Piper's bluegrass, Del Norte willow, and Siskiyou iris) are CRPR 3 or 4 species and considered uncommon but generally not special-status species. Potential effects to yellow-tubered toothwort at Patrick Creek Narrows Locations 1 through 3 are higher than those anticipated prior to circulation and comments on the DEIR/EA (i.e., currently, approximately 266 to 386 yellow-tubered toothwort plants are anticipated to be potentially affected out of approximately 1,431 to 2,451 plants, or approximately 11% to 27%, compared with the 3% to 10% of plants estimated to be affected in the DEIR/EA). The number of plants anticipated to be affected is still low when considering the abundance of this species in the vicinity of the US 199 corridor and on lands that are outside of proposed areas of ground disturbance, such as the approximately 25 occurrences on Six Rivers National Forest lands. The Department coordinated with CDFW and determined that additional potential effects would not be adverse or cumulatively significant because of the abundance of occurrences of this species at Patrick Creek Narrows Locations 1, 2, and 3; along and adjacent to US 199; and on Six Rivers National Forest lands (LaBanca pers. comm. 7/8/11). The Avoidance, Minimization, and/or Mitigation Measures, below, for yellow-tubered toothwort will assist in avoiding and minimizing impacts on this species. CDFW concurred with this finding during the July 8, 2011, phone discussion. Therefore, mitigation for potential effects on yellow-tubered toothwort is not necessary.

Impacts on CRPR 4 species are generally not mitigated unless the population is significant, but good stewardship and recognition of the potential importance of the CRPR 3 and 4 species occurring within project limits prompts the Department to assess and attempt minimization measures for species that would be affected by proposed construction activities. As noted above, only five (of 10) CRPR 3 and 4 species within project areas would be affected by project activities. One of the CRPR 4 species that would be affected by proposed construction is California lady's-slipper, a CRPR 4.2 species. This species is more sensitive than CRPR 4.3 species because it is threatened by horticultural collecting and logging; many protected

populations on Forest Service land are not reproducing; and its habitat is restricted to wet areas, usually associated with serpentine, an uncommon soil/habitat (California Native Plant Society 2010). Although this species is more sensitive than other CRPR 4 species within project limits, only ~8 to 15% of plants within project areas would be affected, and minimization measures are proposed below in an attempt to offset effects on this species at the Narrows. The other CRPR 4.2 species is California pitcherplant; it is threatened by horticultural collecting and mining and is restricted to generally serpentine seeps or wet areas, which are also uncommon habitats. Construction activities have been amended to avoid potential effects on this species.

The minimization measures proposed below are for the following sensitive plant species: California lady's-slipper, Howell's lomatium, Piper's bluegrass, Del Norte willow, yellow-tubered toothwort, and Siskiyou iris, all of which occur in areas anticipated to have construction impacts.

Designate and Fence Environmentally Sensitive Areas for Sensitive Plants, Lichen, and Fungi and Their Habitats

The Department will avoid and minimize potential impacts on sensitive plants and sensitive plant habitat to the greatest extent practicable during project construction.

Wherever any sensitive plants are close to construction, staging, or disposal areas, temporary exclusionary fencing or stakes/flagging will be placed to protect them, buffering them from disturbance. These areas will be designated as Environmentally Sensitive Areas and shown on the project plans. No construction workers or construction equipment will be permitted in these areas.

Relocate Sensitive Plants, When Possible

The Department will attempt to relocate special-status and sensitive (i.e., all CRPR) plants that are in areas of soil disturbance. These will be salvaged with methods appropriate to the particular species (i.e., digging up and replanting clumps of yellow-tubered toothwort tubers at Patrick Creek Narrows Locations 2 and 3; collecting and sowing seed of Piper's bluegrass at Patrick Creek Narrows Location 1 and the Narrows and potentially transplanting some plants; digging up rhizome clusters and surrounding soil of California lady's-slipper at the Narrows; collecting and sowing seed from Howell's lomatium at Patrick Creek Narrows Location 1; taking and replanting Del Norte willow cuttings at the Narrows; and digging up rhizome clusters and replanting clumps of Siskiyou iris at Patrick Creek Narrows Location 2 and possibly Locations 1 and 3). Experimental trials of proposed minimization measures were conducted in 2010 for yellow-tubered toothwort to determine the feasibility and potential success of the proposed measures. These trials occurred in areas where proposed construction impacts are likely , and transplantation occurred nearby but outside proposed project limits and in suitable habitat. This occurred in consultation with the Forest Service. The Department monitored the results of the trials in 2011 and 2012 and determined the trials to be successful. The measures will be expanded to encompass remaining yellow-tubered toothwort areas anticipated to be affected. Replanting will occur in suitable habitat in the project vicinity within the Department's right-of-way or in a location agreed upon by the Department and the landowner of the parcel where transplanting is proposed. Transplants will be monitored for a 3-year period to assess successful

re-establishment of at least some individuals of the transplanted species and success of the transplanting techniques used.

Some studies show that transplantation is often unsuccessful (e.g., Fiedler 1991 in California Native Plant Society 1998) and not considered viable mitigation by the CNPS and others for project impacts on rare and listed plant species (California Native Plant Society 1998). However, transplantation is proposed as a minimization measure for California lady's-slipper, a sensitive but not rare species, at the Narrows in an attempt to maintain genetic diversity and minimize loss of individuals that would occur if no minimization measures were implemented.

Successful re-establishment will be assessed by recording survival of transplanted material or obvious expression of germinated seed, such as concentrations in the area that was seeded. Results will be noted in the monitoring reports. The Department acknowledges that the proposed transplanting and seed collection is experimental. Attempts to assist in re-establishing existing genetic diversity and individuals combined with weeding of invasive plant species in disturbed soil areas is responsible stewardship and will increase knowledge of sensitive plant re-establishment.

Natural seed dispersal by multiple native plant species above the proposed cut limits is anticipated to occur after the proposed slope cuts are constructed, which would assist in re-establishing native vegetation in areas on the new cut slopes that contain soil. Some proposed cut slopes are anticipated to be composed primarily of rock after construction. Seed dispersal down slopes and across the highway, most likely occurring by a combination of gravity, wind, water, erosion, and landslides/rockslides, is apparent in the patterns of the plant species occurrences observed during botanical surveys.

Implement Invasive Weed Control Program

As a compensatory measure to improve habitat for native plants in and adjacent to disturbed soil areas at the project locations and minimize competition from non-native/invasive plants, the Department will implement an interagency agreement with the Forest Service to provide additional funding for the invasive weed control program in the Middle Fork Smith River watershed.

2.3.4 Animal Species

2.3.4.1 Regulatory Setting

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

Federal laws and regulations pertaining to wildlife include the following:

- NEPA,
- Migratory Bird Treaty Act of 1918 (MBTA), and
- Fish and Wildlife Coordination Act.

State laws and regulations pertaining to wildlife include the following:

- CEQA,
- Sections 1600–1603 of the California Fish and Game Code, and
- Section 4150 and 4152 of the California Fish and Game Code.

In addition to state and federal laws regulating impacts on wildlife, there are often local regulations (e.g., county or city) that need to be considered when developing projects. If work is being done on federal land (e.g., Bureau of Land Management or Forest Service), then those agencies' regulations, policies, and Habitat Conservation Plans are followed.

2.3.4.2 Affected Environment

This section is summarized from the NES prepared for the proposed project (California Department of Transportation 2010).

Existing records of special-status animal species occurrences were consulted prior to conducting a site reconnaissance survey to determine which species have the potential to occur within the BSA. The following sources were consulted:

- USFWS species list for Del Norte County, and
- CNDDB (California Department of Fish and Game 2003) occurrence records for the project vicinity (Appendix O).

Focused bat surveys were conducted where suitable habitat was present. Based on the above sources, it was determined that no additional focused surveys for special-status animal species were necessary.

Special-status species such as the federally listed northern spotted owl, marbled murrelet, and southern Oregon/northern California coho salmon are known to occur and are assumed to be present in the BSA. The proposed action is likely to directly or indirectly affect these species. Table 2.3.4-1 summarizes special-status animal species found in the records searches.

No additional surveys were conducted for special-status animal species. If suitable habitat was present, then the species were assumed to be present.

Table 2.3.4-1. Special-Status Animal Species Assumed Present within the BSA

Scientific Name	Common Name	Status	Habitat/Species Presence/Absence	Rationale
Mammals				
Lasionycteris noctivagans	Silver-haired bat	CSC	Present	Assumed present
Martes pennanti Pacifica	Pacific fisher	FC/CSC	Present	Assumed present
Martes americana	American marten	FSS	Present	Assumed present
Birds				
Haliaeetus leucocephalus	Bald eagle	FD/CE/FSS	Present; non-nesting	No suitable nesting in project area
Falco peregrinus anatum	American peregrine falcon	FD/CE/FSS	Non-nesting	Assumed present
Accipiter gentilis	Northern goshawk	CSC/FSS	Non-nesting	Assumed present
Pandion haliaetus	Osprey	CSC	Present	Assumed present
Brachyramphus marmoratus	Marbled murrelet	FT/CE	Non-nesting	No suitable nesting in project area
Strix occidentalis caurina	Northern spotted owl	FT	Present	Assumed present in nesting season
Amphibians/Reptiles				
Ascaphus truei	Western tailed frog	CSC	Present	Assumed present
Plethodon elongatus	Del Norte salamander	CSC	Present	Assumed present
Clemmys marmorata	Western pond turtle	CSC/FSS/CFP	Present	Assumed present
Rana aurora aurora	Northern red-legged frog	CSC/FSS/CFP	Present	Assumed present
Rana boylii	Foothill yellow-legged frog	CSC/FSS	Present	Assumed present
Rhyacotriton variegatus	Southern torrent salamander	CSC	Present	Assumed present
Fish				
Acipenser medirostris	Green sturgeon	FT	Possible	No spawning
Oncorhynchus kisutch	Coho salmon—Southern Oregon/Northern California Coast ESU	FT/CT/CH/EFH	Present in Smith River and tributaries	Known to be present from records in CNDDB
Oncorhynchus tshawytscha	Chinook salmon—Southern Oregon and Northern California Coastal ESU	EFH	Present in Smith River and tributaries	Known to be present from records in CNDDB
Oncorhynchus clarki clarki	Coastal cutthroat trout	CSC/FSS	Present in Smith River and tributaries	Known to be present from records in CNDDB
Invertebrates				
Pristinicola hemphilli	Pristine pyrg (snail)	CSC	Present	Assumed present

Notes:
FE = Federal Endangered
FT = Federal Threatened
FC = Federal Candidate for Listing
FD = Federal Delisted
CE = California Endangered
CT = California Threatened
CH = Critical Habitat Designated
ESU = Evolutionarily Significant Unit
EFH = Essential Fish Habitat Species
CSC = California Species of Concern
FSS = Forest Service Sensitive Species (Six Rivers National Forest)

Bald eagle, peregrine falcon, marbled murrelet, northern spotted owl, green sturgeon, and coho salmon (Southern Oregon/Northern California Coast ESU) are listed as threatened or endangered under state and/or federal endangered species acts. These six animal species are discussed in Section 2.3.5, "Threatened and Endangered Species." The remaining species are discussed below.

Silver-Haired Bat (Lasionycteris noctovagans)—CSS

Silver-haired bat is a state Species of Concern. Silver-haired bat inhabit montane forests from the Oregon border south along the coast to San Francisco; in the summer, females occur in the northerly portion of this range. Summer habitats include coastal and montane coniferous forests. Silver-haired bats roost in hollow trees, snags, buildings, rock crevices, caves, and under bark. Females form nursery colonies or nest singly in dense foliage or hollow trees. CNDDB records show an occurrence in the Patrick Creek watershed near the BSA. Bat surveys were conducted in the BSA, and evidence of night-roosting bats was found at the Middle Fork Smith River Bridge. There was no evidence of day-roosting or maternity roosts.

Pacific Fisher (Martes pennanti Pacifica)—FC/CSC

Pacific fisher is a federal candidate for listing as threatened or endangered, a Forest Service Sensitive Species, and a state Species of Concern. Pacific fisher requires intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. This species require large areas of mature, dense forest. There are approximately 1–2 acres of conifer-dominated woodlands that would be cleared for this project that are suitable as Pacific fisher dispersal and foraging habitat.

The west coast population of Pacific fisher is declining, mainly because of habitat loss and fragmentation due to timber harvest, roads, urban development, recreation, and wildfires. Other threats include small population sizes and isolation, predation, and human-caused mortality from vehicle collisions, poaching, and incidental capture and injury. Therefore, the BSA is low-quality habitat since it includes a highway, and one of the causes of fisher mortality is vehicle strikes (Krohn et al. 1994).

American Marten (Martes americana)—FSS

American marten is a Forest Service Sensitive Species. This species inhabits mixed mesic mature coniferous forests, with large trees and snags, and with complex ground level physical structure. These features provide den sites, resting sites, thermal cover, and protection from predators. Den and resting sites are found in live trees, snags, logs, and root balls. Riparian and stream corridors are important for hunting and territory home ranges.

Martens are typically generalized carnivores preying upon a wide variety of species including voles, squirrels, mice, bird eggs, nestlings, insects, fish, young mammals, berries, wood fiber, lichen and grass.

Northern Goshawk (Accipiter gentillis)—CSC/FSS

Northern goshawk is a Forest Service Sensitive Species and a state Species of Concern. Northern goshawk nests mostly in conifers in deep woods, between 18 and 75 feet above ground. During winter, it may frequent lowlands with riparian and broken woodlands. It ranges the length of the state, but breeds primarily at the higher elevations. It breeds from April to September, with peak

activity from June through July (Polite & Pratt 1990). CNDDB shows no occurrences of northern goshawk reported within 10 miles of the project area (California Natural Diversity Database 2010). Since goshawks establish nests in deeply wooded areas, the trees flanking the highway are not suitable for goshawk habitat.

Osprey (Pandion haliaetus)—CSC/FSS

A state Species of Concern and Forest Service Sensitive Species, the osprey is a large fish-eating bird that can be found near ocean shores, bays, fresh-water lakes, and larger streams. It builds large nests built in treetops within 15 miles of fish-producing bodies of water. A CNDDB search shows no known ospreys nests in the BSA; however, suitable habitat for this species is present.

Other Migratory Birds

Migratory birds of many species are known to nest in habitats typical of the project area. The MBTA makes it illegal to pursue, hunt, take, capture, kill, or attempt to take, capture, or kill migratory birds and/or their nests. Only three species common in Del Norte County are not protected under the MBTA: house sparrow (*Passer domesticus*), rock dove (*Columba livia*), and common starling (*Sturnus vulgaris*).

Western Tailed Frog (Ascaphus truei)—CSC

Western tailed frog, a state Species of Concern, occurs in conifer-dominated habitats including redwood and Douglas-fir habitats. The CNDDB shows occurrences of tailed frogs near Patrick Creek Narrows Location 2 in the Patrick Creek watershed. This species can be found in cool, perennial streams with steep banks and dense vegetation, and frequently occurs in mature or late-successional forests.

Del Norte Salamander (Plethadon elongatus)—CSC

A state Species of Concern, Del Norte salamander is found in Del Norte, Siskiyou, and Humboldt Counties. The CNDDB shows occurrences of Del Norte salamander near Patrick Creek Narrows Location 2 in the Patrick Creek watershed. This species can be found in year-round in montane hardwood-conifer, Douglas fir, and redwood habitats. Habitats include lower elevations to elevations of up to about 4,000 feet. Del Norte salamander can be found in rocky rubble, under rotting logs, and under slabs of bark in damp sites. This species lays eggs in moist soil and does not require standing water for breeding.

Western Pond Turtle (Actinemys marmota)—CSC

Western pond turtle is a state Species of Concern. CNDDB has no known records of western pond turtle in the project area. These turtles can be found in permanent or semi-permanent freshwater aquatic habitats. During the spring or early summer, female pond turtles lay eggs in depressions they dig in sandy banks or on moist stream banks. Nest sites are typically within about 300 feet of a stream (Nussbaum et al. 1983).

Northern Red-Legged Frog (Rana aurora aurora)—CSC/FSS

Northern red-legged frog is a state Species of Concern and a Forest Service Sensitive Species. Red-legged frog is a medium to large sized frog. This species is divided into two subspecies: northern red-legged frog (*R. a. aurora*), which attains lengths around 3 inches, and the California red-legged frog (*R. a. draytonii*), which reaches lengths in excess of 5 inches. It is found in humid forests, woodlands, grasslands, and streamsides with plant cover. It is most common in

lowlands or foothills, and frequently found in woods adjacent to streams. Breeding habitat is in permanent water sources: lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps. It is found from sea level to 4,680 feet.

A CNDDB (2005) search revealed no known occurrences of northern red-legged frogs in the BSA. However, there is suitable habitat for northern red-legged frog in wetlands and other waters of the BSA.

Foothill Yellow-Legged Frog (Rana boylii)—CSC/FSS

Foothill yellow-legged frog is a Forest Service Sensitive Species and state Species of Concern. Foothill yellow-legged frog is a more aquatic species than northern red-legged frog. The CNDDB shows occurrences of foothill yellow-legged frogs in Patrick Creek watershed. This species occupies habitat in or near rocky streams. During cold weather, individuals seek cover under rocks in the streams or on shore within a few meters of water. This species is rarely encountered far from permanent water. From mid-March to May, these frogs lay egg clusters and attach them to gravel or rocks in moving water near stream margins. The eggs hatch in about 5 days.

It is likely foothill yellow-legged frog is present in the Middle Fork Smith River, since this water body provides suitable habitat. Also, because tadpoles of this species transform in 3 to 4 months, they could be present in the Middle Fork Smith River all summer.

Southern Torrent Salamander (Rhyacotriton variegatus)—CSC

A state Species of Concern, southern torrent salamander can be found in coastal redwood, Douglas-fir, mixed conifer, montane riparian, and montane hardwood-conifer habitats in cold, well-shaded, permanent streams and seepages. The areas near the inlets/outlets of the some of the project culverts that are being replaced may have habitat suitable for southern torrent salamanders.

Chinook Salmon—Southern Oregon and Northern California Coastal ESU (Oncorhynchus tshawytscha)—EFH

Chinook salmon are easily distinguished from other Oncorhynchus species by their large size, with some individuals growing to more than 100 pounds. Although federal and state listing of this ESU has been deemed “not warranted” as of September 16, 1999, the Middle Fork Smith River is designated as part of the Essential Fish Habitat (EFH) for this species under the Magnuson-Stevens Fishery Conservation and Management Act. Department Biologists conducted no specific surveys since Chinook salmon are known inhabit the Smith River year-round. The section of the Middle Fork Smith River in the project area provides EFH for juvenile freshwater and adult Chinook. Both adult and juvenile Chinook have been observed in recent summer fish surveys conducted by the Smith River Alliance.

Coastal Cutthroat Trout (Oncorhyncus clarki clarki)—CSC/FSS

Coastal California cutthroat is a Forest Service Sensitive Species and state Species of Concern. Of the 13 subspecies of cutthroat trout indigenous to North America, only the coastal cutthroat is anadromous. However, coastal cutthroat have complex life histories, and not all individuals of this species are anadromous. In any given water body, some individuals 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.

Although no specific surveys were conducted by Department Biologists, coastal cutthroat trout is known to inhabit the Middle Fork Smith River.

Pristine Pyrg (Pristinicola hemphilli)—CSC

This aquatic snail can be found in springs and/or seeps, spring outflow channels, and spring-influenced stream reaches. Some sites are in dense Douglas fir forests. Habitat is characterized by cobble substrates; slow to moderate flows, and very shallow, cold, clear water. CNDDB records show this species to be present in the Patrick Creek watershed. Typically found in sites that are relatively undisturbed, these snails are not likely to be present in the Middle Fork Smith River and seeps at Patrick Creek Narrows Location 1.

2.3.4.3 Environmental Consequences

Silver-Haired Bat

As noted above, CNDDB records show an occurrence of silver-haired bat in the Patrick Creek watershed. Bat surveys were conducted, and there was evidence of night-roosting bats at the Middle Fork Smith River Bridge. The new bridge will provide equivalent habitat. Table 2.3.4-2 quantifies the amount of habitat affected at each location by each alternative suitable as silver-haired bat dispersal and foraging habitat. Impacts on bats and bat habitat will be negligible. This project will result in no adverse impacts on bats and their habitat.

Pacific Fisher

Areas of conifer-dominated woodlands suitable as Pacific fisher dispersal and foraging habitat would be removed for this project. The amount of habitat removed at each location is listed in Table 2.3.4-2 by alternative. Construction activities would not substantially exceed the existing ambient noise levels. Impacts on fishers and fisher habitat will be negligible. This project will result in no adverse impacts on fishers and their habitat.

American Marten

Although approximately 1–2 acres of conifer-dominated woodlands suitable as American marten dispersal and foraging habitat would be cleared for this project, habitat in the vicinity of highways is of low quality. American martens, like fishers, are at risk of mortality from vehicle strikes. Table 2.3.4-2 quantifies the amount of suitable American marten dispersal and foraging habitat affected at each location by alternative. Impacts on martens and marten habitat will be negligible. This project will result in no adverse impacts on martens and their habitat.

Northern Goshawk

As noted above, the trees flanking the highway are not suitable for goshawk nesting habitat. Table 2.3.4-2 quantifies the amount of suitable northern goshawk dispersal and foraging habitat affected at each location by each alternative. Impacts to northern goshawk and goshawk habitat will be negligible. This project will result in no adverse impacts on goshawk and their habitat

Osprey

Osprey may nest in or near the BSA and may be nesting at the time of construction. Work in close proximity to an active nest could disturb a nesting bird. Table 2.3.4-2 quantifies the amount of suitable osprey dispersal and foraging habitat affected at each location by alternative. Impacts on osprey and osprey habitat will be negligible. Avoidance measures will be implemented if osprey are found to be nesting in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on osprey and their habitat.

Other Migratory Birds

Migratory birds are highly likely to be found nesting in trees and shrubs within the BSA. Migratory birds may nest in trees and shrubs, within or adjacent to the project limits. Tree and shrub removal as well as work in close proximity to an active nest could disturb a nesting bird. Due to minimal change in projected traffic levels, construction activity is not expected to contribute any substantial increase in disturbance to birds nesting in the BSA. To further minimize noise effects on wildlife, Department will implement their standard construction practices, which include noise minimization measures (California Department of Transportation 2009). Table 2.3.4-2 quantifies the amount of suitable migratory bird nesting, dispersal, and foraging habitat affected at each location by alternative. Impacts to nesting migratory birds will be negligible. Avoidance measures will be implemented if migratory birds are found to be nesting in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on nesting migratory birds.

Table 2.3.4-2. Impacts on Terrestrial Habitats

Project Sites and Alternatives	Habitat Affected (acres)
Ruby 1	~0.2
Ruby 2	
Four-Foot Shoulders Alternative	~1.0
Two-Foot Shoulders Alternative	~0.6
Two-Foot Widening in Spot Locations Alternative	~0.7
Patrick Creek Narrows Location 1	~0.05
Patrick Creek Narrows Location 2	
Upstream Bridge Replacement Alternative	~3.0
Downstream Bridge Replacement Alternative	~3.0
Bridge Preservation with Upslope Retaining Wall Alternative	~2.0
Patrick Creek Narrows Location 3	~0.3
The Narrows	~0.4
Washington Curve	
Cut Slope Alternative	~1.0
Retaining Wall Alternative	~0.6

Western Tailed Frog

The CNDDB shows occurrences of western tailed frog near Patrick Creek Narrows Location 2 in the Patrick Creek watershed. Table 2.3.4-3 quantifies the amount of western tailed frog habitat affected at each location by each alternative. Impacts on western tailed frog and its habitat will be negligible. Avoidance measures will be implemented if western tailed frog are found in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on western tailed frog.

Del Norte Salamander

The CNDDB shows occurrences of Del Norte salamander near the Patrick Creek Narrows Location 2 project area in Patrick Creek watershed. Work in drainages for culvert replacement may adversely affect this species. Table 2.3.4-3 quantifies the amount of marginally suitable Del Norte Salamander habitat affected at each location by alternative. Impacts on Del Norte salamander and its habitat will be negligible. Avoidance measures will be implemented if Del Norte salamander are found in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on Del Norte salamander.

Western Pond Turtle

The project area at Patrick Creek Narrows Location 2 where potential disturbance of the Middle Fork Smith River may occur is suitable habitat for western pond turtle. Table 2.3.4-3 quantifies the amount of suitable western pond turtle dispersal, estivation, hibernation, and nesting habitat affected at each location by alternative. Except for the bridge work proposed for Patrick Creek Narrows Location 2, none of the project locations and alternatives would result in foraging habitat impacts for western pond turtle, because this species feeds primarily in the water. Both bridge replacement alternatives would temporarily affect approximately 0.7 acre of rearing and foraging habitat. The bridge preservation alternative would result in no impact on rearing and foraging habitat. Impacts on western pond turtle and its habitat will be negligible. Avoidance measures will be implemented if western pond turtle are found in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on western pond turtle.

Northern Red-Legged Frog

A query of the CNDDB (2005) revealed no known records of occurrences for northern red-legged frogs in the BSA. However, there is suitable habitat for northern red-legged frog in wetlands and other waters within the BSA. This project may have a minor adverse effect on the red-legged frog. Impacts on northern red-legged frog and its habitat will be negligible. Avoidance measures will be implemented if northern red-legged frog are found in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on northern red-legged frog.

Table 2.3.4-3 quantifies the amount of red-legged frog habitat affected at each location by alternative.

Foothill Yellow-Legged Frog

It is unlikely that the activities associated with any culvert work would affect foothill yellow-legged frog since they prefer stream habitats. However, it is likely they are present in the Middle Fork Smith River because it provides suitable habitat. Also, because tadpoles transform in 3 to 4 months, they could be present in the Middle Fork Smith River all summer. Impacts on foothill yellow-legged frog and its habitat will be negligible. Avoidance measures will be implemented if foothill yellow-legged frog are found in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on foothill yellow-legged frog.

Table 2.3.4-3 quantifies the amount of habitat affected at each location, by each alternative suitable as foothill yellow-legged frog habitat.

Southern Torrent Salamander

The areas near the inlets/outlets of the some of the project culverts that are being replaced may have habitat suitable for southern torrent salamanders. Table 2.3.4-3 quantifies the amount of suitable southern torrent salamander habitat affected at each location by alternative. Impacts on southern torrent salamander and its habitat will be negligible. Avoidance measures will be implemented if southern torrent salamander are found in the project area (see Section 2.3.4.4). This project will result in no adverse impacts on southern torrent salamander.

Table 2.3.4-3. Impacts on Amphibian and Reptile Habitats

Project Sites and Alternatives	Habitat Affected (acres)
Ruby 1	~0.006
Ruby 2	
Four-Foot Shoulders Alternative	~0.010
Two-Foot Shoulders Alternative	~0.010
Two-Foot Widening in Spot Locations Alternative	~0.010
Patrick Creek Narrows Location 1	~0.012
Patrick Creek Narrows Location 2	
Upstream Bridge Replacement Alternative	~0.710
Downstream Bridge Replacement Alternative	~0.710
Bridge Preservation with Upslope Retaining Wall Alternative	~0.003
Patrick Creek Narrows Location 3	~0.002
The Narrows	~0.006
Washington Curve	
Cut Slope Alternative	~0.005
Retaining Wall Alternative	~0.005

Chinook Salmon—Southern Oregon and Northern California Coastal ESU

It is expected that juvenile Chinook salmon may be harassed by the work associated with the bridge replacement at Patrick Creek Narrows Location 2. The Department has determined that this project will have a negligible and temporary effect on EFH for the Southern Oregon and Northern California Coastal Chinook ESU. This effect on ESH is less than significant under CEQA and NEPA because it is negligible and temporary.

Except the bridge work proposed for Patrick Creek Narrows Location 2, no other work at this site or at other project sites would result in habitat loss for Chinook salmon. Both bridge replacement alternatives may temporarily remove approximately 0.7 acre of rearing and foraging habitat. No spawning habitat would be affected.

The Department would follow standard practices for reducing tree removal and trimming. Only a portion of an identified tree removal area is located immediately adjacent to the river channel where flow is present during summer. Some riparian tree removal would be required at Patrick Creek Location 2 for the Downstream Bridge Replacement Alternative. Considering alternatives that minimize tree removal would help address potential localized temperature increases.

Coastal Cutthroat Trout

It is expected that juvenile coastal cutthroat trout may be harassed by the work associated with the bridge replacement at Patrick Creek Narrows Location 2.

Except for the bridge work proposed for Patrick Creek Narrows Location 2, no other work at this site or other project sites would result in habitat loss for coastal cutthroat trout. Both bridge replacement alternatives may temporarily remove approximately 0.7 acre of rearing and foraging habitat. No spawning habitat would be affected.

Pristine Pyrg

Typically found in sites that are relatively undisturbed, these snails are not likely to be present in the Middle Fork Smith River and seeps at Patrick Creek Narrows Location 1. Work in drainages for culvert replacement may adversely affect this species. Table 2.3.4-2 quantifies the amount of marginally suitable pristine pyrg habitat affected at each location by alternative.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, the proposed improvements would not be constructed, and therefore no project-related impacts on wildlife species would occur.

2.3.4.4 Avoidance, Minimization, and/or Mitigation Measures

Minimize Effects of Nighttime Construction Lighting

To minimize effects on nocturnal species such as Pacific fisher and American martin, if night work is required, the lighting will be directed downward toward the roadway and will not substantially exceed the level of disturbance of the existing traffic headlights.

Contact and Consult with CDFW and Forest Service if Nesting Osprey Are Found

If osprey are found to be nesting in or near the project area at the time of construction, the Department will contact DFG and Forest Service, and consult with those agencies to identify and implement avoidance and minimization measures.

Limit Vegetation Removal to the Non-Nesting Season for Migratory Birds

In compliance with the MBTA, grass, tree, and shrub removal will take place between September 1 and March 1 to avoid impacts on nesting birds. If vegetation must be removed outside these dates, a biological survey for nesting birds must be conducted prior to vegetation removal.

Limit Construction in Watercourses to the Dry Season

Work involving seasonal creeks/drainages will take place when they are dry and there is no precipitation occurring or anticipated. Work in the water of perennially flowing channels will take place during the dry season, generally between June 15 and October 15, to minimize impacts on amphibians and other aquatic organisms.

Conduct Pre-Construction Surveys for Western Pond Turtle

Measures will be implemented to minimize impacts on western pond turtles that may be present in the work area. Every day, prior to any in-stream work with active water flow, a Biological Monitor will survey for turtles in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly starting upstream giving turtles an opportunity to escape downstream.

Conduct Pre-Construction Surveys for Northern Red-Legged Frog

Measures will be implemented to minimize impacts on northern red-legged frogs that may be present in the work area. Every day, prior to any in-stream work with active water flow, the Biological Monitor will survey for frogs and frog egg masses in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly, starting upstream to give frogs an opportunity to escape downstream.

Conduct Pre-Construction Surveys for Foothill Yellow-Legged Frog

Measures will be implemented to minimize impacts on foothill yellow-legged frogs that may be present in the work area. Every day, prior to any in-stream work with active water flow, the Biological Monitor will survey for frogs and frog egg masses in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly, starting upstream to give frogs an opportunity to escape downstream.

Implement Avoidance and Minimization Measures for Chinook Salmon and Salmonids

The Department will avoid and minimize potential impacts on the salmonids and their Critical Habitat and EFH to the greatest extent practicable during project construction. Specific work windows and limitations on construction will be determined through consultations with resource agencies. To avoid, minimize, and offset impacts, the following measures will be included by the Department:

- Large woody debris obtained from tree removal in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish rearing habitat.
- All trees not taken by resource agencies or used by other government or private entities, with approval from the Department, will be put through a chipper and the chips will be applied to areas of exposed soil on-site as erosion control mulch.
- Sediment and erosion control measures will be implemented to minimize sediment discharge to the river or other waters.
- A vacuum sweeper will be used to clean the pavement.
- No material will be placed where it may enter the river due to precipitation.
- Noise blankets are being considered to help reduce the noise from blasting at the Narrows.

- If feasible during blasting activities at the Narrows, K-rail will be placed near the centerline, and a cyclone fence will be placed on top of that.
- No impact pile driving will be used for bridge work or retaining walls.
- There will be no instream activity in the Middle Fork Smith River.
- Debris resulting from bridgework at Patrick Creek Narrows Location 2 will be contained to the maximum extent practicable.

Implement Avoidance and Minimization Measures for Coastal Cutthroat Trout

The Department will avoid and minimize potential impacts on the coastal cutthroat trout and its habitat during project construction by the measures outlined above for chinook salmon so there will be no adverse impacts on coastal cutthroat trout.

Protect Migratory Birds

Per the federal MBTA, the contractor will be instructed that migratory birds and their (active) nests, eggs, and young are protected and measures must be implemented to avoid the harassment or take of any birds. These measures include:

- Tree and shrub removal should occur from September 1 to March 1 to avoid taking nesting birds.
- If vegetation removal cannot occur within this window, then surveys by the Department Biologist or biological monitor will be required prior to the removal of any trees.
- If nesting birds are present, tree and shrub removal will not be permitted until a Department Biologist or biological monitor has given authorization to proceed.

Use Removed Trees and Stumps to Improve Fish Rearing Habitat

Large trees and stumps that are removed in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish rearing habitat.

Implement Measures to Minimize Impacts on Reptiles and Amphibians

Measures will be implemented to minimize impacts on western pond turtles and special-status frogs that may be present in the work area. Every day prior to any drainage work that involves a watercourse with active water flow, the Biological Monitor will survey for frogs and turtles in the area. If any are found, they will be moved to similar habitat nearby.

Every day, prior to any in-stream work with active water flow, the Biological Monitor will survey for western pond turtles, frogs, and frog egg masses in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly, starting upstream to give frogs an opportunity to escape downstream.

Conduct Pre-Construction Surveys for Bats

Measures will be implemented to minimize impacts on bats that may be present in the work area. Bat surveys will be conducted in May of each year of work at the Middle Fork Smith River Bridge and at other natural features providing habitat for bats, a qualified biologist will survey for bats in the area. If a bat colony is identified within the project impact area, mitigation measures should be developed in consultation with CDFW.

Provide Roosting Habitat for Bats

Surveys determined there was evidence of night-roosting bats at the Middle Fork Smith River Bridge. The new bridge will provide equivalent habitat. In addition, bat roosts will be installed on the bridge in appropriate locations to provide additional bat roosting habitat.

2.3.5 Threatened and Endangered Species

2.3.5.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the ESA (16 USC 1531 et seq.; see also 50 CFR Part 402). This act and subsequent 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 that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion or an Incidental Take statement, a Letter of Concurrence, and/or documentation of a "no effect" finding. Section 3 of ESA 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 (California Fish and Game Code, Section 2050 et seq.). CESA emphasizes early consultation to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The CDFW is the agency responsible for implementing CESA. Section 2081 of the California Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by CDFW. For species listed under both the federal ESA and CESA requiring a Biological Opinion under Section 7 of the federal ESA, CDFW may also authorize impacts on 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.

Federal Consultation Process

The ESA defines *endangered species* as those in danger of extinction throughout all or a significant portion of their range. A *threatened species* is any species likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range. Another type of special-status species is the *proposed species*, for which the USFWS or NMFS have enough information on file to propose listing as endangered or threatened. A *delisted species* is no longer found to be in jeopardy of extinction. Delisting a species requires a formal process with notification similar to the listing process. *Species of concern* are those for which listing is possibly appropriate, but for which the USFWS or NMFS lack sufficient information to support a listing proposal. Species of concern have no status under the ESA and are not federally listed species, but they are considered by a federal agency to warrant some attention.

Mike McCain, Forest Service Fisheries Scientist for the Smith River National Recreation Area and Gasquet Ranger District of the Six Rivers National Forest, was consulted regarding fisheries along this stretch of the Smith River (McCain pers. comm.). Brenda Devlin, wildlife biologist of the same district, was consulted regarding marbled murrelet, northern spotted owl, and other animals that may be in the project area (Devlin pers. comm.). Ray Bosch of USFWS was consulted regarding northern spotted owl and marbled murrelet (Bosch pers. comm.). Gordon Leppig (CDFW) and Bob Pagliuco (NMFS) were contacted regarding impacts on coho salmon and marbled murrelet (Leppig pers. comm., Pagliuco pers. comm.). John McRae, botanist for the Six Rivers National Forest in Eureka, was consulted about Forest Service Sensitive botanical species that may be in the project area. He emailed a list of these species to Department staff (McRae pers. comm.). Protection measures for sensitive plant species were discussed at a meeting with John McRae, Lisa Hoover (Forest Service Botanist), and Gordon Leppig in August 2009 and approved by Messrs. McRae and Leppig via email and phone coordination in January 2010. Dave Imper, USFWS Botanist, was contacted about sensitive plants in the project area in 2008. In 2008, representatives from the Department, CDFW, USFWS, NMFS, and NCWQCB attended an agency coordination meeting. This group, along with personnel from the Forest Service, also attended a site visit on November 18, 2009.

Formal consultation was conducted with the USFWS through the submittal of a Biological Assessment on March 13, 2012, subsequently updated with new information, and receipt of a Biological Opinion on September 13, 2012 (see Appendix P). Measures and determinations from the Biological Opinion have included in this section. Formal consultation was conducted with the NMFS through the submittal of a Biological Assessment on Febuary 13, 2012 and receipt of a Letter of Concurrence on May 7, 2012, and subsequently updated on August 29, 2012 (see Appendix P). Measures and determinations from the Biological Opinion have included in this section. Both agencies were updated with new information regarding tree impacts (see Forester/Arborist Report 2012) and minor project design changes to ensure that previous determinations where still valid and no other measures were necessary.

2.3.5.2 Affected Environment

This section is summarized from the NES prepared for the project (California Department of Transportation 2010).

The USFWS species list for Del Norte County was consulted for existing records of federally listed species occurrences. This list is shown in Appendix P. Table 2.3.4-1, Special-Status Animal Species Assumed Present within the BSA, located in Section 2.3.4 of this document, also includes federally and state-listed species within the BSA. As mentioned in Section 2.3.4, special-status animal species are known to occur and are assumed to be present in the BSA. No additional surveys were conducted for special-status animal species. If suitable habitat was present, then the species were assumed to be present. The proposed action is likely to directly or indirectly affect these species.

The federal and state consultation process is summarized in Table 2.3.5-1.

Table 2.3.5-1. Federal and State Consultation Process

Agency	Approval	Status
U.S. Fish and Wildlife Service	Section 7 consultation for threatened and endangered species: northern spotted owl (threatened), marbled murrelet (threatened)	Complete. Biological Opinion Received
National Marine Fisheries Service	Section 7 consultation for threatened and endangered species; coho salmon (threatened), and EFH for coho and Chinook salmon	Complete. Letter of Concurrence received.
California Department of Fish and Wildlife	Section 1602 streambed alteration agreement	Ongoing

SR 197 Project Area: Ruby 1 and Ruby 2

The Smith River is the only major river system in California that has not been dammed. It is designated as a Wild and Scenic River pursuant to both the state and federal Wild and Scenic Rivers acts. It has exceptional water quality and some of California's largest salmon and steelhead runs. The mainstem of the Smith River from Hiouchi downstream along SR 197 to the Pacific Ocean at Pelican Bay is managed as a "Recreational" river segment pursuant to the Wild and Scenic Rivers acts under the administration of the NPS and the California Resources Agency.

The mainstem of the Smith River along SR 197 and most, if not all, creeks passing under SR 197 within the project area are potential waters of the United States pursuant to Section 404 of the federal CWA. This includes wet areas that will likely meet the three-parameter criteria of Section 404 wetlands. The project area is located just outside the California Coastal Zone and therefore outside the jurisdiction of the California Coastal Commission.

The SR 197 sites are suitable as migration and dispersal habitat for northern spotted owl and marbled murrelet, and as spotted owl foraging habitat.

US 199 Project Area: Patrick Creek Narrows, the Narrows, and Washington Curve

The US 199 sites are located in the Klamath Range, about 20 miles inland in Del Norte County at an approximate elevation of 900 feet. The US 199 locations are in a steep, rocky gorge carved

by the Middle Fork Smith River. The highway is on the side of a narrow channel of the Middle Fork Smith River, and rock rises nearly vertically in some sections, extending several hundred feet above the pavement. The rock faces have intermittent patches of vegetation consisting of mosses, lichens, ferns, and a variety of low-lying vascular plants. Beyond the riparian zone of the inner gorge, an oak-dominated forest transitions into a coniferous forest due to differences in soil composition, aspect (the compass direction toward which a slope faces), and elevation. A list of plants identified in the BSA is provided in the *DN 197/199 Safe STAA Access Project, Del Norte County Special-Status Plants Survey Report* (ICF International 2010).

The Middle Fork Smith River flows westward on the south side of the highway. The Middle Fork includes Patrick Creek and the Siskiyou Fork as major tributaries. Little Jones Creek enters the Middle Fork across the river from the PM 23.0. The channel gradient is steep in the headwaters and moderate in downstream areas. Most streams in the Middle Fork subbasin flow through V-shaped canyons. Upstream from the confluence with the South Fork, the Middle Fork includes a gorge that cuts through metamorphosed basalt. Upstream from Gasquet, slopes are less steep due to less resistant serpentine bedrock. In the BSA, riparian and stream habitats have been heavily altered due to flood events, timber harvest in riparian areas, road and highway construction, road-related erosion, and mining.

The US 199 section of the BSA is within the Hurdygurdy Butte and Shelly Creek Ridge 7.5 minute quadrangles in the Klamath Range bioregion of the California Floristic Province (Hickman 1993). These sites are in the Smith River valley and approximately 760 to 1,240 feet in elevation. At the project sites, the valley is narrow and steep-sided. Soils in the project area are relative shallow, well-drained, rocky soils on steep slopes formed by residuum weathered from igneous and metamorphic rock. Serpentine substrates are found at Patrick Creek Narrows Location 1.

Habitats in the US 199 locations are typical of the Klamath Range of California and are primarily Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) forest with tanoak (*Lithocarpus densiflorus*) and canyon live oak (*Quercus chrysolepis*) and bigleaf maple (*Acer macrophyllum*) in the understory. Creeks and drainages in the area support stands of white alder (*Alnus rhombifolia*) and bigleaf maple.

The trees along the highway represent second- and third-growth timber stands managed by Six Rivers National Forest. There is privately owned property adjacent to Patrick Creek Narrows Location 2; otherwise, all the US 199 locations abut Forest Service land.
The Middle Fork Smith River along US 199 and most, if not all, creeks passing under the highway within the project area are potential waters of the United States pursuant to Section 404 of the federal CWA. This includes seeps that originate in rock faces and drain into roadside ditches.

Plant Species

McDonald's rock cress (*Arabis macdonaldiana)*, state and federally listed as endangered, was identified during pre-survey research as having potential to occur within the BSA, but it was not found during plant surveys. Therefore, the plant is assumed to not be present within the BSA.

Animal Species

Bald Eagle (Haliaeetus leucocephalus)—FD/CE/FSS

Bald eagle is state-listed as endangered and is a Forest Service Sensitive Species. This species was federally delisted in 2007. Bald eagles are yearlong residents in California, breeding mostly in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity Counties. Their breeding season lasts from February through July. They often utilize the largest tree in a stand to build a stick platform nest 50–200 feet above ground (Polite & Pratt 1990). Department Biologists did not conduct specific surveys for bald eagles. Bald eagles were seen near the project vicinity in the summer of 2005, but no nests have been located near the project area (Devlin pers. comm.).

American Peregrine Falcon (Falco peregrinus anatum)—FD/CE/FSS

Federally delisted, state-listed as endangered, and a Forest Service Sensitive Species, American peregrine falcons occur worldwide, and are year-round California residents. They breed from early March to late August, mostly in woodland, forest, and coastal areas near wetland, lakes, rivers, or other water on high cliffs, banks, and dunes. Nests are usually scraped on a ledge in an open site, but this species occasionally utilizes tree cavities or old nests of other raptors (Polite & Pratt 1990). According to the CNDDB, there have been no occurrences of peregrine falcons reported within 10 miles of the project area. There is no suitable peregrine nesting habitat in the BSA.

Marbled Murrelet (Brachyramphus marmoratus)—FT/CE

The marbled murrelet was listed as threatened under the ESA on September 30, 1992. Critical habitat was designated by the USFWS on May 24, 1996. This species is also state-listed as endangered. Marbled murrelet have a unique life history strategy in that although they feed primarily on fish and invertebrates in near-shore marine waters, they fly inland to nest on large limbs of mature conifers. Breeding occurs from late March to late September and a clutch size of one is normal. Nests are not built but an egg is laid in a depression of moss or other debris on the limb of a large conifer.

The majority of marbled murrelet are found within or adjacent to the marine environment, although there have been detections of murrelets on rivers and inland lakes. These birds spend the majority of their lives on the ocean, and come inland to nest. They typically nest in mature forests compared with mixed-age and young forests. Stand size is also an important factor for marbled murrelet. These birds more commonly occupy larger stands (500 acres) than smaller stands (100 acres); marbled murrelet are commonly absent from stands less than 60 acres. Density of old-growth trees and tree species composition may be the strongest predictors of murrelet presence and occupancy. The presence of redwood as the dominant tree species seems to be a factor for predicting higher mean detection levels and stand occupancy. There is a strong pattern of declining murrelet presence with distance from the coast. The number of stations more 25 miles inland with murrelet detections was only about 2%. Current studies at inland stands in California have increased the sample of stations located in potential habitat over 15.5 miles from the coast and results continue to indicate that few murrelets are nesting at these distances in California (Miller et al. 1996).

The US 199 project locations are 18 to 22 miles from the ocean, which puts them almost as far from the ocean as marbled murrelet have been detected in California. When asked about this species' presence in the project area, the biologist for the local Gasquet Ranger District of Six

Rivers National Forest office stated, “We have no marbled murrelet detections near Patrick Creek or your project area along 199" (Devlin pers. comm.). USFWS and the Forest Service concurred that trees that would be removed from the BSA for this project do not constitute suitable habitat for marbled murrelet (Devlin and Bosch pers. comms.). No suitable nesting trees for use by marbled murrelet are located within 0.25 mile of the project sites, but may occur within 1 mile.

Northern Spotted Owl (Strix occidentalis caurina)—FT/SSC

The northern spotted owl was listed as threatened under ESA on June 22, 1990. Critical habitat was designated by the USFWS on January 15, 1992. Northern spotted owls are known to nest, roost, and feed in a variety of habitats, but prefer older forest stands with multilayered structure and closed canopy for foraging, roosting, and nesting (Solis and Gutierrez 1990, Thome et al. 1999). Northern spotted owl nests are often found in old-growth conifers near water. The majority of nests are in tree cavities or on overgrown, broken treetops. Other nest sites include mossy platforms on horizontal branches; they also use stick nests built by other species.

Northern spotted owls generally have large home ranges and use large tracts of land containing significant acreage of older forest to meet their biological needs. The attributes of superior nesting and roosting habitat typically include a moderate to high canopy closure (60 to 80% closure); a multi-layered, multi-species canopy with large overstory trees; a high incidence of large trees with various deformities (e.g., large cavities, broken tops, mistletoe infections, and debris accumulations); large accumulations of fallen trees and other debris; and sufficient open space below the canopy for owls to fly (Thomas et al. 1990).

CNDDB records show a northern spotted owl location documented in 1983 about 0.6 mile east of the Narrows site and 0.5 mile south of Patrick Creek Narrows Location 2 (California Natural Diversity Database 2010). The CNDDB shows no northern spotted owl nesting sites within 0.25 mile of the BSA.

Coho Salmon—Southern Oregon/Northern California Coast ESU (Oncorhyncus kisutch)—FT/CT/EFH

The Southern Oregon/Northern California Coast ESU is one of two coho salmon ESUs found in California. The Central California Coast ESU is found south of Punta Gorda, California, while this ESU is found north of Punta Gorda. The Southern Oregon/Northern California Coast Coho ESU is federally listed as threatened, and critical habitat has been designated for this ESU. This ESU has also been designated as EFH under the Magnuson-Stevens Fishery Conservation and Management Act. Additionally, this coho ESU is state-listed as threatened.

Adult coho enter freshwater September through January in order to spawn. Eggs incubate in gravel from November through April, and fry emerge between March and July. The fry first seek out shallow water, forming schools; then, the schools break up and the salmon move to deeper water in July and August. After 1 year in freshwater, they begin migrating downstream to the ocean in late March/early April. Most remain in the ocean for 2 years, although some return to spawn after the first year. Thus, coho typically have a 3-year lifecycle, and a complete generation consists of three consecutive, non-overlapping brood years (California Department of Fish and Game 2004).

Coho salmon is known to inhabit the Middle Fork Smith River. Juvenile coho salmon are present in this section of the Middle Fork Smith River all year, while adult salmon spawning runs occur between October and May (Hadden 2010; McCain pers. comm.)

Green Sturgeon—(Ascipencer medrirostrus)—FT

The Pacific-northern Distinct Population Segment (DPS) of the green sturgeon is federally listed as a Species of Concern. The Pacific-northern DPS includes coastal spawning populations from the Eel River north, to the Klamath and Rogue Rivers. The Southern DPS of the green sturgeon is federally listed as threatened. The Northern and Southern DPS are distinguished based on genetic data and spawning locations, but their distribution outside of natal waters generally overlap with one another (50 CFR Part 226).

Green sturgeon are anadromous; they live primarily in the ocean and breed in freshwater. Adult sturgeon typically spawn from February to July in deep pools of rivers. Juvenile green sturgeon spend 1–4 years in fresh and estuarine waters before dispersal to saltwater.

Green sturgeon is presumed not to spawn in the Smith River system (Moyle et al. 1992), and no juvenile green sturgeon have been found there. This species is known to spawn in the Klamath River system. In December 1973, a green sturgeon 4 feet long was observed in Patrick's Creek, a tributary to the Middle Fork Smith River (Louis H. Carufel, Forest Service Fisheries Biologist for Six Rivers National Forest, quoted in California Department of Fish and Game 2000). Patrick's Creek enters the Middle Fork Smith River near US 199 between Patrick Creek Narrows Location 1 and the Narrows.

2.3.5.3 Environmental Consequences

McDonald's Rock Cress

No McDonald's rock cress were found during the plant surveys. Therefore, the plant is assumed to be not present within the BSA and not affected by the proposed project.

Bald Eagle

There have been no bald eagle occurrences recorded in the CNDDB within 10 miles of the project. No trees suitable for bald eagle nesting would be removed. The proposed project would have no effect on bald eagles.

American Peregrine Falcon

Because there have been no peregrine falcon occurrences recorded in the CNDDB within 10 miles of the project area and there is no suitable nesting habitat in the BSA, the proposed project would have no adverse effect on the American peregrine falcon.

Marbled Murrelet

Although marbled murrelet nesting habitat would not be affected in the BSA, there could be nesting habitat upstream of the BSA. Murrelets fly to and from their nests at dusk and dawn along river corridors. Construction activities could disturb the daily prey delivery of murrelets. This disturbance would be an adverse effect. With implementation of avoidance windows for construction, the proposed project may affect, but is not likely to adversely affect marbled

murrelet. The proposed project would have no effect on marbled murrelet critical habitat because no nesting trees would be removed.

Northern Spotted Owl

This project is within and would affect designated critical habitat for northern spotted owl. Table 2.3.5-2 lists the acres of critical habitat that would be removed by the proposed project. No spotted owl nesting habitat would be adversely affected. However, there is northern spotted owl foraging, roosting, and dispersal habitat in the BSA, and blasting would need to occur during the breeding season to maintain safety and efficiency for construction workers. The project may have a temporary minor effect on northern spotted owl due to harassment from noise. The proposed project will not destroy or adversely modify NSO critical habitat.

Table 2.3.5-2. Northern Spotted Owl Critical Habitat Removed by Location and Alternative

Project Site and Alternatives	Critical Habitat Removed (acres)
Ruby 1	~0
Ruby 2	
Four-Foot Shoulders Alternative	~0
Two-Foot Shoulders Alternative	~0
Two-Foot Widening in Spot Locations Alternative	~0
Patrick Creek Narrows Location 1	~0
Patrick Creek Narrows Location 2	
Upstream Bridge Replacement Alternative	~0
Downstream Bridge Replacement Alternative	~0
Bridge Preservation with Upslope Retaining Wall Alternative	~0
Patrick Creek Narrows Location 3	~0
The Narrows	~0
Washington Curve	
Cut Slope Alternative	~0
Retaining Wall Alternative	~0

Coho Salmon—Southern Oregon/Northern California Coast ESU

Construction noise and shadows from equipment could disturb juvenile coho salmon during bridge construction work at Patrick Creek Narrows Location 2 because of proximity to the Middle Fork Smith River and the known presence of juvenile coho in the river in the project vicinity (Hadden 2010). This disturbance (i.e., harassment under the federal ESA) to coho salmon is considered an adverse effect under the federal ESA. The adverse effect is considered minor and temporary because the potential impacts would not involve killing and the work would occur only between June 15 and October 15, during three construction seasons, when no adult coho would be present. Additionally, the removal of riparian vegetation is considered an adverse impact on coho critical habitat and EFH. Harassment is not considered "take" under CESA; therefore, proposed activities are not considered adverse under CESA with respect to coho salmon. None of the work at other project sites would adversely affect this species because no other work is proposed in areas containing habitat for coho salmon.

Because this project was designed with appropriate features to reduce potential impacts, the project may affect but is not likely to adversely affect the Southern Oregon/Northern California Coast Coho ESU and coho salmon critical habitat as a result of harassment of juvenile coho during bridge work and the removal of riparian vegetation. A Section 2080.1 Consistency Determination for impacts on coho salmon will not be required from CDFW because no lethal take is anticipated. Offsetting measures will be implemented in consultation with NMFS for impacts on EFH for coho and Chinook salmon.

One mitigation measure is restricting bridge construction work to low-flow periods of the river. Based on fish counts conducted by Department biologists in summer 2010, "…it appears that fish density within the study reach is highly dependent on flow volume. This should be considered when determining the appropriate early in-channel work window to avoid impacts to ESA-listed salmonids. For example, late-spring or early-summer storms could substantially increase flows within the project area. This could cause a significant increase in the number of salmonids present within the area. Therefore, the scheduling of the beginning of in-channel work may need to include both temporal (i.e., after June 15) and flow volume components (i.e., cfs [cubic feet per second] restrictions)" (Hadden 2010). Work will be restricted to midsummer (i.e., after June 15) and early fall (i.e., ending by October 15) when river flows are low.

Patrick Creek Narrows Location 2

Bridge replacement at Patrick Creek Narrows Location 2 would not require in-stream work under the Downstream Bridge Replacement Alternative with the arch bridge option. Temporary falsework, which provides support for the concrete bridge as it is being built until it is strong enough to support itself, would be constructed above the wetted channel but possibly within the ordinary high-water mark. It would be removed at the end of each construction season, typically approximately October 15 or whenever environmental permits dictate. No permanent structures would be placed within the ordinary high-water mark of the Middle Fork Smith River. The existing bridge would be removed after construction of the new bridge.

At Patrick Creek Narrows Location 2, two main elements are necessary for components of bridge construction (e.g., retaining wall, viaduct, new bridge, and bridge demolition):

1. **Falsework** to construct the new bridge.
2. **A containment platform** for debris from the demolition of the existing bridge.

A single large platform may be constructed that serves both tasks. This platform would require support, such as concrete pads, on the banks of the Middle Fork Smith River. If a separate crane trestle is required for the sidehill viaduct or retaining wall, the crane's support columns would not be in the wetted channel.

The Narrows

Blasting at the Narrows may result in rock debris entering Middle Fork Smith River. Between 2 and 10 cubic yards of rock may fall into the river during blasting. Although improbable, a small chance of mortality of juvenile salmon may occur. More likely, if there are any juveniles present, they may be temporarily disturbed by sounds and turbidity increases resulting from rock fall. Rock and sediment stirred up may be washed downstream, causing a short-term increase in turbidity and sedimentation.

Green Sturgeon

Although, as noted above, one occurrence of green sturgeon was reported in the area, this species is not likely to occur in the Middle Fork Smith River. Because green sturgeon are very unlikely to occur in the Patrick Creek Narrows Location 2 project area, this project would have no effect on green sturgeon.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, the proposed project would not be constructed. Therefore, no impacts on threatened or endangered species would occur.

2.3.5.4 Avoidance, Minimization, and/or Mitigation Measures

Construct During Specific Work Windows to Protect Marbled Murrelet and Northern Spotted Owl

To avoid adverse effects to northern spotted owl during the critical breeding season (March 1–June 30), no night work will take place and there will be no blasting. To avoid potential noise impacts on migrating marbled murrelet between March 24 and September 15, there will be no construction activity involving equipment with noise levels in excess of ambient traffic noise (including blasting) in the morning for a 3-hour period, starting 1 hour before sunrise and lasting until 2 hours after sunrise. In the evening, no construction activity (including blasting) will occur in a 3-hour window beginning 2 hours before sunset and lasting until 1 hour after sunset. Therefore, from July 1 to September 15, there can be night work starting 1 hour after sunset and ending 1 hour before sunrise. After September 15 (until March 1), there will be no restrictions on night work. Final work windows will be determined through Section 7 consultation and may include additional restrictions or restrictions based upon noise levels and frequency.

Avoid and Minimize Impacts on Salmonids

The Department will avoid and minimize potential impacts on salmonids and their critical habitat and EFH to the greatest extent practicable during project construction. To avoid, minimize, and offset impacts, the following measures will be implemented by the Department:

- Large woody debris obtained from tree and stump removal in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish-rearing habitat.
- All trees not taken by resource agencies or used by other government or private entities, with approval from the Department, will be put through a chipper and the chips will be applied to areas of exposed soil on-site as erosion control mulch.
- Sediment and erosion control measures will be implemented to minimize sediment discharge to the river or other waters.
- A vacuum sweeper will be used to clean the pavement.
- No material will be placed where it may enter the river.
- Noise blankets will be considered to help reduce the noise from blasting at the Narrows.

- If feasible during blasting activities at the Narrows, K-rail segments will be placed near the centerline and a cyclone fence will be placed on top of that.
- No impact pile driving will be used for bridge work or retaining walls.
- There will be no activity in the active channel of the Middle Fork Smith River.
- All debris resulting from bridgework at Patrick Creek Narrows Location 2 will be contained and not allowed to enter the river.

Limit Timing of Construction Activity to Avoid Noise Effects on Migrating Marbled Murrelet

To avoid potential noise impacts on migrating marbled murrelet between March 24 and September 15, there will be no construction activity (including blasting) in the morning for a 3-hour period, starting 1 hour before sunrise and lasting until 2 hours after sunrise. In the evening, no construction activity involving equipment with noise levels in excess of ambient traffic noise (including blasting) will occur in a 3-hour window starting 2 hours before sunset and lasting until 1 hour after sunset. Therefore, from July 1 to September 15, there can be night work starting 1 hour after sunset and ending 1 hour before sunrise. After September 15 (until March 1), there will be no restrictions on night work. Final work windows will be determined through Section 7 consultation, and may include additional restrictions or restrictions based upon noise levels and frequency.

Use Removed Trees and Stumps to Improve Fish Rearing Habitat

Large trees and stumps that are removed in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish rearing habitat.

2.3.6 Invasive Species

2.3.6.1 Regulatory Setting

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

2.3.6.2 Affected Environment

This section is summarized from the Natural Environment Study (California Department of Transportation 2010) prepared for the project. A number of non-native plants observed in the

project area are considered invasive (see Table 2.3.6-1 in "Invasive Species in Biological Study Area"). As such, these species are considered likely to displace native plants in native ecosystems.

Invasive Plant Lists

California Invasive Plant Council

The invasiveness of each plant species listed in Table 2.3.6-1 has been rated by the California Invasive Plant Council (Cal-IPC) in their California Invasive Plant Inventory (Cal-IPC Inventory). The criteria system used to rate the invasiveness of these plants determines a species' overall rating based on 13 criteria, which are divided into three sections: ecological impacts, invasive potential, and ecological distribution (California Invasive Plant Council 2006). Evaluators assign a score of "A" (severe) to "D" (no impact) for each criterion, with "U" indicating unknown. The scoring scheme is arranged in a tiered format, with individual criteria contributing to section scores that generate an overall rating for the plant. The documentation score is a numeric average of the documentation levels for all 13 criteria.

Cal-IPC Inventory Table 1, "Invasive Non-Native Plants that Threaten Wildlands in California," is the core of the inventory and lists those plants we have categorized as invasive plants that threaten California wildlands. Each plant in the Cal-IPC Inventory Table 1 has received an overall rating of "High," "Moderate," or "Limited" based on evaluation using the criteria system. These overall ratings are defined below. In addition to the overall ratings, specific combinations of section scores that indicate significant potential for plants to invade new ecosystems triggers an "Alert" designation so that land managers can watch for range expansions. (California Invasive Plant Council 2006.)

- **High:** These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically. (California Invasive Plant Council 2006.)
- **Moderate:** These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, although establishment generally depends on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread. (California Invasive Plant Council 2006.)
- **Limited:** These species are invasive, but their ecological impacts are minor on a statewide level, or there is not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic. (California Invasive Plant Council 2006.)
- **Evaluated but Not Listed:** In general, this designation is for species for which information is inadequate to respond with certainty to the minimum number of criteria questions (i.e., too many U responses), or for which the sum effects of ecological impacts, invasive potential, and ecological amplitude and distribution fall below the threshold for ranking (i.e., the overall score falls below Limited). Many such species are widespread, but are not known to

have substantial ecological impacts (although such evidence may appear in the future). All species receiving a D score for ecological impacts, regardless of other section scores, are by default placed into this category.

The Cal-IPC Inventory is planned to be updated annually to reflect new information submitted to Cal-IPC. In February 2007, the Cal-IPC Inventory Review Committee met to review submissions received between February 2006 and January 2007. In the 2007 inventory update, ratings were not changed for any species listed in the 2006 Inventory, but minor revisions were made to four listed species, seven species were added, and two were evaluated but not listed.

California Native Plant Society

The CNPS considers some non-native plants "invasive weeds" if they are able to reproduce in the wild, spread rapidly, and cause a decline or loss of native plants. A local publication regarding invasive weeds in Humboldt County was sponsored by many agencies and non-profit organizations. The outcome was a list of invasive plant species similar to the Cal-IPC list (California Native Plant Society 2000). This publication, hosted electronically on the CNPS North Coast Chapter website, is hereafter referred to as the "CNPS list." The criteria for CNPS listing is based the following categories. "A-list" plants are those that have proven most harmful and that are the target of most eradication efforts. "B-list" plants are species that have not and may never have the magnitude of impact of A-list species, but are a major problem or have the potential to become one. Although this list is for Humboldt County, it is also relevant for Del Norte County because of the proximity and climate similarities of the two counties.

Invasive Species in Area of Direct Impact

The following invasive plant species were observed in the area of direct impact:

Table 2.3.6-1. Invasive Plant Species Observed in the Area of Direct Impact

Scientific Name	Common Name	Cal-IPC Overall Rating	CNPS List
Centaurea jacea x nigra	Meadow knapweed	Moderate	A
Centaurea solstitialis	Yellow starthistle	High	A
Cotoneaster pannosus	Cotoneaster	Moderate	B
Cytisus scoparius	Scotch broom	High	A
Cirsium vulgare	Bull thistle	Moderate	A
Conium maculatum	Poison hemlock	Moderate	B
Cortaderia jubata	Pampas grass	High	A
Digitalis purpurea	Foxglove	Limited	B
Genista monspessulana	French broom	High	A
Hedera helix	English ivy	High	A
Hypericum perforatum	Klamath weed	Moderate	B
Lotus corniculatus	Bird's foot trefoil	Evaluated but not listed	B
Mentha pulegium	Pennyroyal	Moderate	B
Rubus armeniacus (formerly *R. discolor*)	Himalayan blackberry	High	A
Lapsana communis	Common nipplewort	Nominated, but not reviewed: "impacts not known" (2007 list)	Not listed
Poa annua	Annual bluegrass	Nominated, but not reviewed: "not a wildland weed" (2007 list)	Not listed

Scientific Name	Common Name	Cal-IPC Overall Rating	CNPS List
Phleum pratense	Meadow timothy	Nominated, but not reviewed: "impacts not known" (2007 list)	Not listed
Melilotus alba	White sweetclover	Nominated, but not reviewed: "impacts not known" (2007 list)	Not listed
Vinca major	Greater periwinkle	Moderate	B

Sources: California Invasive Plant Council 2006, 2007; California Native Plant Society 2000.

Invasive species on the CNPS's A list and listed as High on the Cal-IPC Inventory are the most invasive wildland pest plants, documented as aggressive invaders that displace natives and disrupt natural habitats. These species, such as yellow starthistle (*Centaurea solstitialis*), pampas grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), French broom (*Genista monspessulana*), English ivy (*Hedera helix*), and Himalayan blackberry (*Rubus armeniacus*), occur scattered throughout the BSA.

Invasive species on the CNPS's B list and listed as Moderate on the Cal-IPC Inventory including cotoneaster (*Cotoneaster pannosus*), greater periwinkle (*Vinca major*), poison hemlock (*Conium maculatum*), Klamath weed (*Hypericum perforatum*), and pennyroyal (*Mentha pulegium*), can be found throughout the BSA.

Most commonly occurring plants on the road shoulders in the area of direct impact are non-invasive, non-native, plants such as perennial sweet pea (*Lathyrus latifolius*), hairy vetch (*Vicia villosa*), hairy cat's ear (*Hypochaeris radicata*), burclover (*Medicago polymorpha*), wild oats (*Avena* spp.), tall fescue (*Festuca arundinacea*), chicory (*Cichorium intybus*), and bromes (*Bromus diandrus* and *B. hordeaceus*).

2.3.6.3 Environmental Consequences

Road construction and other soil-disturbing activities promote the spread of invasive plants. The proposed project will disturb approximately 4 to 7 acres of soil overall. The approximate acres of soil disturbed for each project location and alternative are listed in Table 2.3.6-2.

No Build (No Action) Alternative

Under the No Build (No Action) Alternative, there would be no construction. Therefore, there would be no potential for construction activities to spread invasive species.

Table 2.3.6-2. Areas of Soil Disturbed

Project Location and Alternative	Approximation of Soil Disturbed (acres)
Ruby 1	0.2
Ruby 2	
Four-Foot Shoulders Alternative	1.0
Two-Foot Shoulders Alternative	0.6
Two-Foot Widening in Spot Locations Alternative	0.7
Patrick Creek Narrows Location 1	0.25
Patrick Creek Narrows Location 2	

Upstream Bridge Replacement Alternative	3.0
Downstream Bridge Replacement Alternative	3.0
Bridge Preservation with Upslope Retaining Wall Alternative	2.0
Patrick Creek Narrows Location 3	0.3
The Narrows	0.4
Washington Curve	
Cut Slope Alternative	1.0
Retaining Wall Alternative	0.5

2.3.6.4 Avoidance, Minimization, and/or Mitigation Measures

Implement Measures to Reduce Spread of Invasive Plant Species

To reduce the spread of invasive non-native plant species, the Department may implement the following protection measures, in compliance with Executive Order 13112, to the greatest degree practicable:

- Excess excavated soil and plant materials will be disposed of at an appropriately permitted disposal site in compliance with all federal, state, county, and local regulations.
- Plant species used for erosion control will consist of native, non-invasive, regionally appropriate species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing.
- Certified weed-free imported materials (or rice straw in upland areas) will be used.
- If invasive weeds in areas disturbed by project activities show evidence of spreading into other areas, the Department will develop an Invasive Weed Eradication Plan that targets identified invasive species on the Cal-IPC and CNPS lists. Herbicide use is not permitted at the US 199 locations adjacent to Forest Service land, but it is permitted at the SR 197 locations. To avoid the spread of invasive plants, any wheeled or tracked equipment that is operated off pavement will be washed before entering and after leaving the project impact area.

Implement Invasive Weed Control Program

As a compensatory measure to improve habitat for native plants in and adjacent to disturbed soil areas at the project locations and to minimize competition from non-native/invasive plants, the Department will implement an invasive weed control program in the Middle Fork Smith River watershed.

2.4 Construction Impacts

2.4.1 Introduction

This section describes the temporary effects of the project that would cease once construction has been completed. Measures to avoid, minimize, and/or mitigate these effects are also included when appropriate. Temporary effects include disturbances that are short-term (1 to 2 years). Temporary impacts are typically due to activities of construction. If the effect is temporary, the pre-construction condition is expected to re-establish (either by natural processes or human intervention) within 2 years after construction is complete. Permanent effects (i.e., disturbances that are more long-term impacts (more than 2 years or perpetual) are addressed in Sections 2.1 (Human Environment), 2.2 (Physical Environment), and 2.3 (Biological Environment), depending on the subject matter.

2.4.2 Land Use

Under the proposed project, temporary indirect land use impacts could result from construction activities. The construction of roadway improvements would generate temporary air quality impacts (e.g., diesel fumes and dust) and noise impacts from heavy equipment operations and blasting. From a human environment perspective, the impacts would be most pronounced in the parts of the study area where developed land uses are adjacent to or near the individual project sites.

In addition, construction could temporarily block access to homes and businesses along SR 197 and US 199 in locations where project improvements would be constructed. Construction could cause congestion on these roads and cross streets during the construction period. These potential effects are discussed later in this chapter under "Temporary Construction-Related Access and Circulation Impacts" in Section 2.4.3.

Potential indirect construction effects at each project site are discussed below. In general, the effects would be similar for all alternatives being considered at each site.

Temporary Indirect Land Use Effects

Ruby 1 and Ruby 2

Improvements at the Ruby 1 and Ruby 2 sites would occur adjacent to several rural homes that are situated between SR 197 and the Smith River. Residents of these homes would likely experience some construction nuisances, including dust, diesel fumes, and noise. Residents would also likely experience delays while traveling on US 199, similar to those anticipated for recreationists (see "Temporary Construction-Related Access and Circulation Impacts" in Section 2.4.3). The homes are set relatively far back from the road and are generally shielded by trees, which would help diminish the temporary air quality and noise impacts generated by construction. Temporary air quality impacts are discussed in Section 2.4.10, "Air Quality."

Residents near the Ruby 1 and Ruby 2 sites were identified as sensitive receptors and potential construction noise levels near these homes are discussed in Section 2.4.11, "Noise and Vibration."

Patrick Creek Narrows Location 1

Patrick Creek Narrows Location 1 is in a remote location about 7 miles east of Gasquet, 1.6 miles east of the Grassy Flat Campground, and 1.3 miles west of the Patrick Creek Lodge and Patrick Creek Campground. Because of the distance from these potentially sensitive land uses, construction activities at Patrick Creek Narrows Location 1, which are anticipated to last 90 to 100 working days (18 to 20 weeks) over one construction season, including 20 days in the fall for initial grubbing/clearing, beginning in fall 2013 are not anticipated to result in substantial adverse indirect effects on Gasquet residents, Patrick Creek Lodge visitors, or campground users.

Patrick Creek Narrows Location 2

Patrick Creek Narrows Location 2 is located in a rugged, remote part of the Smith River NRA, about 10 miles east of Gasquet, 5 miles east of the Grassy Flat Campground, and 1.7 miles east of the Patrick Creek Lodge and Patrick Creek Campground. No developed land uses are located adjacent to or within the limits of Patrick Creek Narrows Location 2.

As part of rock excavation during construction, controlled blasting would occur during daytime hours at Patrick Creek Narrows Location 2. When blasting is required for rock excavation, it will be performed so that flyrock, ground vibration, air overpressure, and underwater noise levels will be controlled. A written controlled blasting plan will be prepared, including provisions for performing and monitoring test blasting and controlled blasting. See Section 2.4.11, "Noise and Vibration," for a detailed noise impact discussion and minimization and noise abatement measures. See Section 2.2.3.3, "Effects by Location" section in the Environmental Consequences portion of the Geology/Soils/Seismic/Topography section of Section 2.2 for a description of controlled blasting.

Because of the distance from potentially sensitive land uses, construction activities at Patrick Creek Narrows Location 2, which are anticipated to last from 250 to 360 working days (50 to 72 weeks) over three construction seasons, including 20 days in the fall for initial grubbing/clearing, beginning in fall 2013, are not anticipated to result in substantial adverse indirect effects on Gasquet residents, Patrick Creek Lodge visitors, or campground, trail, or day-use area users.

Patrick Creek Narrows Location 3

Patrick Creek Narrows Location 3 is located about 12 miles east of Gasquet, 6.6 miles east of the Grassy Flat Campground, and 3.3 miles east of the Patrick Creek Lodge and Patrick Creek Campground. Because of the distance from these potentially sensitive land uses, construction activities at Patrick Creek Narrows Location 3 are not anticipated to result in substantial adverse indirect effects on Gasquet residents, Patrick Creek Lodge visitors, or campground users.

Several rural homes, however, are located south of the roadway between the Patrick Creek Narrows Location 3 project limits and the Middle Fork Smith River. These homes are visually shielded from the roadway by heavy vegetation and trees, and are set well back from the roadway. The nearest home is an estimated 250 feet southwest of the western end of the project limits; the others are located at least 600 feet south of the roadway. Residents of these homes,

however, would still likely experience construction nuisances, including dust, diesel fumes, and noise. Noise levels from construction at the residence near this location are discussed in Section 2.4.11, "Noise and Vibration," and the temporary air quality impacts are discussed in Section 2.4.10, "Air Quality." Residents would also likely experience delays while traveling on US 199, similar to those anticipated for recreationists (see "Temporary Construction-Related Access and Circulation Impacts" in Section 2.4.3).

The Narrows

The Narrows site is situated between Patrick Creek Narrows Locations 1 and 2, about 9 miles east of Gasquet, 3.8 miles east of the Grassy Flat Campground, and 0.5 mile east of the Patrick Creek Lodge, Patrick Creek Campground, and Patrick Creek Trail. No developed land uses are located within or immediately adjacent to the project limits of the Narrows site.

Roadway widening will be accomplished by cutting deeper into the existing cut slope, requiring sliver cuts in steep rock faces in some places. This work will involve drilling into the rock face and controlled blasting. Drilling, blasting, and excavation would be completed for two or three setups per day, with each setup involving all three activities. Construction is anticipated to take approximately 122 working days (approximately 24 weeks) over two construction seasons beginning in summer/fall 2014 or 2015.

Because the Patrick Creek Lodge, Patrick Creek Campground, and Patrick Creek Trail are near the Narrows site, construction of the proposed improvements could result in noise and vibration impacts on lodge residents and campground users (see "Temporary Effects on Park and Recreation Facilities" in Section 2.4.2.3).

Washington Curve

The Washington Curve site is located about 12 miles east of Gasquet, 7.4 miles east of the Grassy Flat Campground, and 4.1 miles east of the Patrick Creek Lodge and Patrick Creek Campground. No developed land uses are located within or adjacent to the project limits, and no potentially sensitive developed land uses are nearby. Construction activities at the Washington Curve site are anticipated to last 80 working days (16weeks) beginning in 2014 or 2015 over two construction seasons for the Cut Slope Alternative, which is the selected preferred alternative, and 250 to 300 working days (50 to 60 weeks) over three construction seasons beginning in 2014 or 2015 for the Retaining Wall Alternative. Because of the distance from these potentially sensitive land uses, construction activities at the Washington Curve site are not anticipated to result in substantial adverse indirect effects on Gasquet residents, Patrick Creek Lodge visitors, campground users, or day-use visitors.

Avoidance, Minimization, and/or Mitigation Measures

Measures to reduce the effects of air quality, noise, utility, and traffic impacts, which are discussed in detail in subsequent sections of this chapter, would also reduce indirect land use impacts, but no specific measures to avoid, minimize, or mitigate temporary or indirect land use effects are necessary.

2.4.2.1 Wild and Scenic Rivers

Temporary Effects on the Middle Fork Smith River during Construction

Proposed improvements to the Middle Fork Smith River Bridge at Patrick Creek Narrows Location 2, where the roadway spans the river, would include replacement of the existing bridge and would require temporary work within the OHWM but above the wetted channel of the Middle Fork Smith River. Construction activities in the bed or on the banks of a designated Wild and Scenic River (below the OHWM) require review under Section 7 of the National Wild and Scenic Rivers Act because of the potential to adversely affect the values for which the river was designated. Three alternatives for improvements were considered at this location: the Upstream Bridge Replacement, Downstream Bridge Replacement (the selected preferred alternative), and Bridge Preservation with Upslope Retaining Wall Alternative. Bridge replacement would require a trestle, pad, or other type of support for the falsework, and a debris containment system. These may be supported by columns placed on the riverbanks or within the OHWM but above the wetted channel. The falsework would be removed at the end of each construction season, typically approximately October 15 or whenever environmental permits dictate. Details on potential design of falsework are included in Section 2.3.5.3, "Patrick Creek Location 2," in the "Coho Salmon—Southern Oregon/Northern California Coast ESU" section of the Environmental Consequences portion of Section 2.3.

A demolition and debris containment system would be constructed to minimize debris entering the Middle Fork Smith River during demolition of the old bridge. The debris containment system would have to extend underneath the existing bridge and would likely require supports on the banks or within the OHWM but above the wetted channel. The bridge would be demolished during one construction season, and the temporary supports would be removed once the bridge demolition has been accomplished (California Department of Transportation 2010b).The banks or channel of the river would not be altered. All construction debris would be removed and the site would be restored to a natural setting with re-grading, erosion control and revegetation of disturbed areas. Construction at this location is anticipated to take up to three seasons. The free-flowing nature of the river would not be altered during construction.

During construction at Patrick Creek Narrows Location 2, recreationists would be subject to periodic exclusion from the construction zone within the project limits for safety reasons while bridge replacement and demolition work was occurring. The free-flowing condition of the river would not be affected during construction. Within the construction limits, falsework and the debris containment system would span the river channel. Recreation use of the river would not be interrupted upstream or downstream of the limited construction zone. The construction season could coincide with part of the fishing, kayaking, and rafting season during the fall and the winter months. If kayakers or rafters are present at the same time bridge construction/demolition and/or slope removal activities are taking place, kayakers and rafters would be allowed to portage around the construction area for safety reasons. Recreational activities on the river near the bridge would resume after each construction season has ended.

Implementation of the bridge preservation alternative was not expected to require in-water work or diversion techniques, although blasting may be required. During controlled blasting activities, recreation activities, such as fishing and boating, would be temporarily interrupted in the immediate vicinity of the bridge in order to establish a safety zone. Recreation activities would resume in the vicinity of the bridge once controlled blasting activities are completed.

Traffic delays on US 199 are anticipated during construction seasons at various locations over a period of 3 years. In particular, multiple delays could be encountered when construction is occurring at more than one location during the same construction season. These delays would make public access to the Smith River NRA recreation sites on or accessed from US 199, including Middle Fork Smith River access points less convenient during that time. Construction activities at Patrick Creek Narrows Location 2 are anticipated to take up to three seasons. Implementation of measures included under "Temporary Construction-Related Access and Circulation Impacts" in Section 2.4.3 would minimize the temporary impacts on recreationists traveling to river access points during the construction period.

Recreation use of the river would not be interrupted upstream or downstream of the limited construction zone during bridge replacement. Recreation opportunities would resume within the limited construction zone once construction at Patrick Creek Narrows Location 2 has been completed each season. The temporary impacts during bridge replacement would not alter the river segment's ability to meet the recreational designation it now holds once construction has been completed.

Avoidance, Minimization, and/or Mitigation Measures

Measures identified to reduce community impacts, traffic and transportation, water quality and wetlands would also reduce effects related to Wild and Scenic Rivers. These measures are:

Implement Measures to Reduce Temporary Access and Circulation Impacts

See Section 2.4.3, "Community Impacts," for the full text of this measure.

Implement Additional Measures to Reduce Temporary Access and Circulation Impacts

See Section 2.4.5, "Traffic and Transportation/Pedestrian and Bicycle Facilities," for the full text of this measure.

Limit Construction in Waters of the State/United States to the Dry Season

See Section 2.4.13, "Wetlands and Other Waters of the United States," for the full text of this measure.

2.4.2.2 Parks and Recreational Facilities

Temporary Effects on Parks and Recreational Facilities during Construction

Ruby 1 and Ruby 2

Construction of improvements at the Ruby 1 site would require a temporary construction easement within the parking lot of Ruby Van Deventer County Park. The construction easement would be necessary to modify the entrance to match the improved roadway elevation. The temporary construction easement would extend into the parking lot near the entrance, but would not extend into the campground or picnic area. Construction at the entrance is anticipated to occur over a period of 3 days. Access to the park, including the campground and picnic area, would be maintained at all times during construction at the park entrance and during construction

at this location. The anticipated 50-day construction period at the Ruby 1 site is will begin during summer and fall in either 2013 or 2014. Establishment of the construction zone would be done in a manner that would minimize the number of spaces unavailable for parking and would not temporarily or permanently displace any campsites or picnic sites.

The temporary construction easement would temporarily prohibit visitor parking on up to four parking spaces; however, the easement would be sited to minimize the number of spaces unavailable for parking. The parking lot covers an area of approximately 5,576 square feet and has 18 marked parking spaces (Church pers. comm.; Renae pers. comm.). Because of the short-term nature of the displacement (3 days) and the fact that construction would occur during the week not on weekends, the loss of the use of the four parking spaces would not disrupt use of the park or river access by day-use recreationists.

Access to the river at the undeveloped boat launch by boaters with trailers could be reduced or limited during the period required for the temporary construction easement because there would be less room to maneuver boat trailers in the parking lot. However, this access would not be blocked and would be maintained at all times, and access to the river by other recreationists at this location would not be affected. Launching boats from this location is difficult due to a large gravel sandbar in the river and this access is not used frequently (Fulton pers. comm.). Given the short duration of this temporary impact, the difficulty of launching boats from this location, and the availability of other boat launch facilities nearby, this impact would be minor. Additionally, construction activities at the entrance could intermittently delay access to the campsites and day-use area at times when equipment or material is moving in or out of entrance. Access to the campsites and day-use area of the park would be maintained at all times during construction activities.

The entrance to Ruby Van Deventer County Park is located on the west side of SR 197 immediately adjacent to the Ruby 1 site. The park's campsites are located between the roadway and the river, just north of the Ruby 1 site, with several campsites located approximately 50 to 100 feet from the roadway. Construction of project improvements would generate dust and diesel fumes during construction periods, temporarily degrading the camping and recreation experiences of those using the park. Implementation of measures described in Section 2.4.10, "Air Quality," would reduce these temporary impacts on park users during the construction period. Construction at the Ruby 1 and Ruby 2 sites would occur during the week and night work is not anticipated at these locations. Construction activities at the Ruby 2 site would not generate exhaust or dust that could affect the visitors to the southern portion of Ruby Van Deventer County Park, and there would be no temporary air quality impacts in this area.

Noise generated during the construction period could temporarily affect visitors to the park, in particular campers in campsites located closest to the Ruby 1 site. The closest campsites are located approximately 50 to 100 feet away from the proposed construction site and have a direct or partial line-of-sight toward SR 197. Noise studies conducted for the proposed project measured the existing noise level near the entrance to Ruby Van Deventer County Park at PM 4.5 at 60 A-weighted decibels (dBA) and identified the primary noise source as traffic on SR 197 (ICF International 2010). Because the campsites are located north of the entrance, construction noise levels at the campsites are anticipated to be somewhat lower than those at the entrance. However, the noise studies also indicate that at a distance of 50 feet from the construction

equipment, maximum noise levels during construction periods could range from 88 to 92 dBA (ICF International 2010). Blasting would not occur at this site, but noise levels generated during construction could be disruptive to campers who are in the campsites closest to the Ruby 1 site during daytime construction hours. However, night work is not anticipated at this site, and construction noise would not affect campers sleeping at night in the campground. The impact would be temporary and not significant; however implementation of measures described in Section 2.4.11, "Noise and Vibration," would reduce the temporary noise impacts on park users during the construction period.

According to the draft TMP for this location, construction would not occur on weekends (beginning after 3 p.m. on Fridays), designated legal holidays, and the day preceding designated legal holidays. No night work is anticipated at this site. These measures would reduce potential effects on weekend and holiday park users, but weekday users would still be affected during the 50-day period. Construction would potentially overlap with part of the summer high-use season at Ruby Van Deventer County Park and result in the same temporary impacts on recreationists as described above.

The southern portion of Ruby Van Deventer County Park is located more than 400 feet west of the northern terminus of the Ruby 2 site. Existing noise levels were not measured at the southern portion of the park, but given the distance from the road, it is assumed that noise generated from traffic on SR 197 would be lower than that measured near the park entrance (60 dBA). In this part of the park, the primary noise source is more likely from water flow than traffic noise. The noise studies indicate that at a distance of 50 feet from the construction equipment, maximum noise levels during construction periods could range from 88 to 94 dBA at this location (ICF International 2010). Noise generated during construction is expected to decrease by approximately 7 to 8 dBA per doubling of distance (ICF International 2010), which would reduce construction noise to the range of approximately 64 to 70 dBA at this area within the park. This area of the park is limited to day use only; it is not used for camping. Visitors to this area of the park would be fishing, swimming, or kayaking where construction noise could be heard over the water flow of the river, but it is not anticipated that the construction noise would interfere with the enjoyment of these activities. No construction noise impacts are anticipated in the vicinity of the southern portion of Ruby Van Deventer County Park.

The northern boundary of the Jedediah Smith Redwoods State Park is approximately 300 feet south of the Ruby 2 site (Figure 2.1.1-3 in Section 2.1.1, "Land Use"). However, no construction activities at the Ruby 2 site would occur on state-owned parklands, and the proposed project would not require acquisition of right-of-way from the parklands on either a temporary or permanent basis. Access from SR 197 to the northern portion of the park is via dirt roads and leads to private in-holdings within the park (California Department of Parks and Recreation 2009). There are no public trails, campgrounds, or other park facilities located within 1 mile of the Ruby 2 site. The main portion of the state park is located more than 1 mile southwest of the Ruby 2 site and across the Smith River. Because of the distance of the recreation facilities at Jedediah Smith Redwoods State Park from SR 197 and the Ruby 2 site, there would be no project related noise or visual impacts.

Construction-related activities on SR 197 could intermittently delay motorists traveling to Ruby Van Deventer County Park and Jedediah Smith Redwoods State Park. The maximum delays expected at the Ruby 1 and Ruby 2 sites would be 15 minutes. Improvements at the Ruby 1 and Ruby 2 sites would be completed over one construction season at each site (see Table 1-2). Because most park users access Jedediah Smith Redwoods State Park from US 199, the traffic delays on SR 197 would increase travel time for park users but this effect would be minor. Before construction of project improvements begins each construction season, contact would be made with Jedediah Smith Redwoods State Park staff to advise them of the potential length and timing of any planned closures on US 199 and to determine the exact dates of any festivals in the park that might be affected by the closures.

The use of pullouts for construction staging areas could displace the use of the pullouts by Smith River recreationists during parts of the late summer and fall 2013 and 2014 or 2015 recreation seasons. Potential staging areas for the Ruby 1 and Ruby 2 sites are shown in Figure 1-15. As shown, pullouts at PMs 3.20, 4.02, and 4.05 could be used for construction staging. The pullouts at PMs 3.20 and 4.05 are on the river side of the road and may be used by recreationists. Additionally, traffic queues that form because of construction-related traffic controls could lengthen to the point that access to the pullouts is blocked for periods of time increasing the travel time for recreationists to reach the pullouts. Construction Contractors, however, would be required to maintain access to pullouts during construction.

Patrick Creek Narrows Location 1

The pullout used to access Sandy Beach is located at the eastern terminus of Patrick Creek Narrows Location 1 at PM 20.9. A short trail leads to a swimming area on the Middle Fork Smith River approximately 1,500 to 2,000 feet southeast of the proposed project at this location. However, no construction activities or staging areas for Patrick Creek Narrows Location 1 would be located on the paved pullout used to access the beach. Access to the beach area would be maintained at all times during construction. Estimated noise levels at a distance of 1,500 to 2,000 feet from construction activities were found to be similar to the existing noise levels measured at Sandy Beach (see Table 2.2.6-5 in Section 2.2.6, “Noise and Vibration”). Blasting is not proposed at Patrick Creek Narrows Location 1. Therefore, there would be no construction related impacts on recreational use at Sandy Beach. Traffic delays and queues could affect recreationists during the construction seasons (see the discussions provided under “Delays in Access to Recreation Facilities on US 199” in this section and “Traffic Delays on SR 197 and US 199” in Section 2.4.5). The use of pullouts for construction staging areas could displace the use of pullouts by Middle Fork Smith River recreationists. Potential staging areas for Patrick Creek Narrows Location 1 are shown in Figure 1-16. As shown, pullouts at PMs 19.80, 20.08, 20.19, and 21.30 could be used for construction staging. Two of these pullouts are on the river side of the road. Use of these pullouts could reduce the accessibility of this reach of the river to recreationists during parts of the spring and summer during the construction seasons proposed, (see Table 1-2) although it is unlikely that all four pullout areas would be used for construction staging. Additionally, traffic queues that form because of construction-related traffic controls could lengthen to the point that access to pullouts is blocked for periods of time, increasing the time it would take recreationists to reach the pullouts. Construction Contractors, however, would be required to maintain access to pullouts during construction.

Patrick Creek Narrows Location 2

During construction at Patrick Creek Narrows Location 2, recreationists would be excluded from the construction zone within the project limits at this location for safety reasons while bridge replacement and demolition work are occurring because the Downstream Bridge Replacement Alternative was selected as the preferred alternative. Access to the river for recreational activities upstream or downstream of the limited construction zone would be maintained at all times throughout the proposed project construction period. The free-flowing condition of the river would not be affected, and recreation activities on the river would continue upstream and downstream of the construction limits. Recreational activities in this area include seasonal fishing, kayaking, and rafting. The fishing season extends all year, although chinook salmon and steelhead fishing typically occurs during winter and fall. The kayaking and rafting season on the Middle Fork Smith River is typically during spring, fall, and winter, when the river is navigable. The construction season could coincide with the fishing, kayaking, and rafting season during fall and winter. If boaters are present at the same time as bridge construction/removal and/or slope removal, kayakers and rafters would be allowed to portage around the construction area, resulting in a minor temporary impact on this recreational experience. No construction work would occur in the wetted channel of the Middle Fork Smith River.

Implementation of the bridge preservation alternative was not expected to require in-water work or diversion techniques, although blasting may be required. During blasting activities recreation activities, such as fishing, kayaking and rafting, would be temporarily interrupted in the immediate vicinity of the bridge in order to establish a safety zone. Recreation activities would resume in the vicinity of the bridge once the blasting activities are completed. The Cedar Rustic Trail is located at PM 23.5, more than 2,000 feet west of Patrick Creek Narrows Location 2.There are no other designated river access trails in this area, and there are no beaches along this segment of the river. Access from informal pullouts along US 199 and Cedar Rustic Trail would be maintained.

The use of pullouts for construction staging areas could displace the use of informal pullouts by Middle Fork Smith River recreationists. Potential staging areas for Patrick Creek Narrows Location 2 are shown in Figures 1-17 and 1-18. As shown, pullouts at PMs 23.96 and 25.00 could be used for construction staging. The pullout at PM 23.96 is on the river side of the road and is likely used by recreationists. Use of these pullouts for staging could reduce the accessibility of this reach of the river to recreationists during parts of the late summer and fall in the proposed construction seasons (see Tables 1-2 and 1-3). Additionally, traffic queues that form because of construction-related traffic controls could lengthen to the point that access to pullouts is blocked for periods of time increasing the length of time it would take recreationists to reach the pullouts. Construction Contractors, however, would be required to maintain access to pullouts during construction, although full highway closures may temporarily affect the ability of recreationists to use pullouts. Full highway closures with 20-minute maximum delays, may occur for 150 days during the construction seasons, which may temporarily affect access for recreationists who want to use these pullouts to reach the river.

Patrick Creek Narrows Location 3

There are no recreational facilities in the vicinity of the proposed project at this location. Traffic delays and queues could affect recreationists during the construction seasons (see the discussions provided under “Delays in Access to Recreation Facilities on US 199” in this section and “Traffic Delays on SR 197 and US 199” in Section 2.4.5).

The use of pullouts for construction staging areas could displace the use of informal pullouts by Middle Fork Smith River recreationists. Potential staging areas for Patrick Creek Narrows Location 3 are shown in Figure 1-18. As shown, pullouts at PMs 25.80 and 26.15, both on the river side of the road, could be used for construction staging. Use of these pullouts could reduce the accessibility of this reach of the river to recreationists during parts of the spring and summer during the proposed construction seasons (see Tables 1-2 and 1-3). Additionally, traffic queues that form because of construction-related traffic controls could lengthen to the point that access to pullouts is blocked for periods of time increasing travel time to the pullouts. Construction Contractors, however, would be required to maintain access to pullouts during construction.

The Narrows

Three Forest Service campgrounds are located along the US 199 corridor near the project locations: Panther Flat, Grassy Flat, and Patrick Creek. However, the Patrick Creek Campground is the only one situated in the immediate vicinity of one of the project sites. The Patrick Creek Lodge, Patrick Creek Campground, and Patrick Creek Trail are located more than 0.5 mile north and west of the Narrows site. Access to the lodge, campground, and trail would not change and would be maintained during construction.

Controlled blasting activities would occur during daylight hours at a distance of more than 2,000 feet from the Patrick Creek Lodge, Patrick Creek Campground, and Patrick Creek Trail. As indicated in Section 2.4.11, "Noise and Vibration," the sound from blasting could be "strongly perceptible to mildly unpleasant" at the campground. However, given distance from the blasting activities, the proximity of the lodge, campground, and trail to US 199 with the existing sound from occasional heavy-truck passages, topography, and the fact that blasting would be limited to two or three isolated blasts per day, temporary and mild noise disturbances are anticipated, but noise disturbances that would be "strongly perceptible to mildly unpleasant" are not. Blasting at this site would occur during the daytime and construction noise would not affect campers sleeping at night in the campground. Noise Attenuation measures would be required to reduce the potential noise impacts on campers and trail users (ICF International 2010b). See Section B.5 in Appendix B and Section 2.4.11, Noise and Vibration, for details of the attenuation measures. Campers would still be able to use all the amenities within the Patrick Creek Campground, and there would not be any physical changes to the campground. In addition, the trail and day-use areas would be available for use by recreationists, and there would not be any physical changes to these facilities. Noise impacts, however, would be intensified when construction activities occur during the high-use summer months, when more people could be disturbed. Implementation of the minimization measures included in Section 2.4.11, "Noise and Vibration," would reduce the potential noise impacts on recreationists at the lodge, campground, and day-use areas and on the trail during the construction periods.

Blasting activities would occur intermittently during daylight hours at a distance of more than 50 to 100 feet from the Middle Fork Smith River at the Narrows site. The peak noise level for sound from blasting at a distance of 100 feet was estimated at 143 dBA. Table 2.4-9 indicates that sound from blasting could range from "distinctly unpleasant to intolerable" (120 to 140 dBA) at these locations (ICF International 2010). Similar to the discussion presented above for Patrick Creek Narrows Location 2, a safety zone would be established at a distance from the blast site on either side of the bridge including along the roadway and the river. The safety zone would be established prior to blasting and incorporate a buffer area large enough to avoid safety concerns

from the blast concussion and falling debris. Recreationists would not be exposed to the peak noise level but would experience increased noise disturbance within the vicinity of the Narrows site during intermittent and short periods while blasting activities are occurring. Given the proximity of the river to the nearby highway with existing sound from occasional truck traffic, noise from water flow, and the fact that blasting would be limited to two or three isolated blasts per day, noise from blasting activities is not expected to adversely affect use of the river for recreational purposes near the Narrows site. Construction is mostly anticipated to occur during the off-season for kayaking and rafting on the river (see Table 1-3) but would occur during the fall. Implementation of minimization measures described in Section 2.4.11, "Noise and Vibration," would reduce the temporary noise impacts from blasting on recreationists during the construction period.

The Eagle Eye Mine Trail, an informal river access trail, is located at PM 23.1, more than 500 feet east of the terminus of the Narrows site at PM 23.0. There are no developed land uses at this site. The potential staging area located at PM 23.15 is more than 250 feet east of the access trail. No construction activities are proposed at this location, and there would be no temporary impacts.

The use of pullouts for construction staging areas could displace the use of pullouts by Middle Fork Smith River recreationists. Potential staging areas for the Narrows site are shown in Figure 1-17. As shown, pullouts at PMs 22.11 and 23.15 could be used for construction staging. The pullout at PM 23.15 is on the river side of the road. Use of these pullouts could reduce the accessibility of this reach of the river to recreationists during parts of the summer and fall 2013 recreation seasons. Additionally, traffic queues that form because of construction-related traffic controls could lengthen to the point that access to pullouts is blocked for periods of time. Construction Contractors, however, would be required to maintain access to pullouts during construction.

Washington Curve

There are no recreational facilities in the vicinity of the proposed project at this location.

The use of pullouts for construction staging areas could displace the use of informal pullouts by Middle Fork Smith River recreationists. Potential staging areas for the Washington Curve site are shown in Figure 1-18. As shown, the pullouts at PM 25.80 and 26.15, which are on the river side of the road, could be used for construction staging. Use of these pullouts for construction staging could reduce accessibility to this reach of the river by recreationists during parts of the recreation seasons during which construction is proposed (see Table 1-3). Additionally, traffic queues that form because of construction-related traffic controls could lengthen to the point that access to pullouts is blocked for periods of time, increasing travel time to the pullouts. Construction Contractors, however, would be required to maintain access to pullouts during construction, although full highway closures may temporarily affect the ability of recreationists to reach the pullouts for access to the river. However, the closures at the Washington Curve site, which could last as long as 8 hours, would occur at night, when there would be little demand from recreationists who want to use these pullouts to reach the river.

Delays in Access to Recreation Facilities on US 199

Construction of the proposed project on US 199 is anticipated to take place over a period of 3 years, mainly during summer and fall, but with a possible extension into winter during the third year. Traffic delays would occur at multiple locations and could be inconvenient for all travelers on US 199. These delays would interfere with public access to the Smith River NRA recreation sites on or accessed from US 199, including day-use areas, campgrounds, trailheads, and Middle Fork Smith River access points including pullouts. Implementation of the TMPs and the measures they contain would minimize the construction delays, temporary access and circulation impacts. Additional minimization measures described in Section 2.4.3, "Community Impacts," would further reduce the delays, access, and circulation impacts.

Avoidance, Minimization, and/or Mitigation Measures

Maintain Access to Parks and Recreational Facilities

Construction Contractors would be required to maintain access to recreation sites on or accessed from SR 197 and US 199, including day-use areas, campgrounds, trailheads, and access points to the Smith River and Middle Fork Smith River to maintain availability of recreational opportunities during construction.

Limit Construction to Non-Holiday Periods

Construction would not occur on weekends (beginning after 3 p.m. on Fridays), designated legal holidays, or the day preceding designated legal holidays, thus reducing impacts on recreationists during these peak use periods.

Implement Measures to Minimize Effects on Ruby Van Deventer County Park

Coordination with the Del Norte County Parks Department would provide an opportunity for the county to review and comment on the temporary construction easement and impacts at Ruby Van Deventer County Park. In addition to the minimization measures listed above, measures specific to Ruby Van Deventer County Park would reduce the temporary effects on the park and visitors during construction at the Ruby 1 site.

- The Department will coordinate with the Del Norte County Parks Department to ensure that, to the extent feasible, construction would avoid impacts on as many park visitors as possible.
- Access to the recreation areas in the park, including the campground, picnic area, day-use area, and banks along the Smith River would be maintained at all times during construction period to allow for continued recreational use.
- The construction zone at the entrance would not use more than three or four parking spaces over an anticipated period of three days to minimize the number of spaces unavailable for visitor use.
- The entrance would be paved and fully restored to a condition as good as or better than that which existed before the proposed project. The entrance will be restriped and any modifications or inadvertent damage to the parking lot or other park property would be restored to the condition that existed before the construction activities.

The proposed minimization measures will be refined and additional measures may be added based on input from the County. A letter to the Del Norte County Parks Department regarding the temporary construction easement and the potential impacts on the park was submitted by the Department (see Chapter 4).

Coordinate with the Forest Service to Minimize Effects on Smith River NRA and Middle Fork Smith River

Coordination with the Forest Service regarding the potential effects on the Smith River NRA and Middle Fork Smith River would minimize effects on recreation facilities and opportunities along US 199 by providing an opportunity for the Forest Service to review and comment on the temporary construction impacts on the Smith River NRA and Middle Fork Smith River. Proposed minimization measures will be refined and additional measures may be added based on Forest Service input. A letter to the Forest Service requesting concurrence with the *de minimis* impact findings on the Smith River NRA, temporary occupancy of the Middle Fork Smith River, and Wild and Scenic Rivers Coordination was submitted by the Department (see Chapter 4).

Measures identified to reduce community impacts, traffic and transportation, air quality, and noise would also reduce effects related to parks and recreational facilities. These measures are:

Implement Measures to Reduce Temporary Access and Circulation Impacts

See Section 2.4.3, "Community Impacts," for the full text of this measure.

Implement Additional Measures to Reduce Temporary Access and Circulation Impacts

See Section 2.4.5, "Traffic and Transportation/Pedestrian and Bicycle Facilities," for the full text of this measure.

Implement NCUAQMD's Rule 104 Prohibitions, Section 4.0, to Control Fugitive Dust Emissions

See Section 2.4.10, "Air Quality," for the full text of this measure.

Employ noise and vibration reducing construction measures

See Section 2.4.11, "Noise and Vibration," for the full text of this measure.

2.4.3 Community Impacts

Temporary Construction-Related Access and Circulation Impacts

The proposed project comprises highway improvements at seven sites—two on SR 197 and five on US 199. Construction of each improvement would result in delays of varying lengths for motorists using these roadways, temporarily limiting access and affecting regional circulation.

The traffic controls and related delays anticipated for the proposed project are specified in the current draft TMPs for each location. TMPs are evolving documents that are periodically modified as new project-related information becomes available. The TMPs for each location, which may be updated up to and even during the construction phase, will establish the applicable restrictions on delays, hours of closure, maximum length of delays and closures, and number of closures allowed within a set distance. At the time of construction of improvements at each location, the actual closure and delay lengths and hours used for closures will be determined by the Construction Contractor and submitted to the Department for approval (Hayler pers. comm.). Ultimately, the hours set for closures and closure lengths will be subject to restrictions in the proposed project's final environmental document, permits, and contract special provisions.

For its construction projects, the Department seeks to limit delays for motorists traveling a specific corridor, such as US 199, to no longer than 30 minutes. All anticipated delays and closures included in current TMPs for the proposed project that exceed 30 minutes will require approval by the District Lane Closure Review Committee (DLCRC) before construction. At this time, it is not known whether the DLCRC will approve closures exceeding 30 minutes or whether other viable construction alternatives will be identified and implemented that will shorten delays. For the purposes of this analysis, it was assumed that the DLCRC will approve the proposed delays and closures in the current draft TMPs, which represent a worst-case scenario.

The preliminary current construction schedules and anticipated traffic control measures for each improvement are summarized in Table 1-2. The anticipated construction start dates are the best known dates at this time. For all improvements, the full widths of the roadways are expected to be open for use by public traffic on weekends (after 3 p.m. on Fridays), designated legal holidays, the day before legal holidays, and when construction is not actively in progress. If a legal holiday falls on a Monday, the full width of the roadway would be open on the preceding Friday. Additionally, except for staged construction, the full width of the traveled way would be open for use by public traffic from the preceding Friday to the following Monday for special events that could be affected by project construction, such as the "Jamming on the Jed" festival held each year during the second weekend in September. These measures would help reduce impacts on motorists during the construction periods for each site.

Ruby 1 and Ruby 2

Construction of improvements at the Ruby 1 and 2 sites on SR 197 are preliminarily scheduled to begin in 2013 or 2014. Construction is anticipated to last 50 working days at the Ruby 1 site and approximately 60 working days at the Ruby 2 site for the Two-Foot Widening in Spot Locations Alternative, which is the selected preferred alternative (See Table 1-2). Traffic controls during construction are anticipated to involve one-way reversible traffic control with pilot car and flaggers, with maximum 15-minute traffic delays at each location. No night work is expected at either location. Given the relatively short traffic delays anticipated for the Ruby 1 and 2 sites, whose construction schedules would not overlap, adverse impacts on motorists using SR 197 during the construction periods are anticipated to be minor.

In addition to the short construction-related delays for motorists, construction at the Ruby 1 and 2 sites could temporarily block access to driveways located within the project limits. Additionally, traffic queues caused by construction delays could block driveways or roads beyond the construction limits. These potential access effects are particularly critical at the Ruby 2 site, where SR 197 provides access to driveways for several homes located adjacent to proposed improvements and to a locally used road (Kaspar/Keene Road) at the southern edge of the project limits that provides access to other nearby homes. These potential impacts, however, would be largely limited by access requirements that would be included in agreements with Contractors used to construct the project improvements. Per Section 7-1.08 (2006)/Section 7-1.03 (2010)[1] of the Department's Standard Specifications, the Contractor is required to maintain "convenient access" to driveways. Therefore, the Contractor will be required to minimize any access delays to driveways or public roadways within or near the work zones. Typically, the Contractor and the Department Resident Engineer work with property owners and residents to ensure that access is provided, with information provided to residents before and during project work concerning construction activities that could negatively affect travel surrounding the construction zone (Hayler pers. comm.). As a result, residents near the Ruby 2 site would be inconvenienced at times, potentially experiencing short delays in entering or exiting their driveways because of construction blockage or traffic queues, but the effects on access to homes would be relatively minor over the anticipated 60- to 80-day construction period.

Patrick Creek Narrows Locations 1, 2, and 3; The Narrows; and Washington Curve

Improvements at five locations along US 199—Patrick Creek Narrows Locations 1, 2, and 3; the Narrows site; and the Washington Curve site—would be constructed as part of the overall project. Construction delays would occur at all five locations at various times, including full closures without detour of US 199 at the Narrows site and the Washington Curve site. With the exception of the full roadway closures at Washington Curve, delays are anticipated to occur only during daytime hours. Full closures of US 199 of up to 0.5 hour at the Narrows and Washington Curve are anticipated to occur during daytime hours. The full closures of US 199 at the Washington Curve site during nighttime could occur more than once each night, with hours of closure to be determined by the DLCRC before construction. These delays during construction would be inconvenient for all users of US 199, including residents, business owners, and visitors, and in particular may interfere with public access to the Smith River NRA recreation sites on or accessed from US 199, including use at dusk or dawn of day-use areas, campgrounds, trailheads, and Middle Fork Smith River access points.

As shown in Table 1-3, improvements at all US 199 locations are preliminarily scheduled to start in 2013, with completion at all locations by late 2016 or 2017.

At all construction locations, one-way reversible traffic control with temporary traffic signals or flaggers would be used, resulting in periodic delays for travelers on non-holiday weekdays and other specific days, as described at the beginning of this section.

For Patrick Creek Narrows Location 2, delays are anticipated to last up to 20-minutes. One-way reversible traffic controls and shoulder closures may be required to construct portions of the rock

[1] All Standard Specifications and Standard Special Provisions referenced in this document are subject to revision or updating on a monthly basis. The most current versions will be used at project advertisement for bid. Find these specifications at the Department's Office Engineer website, at http://www.dot.ca.gov/hq/esc/oe/standards.php.

cut slope under all alternatives being considered for this location. Because the existing narrow highway at this location provides limited construction access, periodic highway closures are anticipated in the narrowest sections of the highway. Additionally, under the Upstream Bridge Replacement and Downstream Bridge Replacement Alternatives, which involve replacing the Middle Fork Smith River Bridge, Under both of these bridge replacement alternatives, the new bridge would be constructed on a different alignment than the current bridge, allowing motorists to use the existing bridge while the new one is being constructed. Delays are expected to last no longer than 20-minutes which could occur periodically over approximately 225 to 300 days for the selected preferred alternative; the other two alternatives would have had the same closures for approximately 185 to 300 days, depending on alternative. Construction at Patrick Creek Narrows Locations 1 and 3 and at Patrick Creek Narrows Location 2 could overlap during 2013 - 2016 in late summer or fall.

At the Washington Curve site, some of the proposed widening of US 199 may need to be done using nighttime closures, with potentially 1- to 4-hour delays without detour expected for 50 to 150 days over the 2-year construction period for the Cut Slope Alternative and 250 to 300 days over three-season construction period for the Retaining Wall Alternative. The potential length of the closures at the Washington Curve site are not known at this time; if approved by the DLCRC, nighttime closure periods could last 1 to 4 hours.

Although construction at all locations on US 199 at the same time is unlikely, construction at more than one location at the same time is possible. Assuming a worst-case scenario, in which construction at all projects sites with overlapping construction schedules occurs simultaneously, the following cumulative daytime delays could occur along the US 199 corridor during parts of the spring/summer/fall construction seasons over the 2013–2017 period (note: closures exceeding 30 minutes will require prior approval by the DLCRC). Cumulative delays in the SR 197–US 199 corridor will not be allowed to exceed 90 minutes during daytime construction.

The following is based on Tables 1-2 and 1-3 in Chapter 1, “Proposed Project.”:

- **2013:** Up to four locations in construction, with the following delays:
  - Potential 15-minute delays for the SR 197 Ruby 1 location and up to three locations on US 199.
- **2014:** Up to seven locations in construction, with the following delays:
  - Potential 15-minute delays for both Ruby locations on SR 197 and up to three locations on US 199.
  - Potential 75-minute delays for Narrows and 30-minute delays for Washington Curve, and
  - Potential 1- to 4-hour full-highway closures at night for 50 to 100 days at Washington Curve.
- **2015:** Up to six locations in construction, with the same delays that are shown in 2014, except that there would be no construction at Ruby 1 on SR 197.
- **2016:** Up to five locations in construction, with the same delays that are shown in 2014, except that there would be no construction at either location on SR 197.

- **2017:** Up to one location in construction, with a potential delay of up to 30-minutes on US 199.
    - Potential 1- to 4-hour full-highway closures at night for 50 to 100 days at Washington Curve.

Nighttime full closures of US 199 without detour lasting 1 to 4 hours could include the following:

- **2014:** Up to 4 hours at Washington Curve, if construction starts in 2014.
- **2015:** Up to 4 hours.
- **2016:** Up to 4 hours at Washington Curve, if construction starts in 2015.
- **2017:** Up to 4 hours at Washington Curve, if construction starts in 2016.

Considered together, the construction delays and highway closures associated with construction at all five US 199 project locations could result in substantial impacts on motorists, resulting in long delays, at times substantially exceeding the Department's 30-minute corridor delay threshold but not exceeding 90 minutes on the SR 197–US 199 corridor during daytime construction. As the above illustrates, these construction delays and highway closures would occur over an estimated period of 3 to 4 years in the corridor. Worst-case cumulative delays for a motorist traveling in either direction between Gasquet and east of the Washington Curve site during daytime hours could last up to 30 minutes. During nighttime hours, delays could be even longer, lasting at as long as 4 hours when highway closure is required for construction at the Washington Curve site. It should be noted that the lengthy Washington Curve site closures that are anticipated for 50 to 150 nights would be spread over two construction seasons, and that the length of nighttime closures may be substantially less than 4 hours. In addition to effects from delays and closures, the use of pullouts, which are often used by slower vehicles to let faster vehicles pass, at construction staging areas could further slow traffic in the vicinity of project improvements.

Although the section of US 199 between Gasquet and the California/Oregon state line, in which the anticipated delays and closures would occur, is not a major commuter route, the highway is traveled in both directions by several types of users, including a small number of local residents with homes along the section between Patrick Creek Narrows Location 1 and the Washington Curve site. Del Norte County residents use US 199 to reach the I-5 corridor for various travel purposes, including accessing medical services and other services in and near Grants Pass, Oregon. Tourists use the highway to reach Smith River access points and North Coast tourist destinations. Businesses use the corridor to ship goods into and out of Del Norte County. Public service providers (e.g., law enforcement, fire protection, and other emergency service providers) use the highway to respond to emergency calls along the corridor. Over the 2013–2017 period, especially during late summer/early fall**,** project-related travel delays could inconvenience travelers, discouraging some tourists from visiting North Coast tourist destinations, and delay shipments and add shipping costs for some businesses. Delays could be particularly long for motorists traveling the length of the US 199 corridor from points on either side of the five project locations because of the potential for multiple delays or closures during the 2014 to 2017 construction seasons. These delays would interfere with public access to the Smith River NRA

recreation sites on or accessed from US 199, including day-use areas, campgrounds, trailheads, and Middle Fork Smith River access points.

To reduce these potential effects, as part of project implementation, the Department has developed TMPs for each project site (Appendix G). Among the TMP measures that are recommended for each site, the following are particularly relevant to notifying motorists and easing potential impacts resulting from delays and closures:

- Access to side roads and residences would be maintained at all times. When work or traffic queues extend through an intersection or driveway, additional traffic control will be required at the intersection or driveway.
- Any emergency service agency whose ability to respond to incidents will be affected by any lane closure must be notified before that closure.
- The Department Resident Engineer would provide information to residents and businesses, and adjacent landowners (e.g., Jedediah Smith Redwoods State Park, Forest Service) before and during project work that may represent a negative impact on commerce and travel surrounding the zone of construction. Funding will be available for the Resident Engineer to print flyers.
- The ODOT public information officer will be contacted 1 week before any planned closure on US 199 to allow ODOT to warn public traffic of the possible delays on the US 199 corridor.
- Closures will be coordinated with the local and regional transit systems to minimize impacts on their schedules. Specifically, work will be coordinated with the local busing system (including school buses and public systems) to minimize impacts on bus schedules.
- The Department would coordinate with regional trucking firms and major shippers to ensure that these businesses are notified of major delays and planned highway closures so that shipments can be rescheduled or alternative trucking routes used. To the extent possible, notification would be provided through electronic communications (e.g., email).
- Prior to construction of project improvements each construction season, contact would be made with staff at Jedediah Smith Redwoods State Park to advise them of the potential length and timing of any closures of US 199 and to determine the exact dates of any festivals in the park that might be affected by the closures.
- Department highway advisory radios and changeable message signs may be used to aid in notifying the traveling public of full closures.
- During the complete closure of US 199, additional portable changeable message signs will be required to notify the traveling public of the closure. The following locations are suggested:
    - On US 101 north and south of the intersection with US 199
    - On US 101 at the intersection with SR 197
    - On US 199 at Parkway Drive northbound at Elk Valley Road
    - On US 199 north of Hiouchi
    - On US 199 at the California/Oregon state line

A minimum of one portable changeable message sign in advance of both ends of each of the construction sites will be required to notify the public of the closures related to the proposed project.

Implementation of these measures and others found in the TMPs would minimize the access and circulation impacts of the proposed project on US 199 motorists, allowing motorists the opportunity to schedule some trips during non-construction periods. However, the lack of reasonable alternative routes between the US 101 and the I-5 corridor means that many US 199 users would often face substantial delays when traveling along US 199. The overlapping and long construction schedules for the project improvements, spanning up to four construction seasons, also suggest that impacts on motorists could be substantial. Mitigation measures proposed to compensate for the potential adverse impacts of the proposed project on access and circulation, including measures to reduce impacts related to temporary access and circulation delays during construction, are described below.

Section 2.4.5, "Traffic and Transportation/Pedestrian and Bicycle Facilities," provides additional discussion on the temporary access and circulation impacts.

Temporary Impacts on Parking during Construction

Construction of improvements at the Ruby 1 site on SR 197 is anticipated to temporarily displace three or four parking spaces in the paved parking lot at the entrance to Ruby Van Deventer County Park for about 3 working days (Hayler pers. comm.; Church pers. comm.). This county-owned parking lot, which is used by kayakers and others recreationists to access the Smith River, includes a total of 18 parking spaces. Because of the short duration of the displacement and the relatively small number of spaces that would be displaced, the impact on parking lot users is expected to be minor.

Construction along US 199 could temporarily block access to gravel pullouts that provide informal parking for recreationists using the Middle Fork Smith River and recreation facilities within the Smith River NRA. Pullouts could be blocked by lengthy traffic queues formed by traffic controls that involve delays and closures at construction sites on US 199. Construction Contractors, however, will be required by the Department to maintain access to pullouts during construction (Hayler pers. comm.), indicating that pullouts will still be available for parking. Use of pullouts for construction staging, however, could displace specific pullouts for the duration of construction at each of the five US 199 project locations. These potential effects include temporarily reducing access to short segments of the Middle Fork Smith River along US 199.

Avoidance, Minimization, and/or Mitigation Measures

Implement Measures to Reduce Temporary Access and Circulation Impacts

The following measures would reduce impacts related to temporary access and circulation delays during construction:

- Access to side roads and residences would be maintained at all times. When work or traffic queues extend through an intersection or driveway, additional traffic control will be required at the intersection or driveway.

- The Department Resident Engineer would provide information to residents, businesses, and adjacent landowners (e.g., Jedediah Smith Redwoods State Park, Forest Service) before and during project work that may represent a negative impact on commerce and travel surrounding the zone of construction. Funding will be included in supplemental funds for the Resident Engineer to print flyers.
- The ODOT public information officer will be contacted 1 week before any planned closure on US 199 to allow ODOT to warn public traffic of the possible delays on the US 199 corridor.
- Prior to construction of project improvements each construction season, contact would be made with staff at Jedediah Smith Redwoods State Park to advise them of the potential length and timing of any closures of US 199 and to determine the exact dates of any festivals in the park that might be affected by the closure.

In addition to implementing measures for specific project sites, the following measures would reduce the temporary access and circulation impacts of the project caused by potentially lengthy construction delays and highway closures:

- The traffic management plans for each project location would require that emergency service providers (i.e., sheriff, fire, and ambulance services) be given at least 1 week of notice before any planned full roadway closures on US 199 during construction. Notification is particularly critical for highway closures at Patrick Creek Narrows Location 2 and the Washington Curve site, and for potentially lengthy delays at the Narrows site. Construction Contractors would be required by the Department to expedite the passage of emergency service vehicles through work zones at all times.
- Information regarding delays and scheduled closures would be made readily available to the traveling public on the internet through the Department's California Highway Information Network (CHIN), and other sources. It is recommended that the website dedicated to the proposed project be maintained to provide additional information to the public regarding the status of the projects, planned night time full roadway closures, etc. The address of this website would be included in all media advisories.
- The Department would use regional media (e.g., newspapers and radio stations) to advise the public of closures or lengthy delays at Patrick Creek Narrows Locations 1, 2, and 3; the Narrows site; and the Washington Curve site. Media advisories on full highway closures should be provided at least 1 week in advance of closures.
- Coordination with sponsors of projects near the project sites would be required to avoid conflicts with other projects. This coordination needs to extend to other Department projects and projects that may be undertaken by Del Norte County and other agencies.
- In addition to notification of emergency service providers, the Department would notify Pelican Bay State Prison before any full closures on US 199 at least 1 week in advance. The prison occasionally transports prisoners in multi-car convoys, and convoy delays at construction sites could pose security and logistical problems for prisoner transportation (Hablitzel pers. comm.).

The following recommended measure would reduce potential effects on trucking and shipping businesses from construction delays and closures of US 199:

- The Department would coordinate with regional trucking firms and major shippers to ensure that these businesses are notified of major delays and planned highway closures so that shipments can be rescheduled or alternative trucking routes used. To the extent possible, notification would be provided through electronic communications (e.g., email).

2.4.4 Utilities/Emergency Services

Potential for Delays for Law Enforcement, Fire, and Emergency Service Providers during Project Construction

For all construction locations, the full widths of the roadways are expected to be open for use by public traffic on weekends (after 3 p.m. on Fridays), designated legal holidays, the day preceding designated legal holidays, and when construction operations are not actively in progress. Therefore, the proposed project would not affect the ability of public and emergency service providers to access SR 197 and US 199 during these periods. In addition, Construction Contractors would be required by the Department to expedite the passage of emergency service vehicles through work zones at all times.

For construction work at all project sites, the following emergency service providers would be notified by the Department before any temporary lane closures on SR 197 or US 199:

- Forest Service Six Rivers National Forest Headquarters (Eureka) and the Smith River National Recreation Area Office (Gasquet)
- CAL FIRE (Crescent City)
- Del Norte County Sheriff's Department (Crescent City)
- Del Norte County Office of Emergency Services
- California Highway Patrol (Crescent City)
- Sutter Coast Hospital (Crescent City)
- Del Norte Ambulance Ground and Air Service (Crescent City)
- Smith River Fire Department
- Gasquet Volunteer Fire Department
- Josephine County (Oregon) Emergency Management (a division of the Josephine County Sheriff's Office in Grants Pass)

Upon such prenotification, law enforcement agencies may choose to station Del Norte County Sheriff's Department officers or Forest Service rangers on the east side of project-related highway closure locations on US 199 before the closures begin. As a result, officers or rangers on the east side of the closure locations would be available to respond to emergencies along the US 199 corridor between the construction sites and the California/Oregon state line (Athey pers. comm.).

Similarly, timely prenotification of the Smith River Fire Department, Gasquet Volunteer Fire Department, CAL FIRE, and Forest Service would allow these agencies to plan adequately for closures. With appropriate notification, a fire engine and staff could be placed on standby to assist during a fire emergency on the east side of closure locations on US 199; as a result, they would be available to respond to fire emergencies along the US 199 corridor between the construction sites and the California/Oregon state line (Athey pers. comm.).

It should be noted that Del Norte Ambulance Ground and Air Service has an existing mutual-aid agreement with American Medical Response (AMR) in Grants Pass, Oregon (Athey pers. comm.). With timely prenotification, AMR would be able to place an ambulance on standby to respond to calls and assist patients on the east side of US 199 closure locations, including closures at the three Patrick Creek Narrows locations and the Washington Curve site. Persons needing emergency care would most likely be transported to Three Rivers Community Hospital in Grants Pass during closures. AMR currently has an ambulance stationed in Cave Junction, Oregon, at all times (Tweed pers. comm.).

Potential public service impacts specific to each project site are described below. As part of this evaluation, key public service providers in the study area were contacted to discuss potential effects on the provision of emergency services and response times, including representatives of the Del Norte County Sheriff's Department (Athey pers. comm.; Hablitzel pers. comm.), Crescent City Fire Protection District (Morrison pers. comm.), Six Rivers National Forest (Gibbons pers. comm.), and Del Norte Ambulance Ground and Air Service (Chase pers. comm.; Tweed pers. comm.).

Ruby 1 and Ruby 2

Because of the short duration of the anticipated maximum traffic delay at the Ruby 1 and Ruby 2 sites and the requirement that emergency service vehicles be expedited through work zones, it is unlikely that emergency service response times would be substantially affected at these locations under any of the alternatives.

Patrick Creek Narrows Locations 1, 2, and 3

Construction at Patrick Creek Narrows Location 2 could lengthen emergency service response times on US 199 because of the potential for daytime road closures and long delays. Long delays are also possible if construction delays occur simultaneously at more than one construction site on US 199.

Twenty minute typical delays, may be required for up to 360 days at Patrick Creek Narrows Location 2 to construct portions of the project improvements (California Department of Transportation 2012). Overall route delay will be coordinated between all project sites and will not exceed 90 minutes. Emergency service providers would be notified by the Department before any planned lane closure at the Patrick Creek Narrows locations; however, full closure of the highway could result in substantially longer response times for emergency service calls over parts of 3 years. This could adversely affect public health and safety by increasing the time needed for law enforcement to reach crime scenes and accident sites, for fire crews to respond to fire and emergency medical service calls, and for ambulances to reach those in need of emergency medical treatment and transport them to medical facilities. However, passage of emergency service vehicles will be expedited through closed segments of the highway to the

maximum extent practicable (a requirement for Construction Contractors), delays for emergency service providers will be minimized, and the Department will provide emergency access. Mitigation measures are proposed to compensate for the potential adverse impacts of the proposed project on emergency service providers.

The Narrows

Potential impacts on emergency service providers from construction of improvements at the Narrows site would be similar to those for the Ruby 1 and 2 sites. Complete closure of the highway could occur for up to a maximum of 75 minutes. Because of the short duration of the anticipated maximum traffic delay at the Narrows site and the requirement that emergency service vehicles be expedited through work zones, it is unlikely that emergency service response times would be substantially affected at this location.

Washington Curve

Potential impacts on emergency service providers from construction of improvements at the Washington Curve site would be similar to those for Patrick Creek Narrows Location 2. Nighttime highway closures are anticipated for 50 to 150 days for the Cut Slope Alternative, which is the selected preferred alternative, and 175 to 300 days for the Retaining Wall Alternative. As with Patrick Creek Narrows Location 2, passage of emergency service vehicles will be expedited through closed segments of the highway to the maximum extent practicable (a requirement for Construction Contractors), delays for emergency service providers will be minimized, and the Department will provide emergency access. Mitigation measures are proposed to compensate for the potential adverse impacts of the proposed project on emergency service providers.

Temporary Effects on Utilities during Project Construction

Construction of the proposed project would result in various effects on utilities located within or adjacent to the proposed right-of-way at the Ruby 1 and Ruby 2 sites. No utilities would be affected during construction at Patrick Creek Narrows Locations 1, 2, and 3; the Narrows site; or the Washington Curve site. At these locations, drainage courses would be maintained, and existing culverts would be replaced.

Ruby 1

Construction of the improvements at the Ruby 1 site would result in the relocation of one utility pole carrying Verizon telephone lines and Charter Communications cable television lines located on the east side of SR 197 near PM 4.42. The Department would coordinate with the utility providers before relocation of the utility pole and lines to ensure that potentially affected utility customers are notified of potential service disruptions before relocation occurs. Two drainage systems would also be extended, with the appropriate inlet system installed. No underground utilities were identified by the utility service companies at this site.

Ruby 2

Construction of improvements under the Four-Foot Shoulders Alternative would result in the relocation of two utility poles carrying Verizon telephone and Charter Communications cable television lines. One utility pole is located on the east side of SR 197, and the other is located on the west side of SR 197. Four drainage systems would also be extended, with the appropriate inlet system installed.

Construction of improvements under the Two-Foot Shoulders Alternative would result in the relocation of one utility pole carrying Verizon telephone and Charter Communications cable television lines located on the east side of SR 197. Four drainage systems would also be extended or replaced, with the appropriate inlet system installed. No underground utilities were identified by the utility service companies at the Ruby 2 site.

Construction of improvements under the Two-Foot Widening in Spot Locations Alternative would require relocation of two utility poles; the shoulder would be widened only in spot locations, and all other utility poles would be avoided. Four drainage systems would be extended, with the appropriate inlet system installed.

The Department would coordinate with the utility providers before relocation of any utility poles and lines to ensure that potentially affected utility customers are notified of potential service disruptions before relocation.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would reduce potential impacts on the response times of emergency service providers, including law enforcement, fire protection, and ambulance service providers, caused by potential construction delays and highway closures.

Notify Emergency Service Providers 1 Week before Highway Closures during Construction

The TMPs for each project site would require that emergency service providers (e.g., sheriff, fire, Office of Emergency Services, and ambulance services) be given at least 1 week of notice before US 199 is closed during construction. Notification is particularly critical for highway closures at Patrick Creek Narrows Location 2 and the Washington Curve site and for potentially lengthy delays at the Narrows site.

Construction Contractors would be required by the Department to expedite the passage of emergency service vehicles through work zones at all times.

Notify Pelican Bay State Prison before Highway Closures during Construction

In addition to notification of emergency service providers, the Department would notify Pelican Bay State Prison before closures of US 199. The prison occasionally transports prisoners in multicar convoys, and convoy delays at construction sites could pose problems for prisoner transportation (Hablitzel pers. comm.).

2.4.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

Traffic Delays on SR 197 and US 199

Construction durations at each project location are summarized in Table 1-2. The anticipated traffic management for each location is also described. Table 1-3 shows the preliminary construction schedule for all project locations in a timetable. The three build alternatives for Patrick Creek Narrows Location 2 would have essentially the same effects. Both the Ruby 2 and Washington Curve sites also have build alternatives, but their

respective sets of alternatives would have the same effects in terms of traffic delays during construction.

As discussed in Section 2.4.3, "Community Impacts," for its construction projects, the Department seeks to limit delays for motorists traveling a specific corridor, such as SR 197 or US 199, to no longer than 30 minutes. All proposed anticipated delays and closures that exceed 30 minutes will require approval by the DLCRC before construction. For the purposes of this analysis, it was assumed that the DLCRC will approve the proposed delays and closures in the current draft TMPs, which represent a worst-case scenario.

Traffic delays could be inconvenient for local residents, business owners, recreationists, and visitors traveling in the SR 197–US 199 corridor on any given day during active during construction of the project. Anticipated traffic controls include one-way reversible traffic control, full roadway closure without a detour, and shoulder closure. Under typical one-way reversible control, maximum delays of 15 to 30 minutes are anticipated; however, full road closures without detour could cause delays up to 90 minutes during daytime construction along the SR 197–US 199 corridor. The full widths of the roadways would be open for use by public traffic on weekends (after 3 p.m. on Fridays), designated legal holidays, the day preceding holidays, and when construction operations are not actively in progress. Section 2.4.3, "Community Impacts," provides additional discussion on the temporary access and circulation impacts during construction.

Because of the relatively short traffic delays anticipated for the Ruby 1 and 2 sites (maximum 15-minute traffic delays at each location), whose construction schedules would not overlap, adverse impacts on motorists using SR 197 during the construction periods are anticipated to be minor and within the Department's 30-minute corridor delay threshold. However, as mentioned above and presented in detail in Section 2.4.3, "Community Impacts," the construction delays and highway closures associated with construction at all five US 199 project locations could result in substantial impacts on motorists, resulting in long delays, at times substantially exceeding the Department's 30-minute corridor delay threshold. These construction delays and highway closures would occur over a period of 3 to 4 years. Worst-case cumulative delays for a motorist traveling in either direction between Gasquet and east of the Washington Curve site during daytime hours could range from 30 to 90 minutes. During nighttime hours, delays could be even longer, lasting at as long as 4 hours when highway closure is required for construction at the Washington Curve site. It should be noted that the lengthy Washington Curve site closures that are anticipated for 50 to 150 nights would be spread over two construction seasons and that the length of nighttime closures may be substantially less than 4 hours. In addition to effects from delays and closures, the use of pullouts, which are often used by slower vehicles to let faster vehicles pass, at construction staging areas could further slow traffic in the vicinity of project improvements.

The minimization and mitigation measures discussed in this section and in Section 2.4.3 would reduce the temporary access and circulation impacts of the proposed project; however, the temporary period of construction would extend over a period of 3 to 4 years, with delays occurring at multiple locations along SR 197 and US 199.

Preliminary location-specific traffic management plans (TMPs) have been prepared by the Department's District Traffic Operations staff. TMPs are revised at each phase of a project, when new information regarding physical conditions and/or restraints or construction procedures become known, and may be updated up to and during construction. Final TMPs are approved by the Department's District Transportation Management Plan Manager. Each plan will contain specific requirements for public noticing, traffic control implementation, property and business access, and safety during project construction. TMPs typically include:

- a public awareness campaign,
- highway advisory radio broadcasts,
- portable changeable message signs,
- flaggers,
- a temporary loop sensor and signals, and
- consistency with the Construction Zone Enhanced Enforcement Program, a California Highway Patrol officer posted at the construction site to enforce the speed limit in the construction zone.

Parts of US 101 in Del Norte County are designated as the Pacific Coast Bike Route and have marked bicycle lanes. Although bicyclists are permitted to use SR 197 and US 199, shoulders throughout the study area vary from 0 to 8 feet. Only the first 3 miles of SR 197 north of US 199 have paved shoulders. On US 199, approximately 1 mile of roadway through Gasquet has designated bicycle lanes in both directions. According to the 2007 RTP, there are no pedestrian facilities along SR 197, US 199, or US 101 in the study area. Most pedestrian facilities in the county are located in downtown Crescent City.

Field observations indicated some bicycle travel along the US 101 and US 199 corridors. The field-observed bicycle travel on US 199 was concentrated in Gasquet. Pedestrian activity was only observed in the urban areas and within Redwood National Park.

The proposed project is not expected to have an effect on pedestrians, but the shoulder widening and improved sight distance would make bicycle travel more comfortable on the corridors. (Because of safety concerns, pedestrians and bicycle riders rarely use the SR 197–US 199 corridor, except in Gasquet, Hiouchi, or the vicinity of Jedediah Smith Redwoods State Park.)

Reduced Access to Roadway Pullouts Used as Staging Areas

To temporarily store and stage construction equipment and vehicles, access to several existing roadway pullouts would be blocked temporarily along SR 197 and US 199. Figures 1-15 to 1-18 show the potential locations of these staging areas. Excavated material would be disposed of at existing approved facilities.

Avoidance, Minimization, and/or Mitigation Measures

Implement Measures to Reduce Temporary Access and Circulation Impacts

See Section 2.4.3, "Community Impacts," for the full text of this measure.

Implement Additional Measures to Reduce Temporary Access and Circulation Impacts

The following recommended measures would further reduce the temporary access and circulation impacts of the project caused by potentially lengthy construction delays and highway closures:

- Bicyclists would be accommodated through the work zone. For a lane closure controlled by flaggers, bicyclists would be instructed to join the traffic queue. For a lane closure controlled by a signal, signal timing would be adjusted to accommodate bicyclists.
- When pedestrians are found to use construction areas, they would be transported through the work zone using a pilot vehicle, vehicle transport, or other appropriate method.
- The TMPs for each project location would require that emergency service providers (e.g., sheriff, fire, and ambulance services) be given at least 1 week of notice before any planned full roadway closures on US 199 during construction. Notification is particularly critical for highway closures at Patrick Creek Narrows Locations 1, 2, and 3 and the Washington Curve site and for potentially lengthy delays at the Narrows site.

2.4.6 Visual/Aesthetics

Temporary Visual Changes during Construction

Construction of the proposed improvements would create temporary changes in views of and from the project area. Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewsheds of SR 197 and US 199, parks and forest lands, and residential properties. Safety and directional signage would also be visible elements because construction would require one-way reversible traffic control. Construction for any one site would require between 50 days (minimum) and 200 days over two construction periods (maximum).

Viewer groups on SR 197 would not be accustomed to seeing construction activities and equipment. Much of roadway users' focus is on driving and roadway conditions and their sensitivity to such impacts would be moderate. While work would occur within the existing right-of-way, residential driveways exit directly onto SR 197, and local residents would be directly subject to construction activities when they are home, such as in the evenings and weekends. The sensitivity of these residents to such impacts during the construction period would be high. Impacts on these residences are considered temporary because the residents would experience a short-term change in the visual character of the area in front of their residences. If nighttime construction occurs, high powered lights would be required to illuminate the construction area would draw attention to the construction area, potentially cause light pollution, and negatively affect residential viewers.

Residents and roadway users on US 199 would be more accustomed to seeing construction activities and equipment because of frequent roadway maintenance, such as clearing rock slides, and fairly recent bridge replacements elsewhere along the route. Residents would have high sensitivity to construction activities because of the proximity of the roadway to their driveways off of US 199. Much of roadway users' focus is on driving and roadway conditions, and their

sensitivity to such impacts would be moderate. Recreationists kayaking on the Middle Fork Smith River would be affected during bridge replacement at Patrick Creek Narrows Location 2.

Sandy Beach is located more than 1,500 feet southeast of the proposed project on the banks of the river (PM 20.9). Views of the construction activities on US 199 can be expected by recreationists at the beach during the construction period. However, these views would be temporary over a period of 90 to 100 days in one construction season.

Avoidance, Minimization, and/or Mitigation Measures

Limit Construction on SR 197 to Daylight Hours

Construction activities scheduled to occur after 6 p.m. or on weekends would not continue past daylight hours (which vary according to season). This will reduce the amount of construction experienced by viewer groups because most construction activities will occur during business hours (when most viewer groups are likely at work), and it will eliminate the need to introduce high-wattage lighting sources to operate in the dark.

2.4.7 Water Quality and Stormwater Runoff

Temporary Increases in Erosion and Sediment Transport

Short-term impacts may occur during the construction phase. Impacts would result from increased erosion and subsequent sediment transport from areas of disturbed soil and where in-stream construction activities occur (Patrick Creek Narrows Location 2). Sedimentation could temporarily increase suspended and dissolved solids, and organic pollutants in stormwater runoff generated within the project limits. Potential short-term impacts associated with erosion would continue until all disturbed soil has been permanently stabilized. Effects are discussed in additional detail by location and alternative below.

Ruby 1

Discharging sediment to receiving waters is the primary potential short-term water quality impact. The project would be completed within one non-rainy period and includes disturbance of a relatively minor area of soil. The project site has available space to implement construction site BMPs to adequately address potential short-term impacts.

Ruby 2

Construction site BMPs would effectively address short-term impacts from erosion. Site topography lends itself to implementing adequate erosion and sediment control BMPs. The project would be completed during a single non-rainy season, minimizing exposed disturbed soils. Site conditions also appear favorable for reestablishing herbaceous vegetation on disturbed soil during a relatively short period.

Patrick Creek Narrows Location 1

Potential short-term water quality impacts include sediment discharges and incidental falling debris. Working adjacent to the river increases the impact potential. However, adequate construction site BMPs are available to effectively address the potential impacts. If constructing

a retaining wall requires deep borings, then dewatering activities may be required at this location. Dewatering liquid would need full containment and transport for land disposal.

Patrick Creek Narrows Location 2

Upstream and Downstream Bridge Replacement Alternatives

Potential short-term impacts of these two alternatives include those associated with bridge construction, expanding the existing cut slope, and bridge demolition. The potential for water quality impacts may be higher than that at other project locations because work would occur within the OHWM, though above the wetted channel. Any potential impacts are expected to be temporary and of short duration, and have negligible impacts on Beneficial Uses; therefore, they are not considered significant. Bridge construction includes building a crane platform, abutments and foundations, falsework, and superstructure, as well as completing the bridge. These activities may require work within the OHWM of the channel, though no in-water work would occur. Potential short-term impacts may include discharge of sediment, concrete waste (high pH), construction debris from erecting and demolishing falsework, and increased turbidity.

Bridge Preservation with Upslope Retaining Wall

This alternative would not require in-water work and would not have as high of a potential for water quality impacts as the bridge replacement alternatives. However, like the bridge replacement alternatives, this alternative includes expanding the existing cut slope and, because of the proximity to the Middle Fork Smith River, has the potential for temporary discharge of sediment and concrete waste (high pH) and increased turbidity. Because the bridge preservation alternative does not preclude the need to replace the bridge in the future, potential temporary impacts not associated with this alternative might only be postponed, rather than avoided entirely.

Patrick Creek Narrows Location 3

Potential short-term water quality impacts include sediment discharges. Linear barrier sediment control BMPs and, if required clear water diversions, would effectively address potential impacts during construction. Constructing the retaining wall may require dewatering activities. Dewatering liquid would need full containment and transport for land disposal.

The Narrows

Potential short-term impacts may include sediment discharges. Airborne dust generated while expanding the cut slope may reach receiving waters. The project location sits immediately next to the river, and there is no tree barrier that could filter some dust. Airborne dust discharges would depend on wind direction and the amount of dust generated. Dust control may be required. However, dust control that requires watering could result in non-stormwater discharges. This residual water would need full containment and transport for land disposal. Construction at this project location is anticipated to take 2 years of working during the non-rainy season. Completing work on erosive soil areas during mid-season would reduce potential discharges caused by off-season rainfall events that may occur early during the construction period.

Washington Curve

Sediment discharges would be the likely potential short-term impact associated with either alternative. However, the Cut Slope Alternative includes elements that increase the potential for this impact. These elements include excavation volumes, greater area of disturbed soil, dust generation, and potentially

watering to control NOA. The scope of work for the Cut Slope Alternative would appear to reduce control for reducing discharges using BMPs compared to the Retaining Wall Alternative. Sediment discharge potential would be increased if either alternative requires dewatering.

Water Quality Impacts from Sediments, Turbidity, Floating Material, and Nutrients

Sediment is the pollutant of primary importance on Department construction projects. Increasing sediment, turbidity, and color can adversely affect receiving water quality. The following construction activities, which may apply to any location where these are conducted, could increase these pollutants in receiving waters:

- **Daily contractor activity.** Routine construction activities such as material delivery, storage, and usage, waste management, vehicle/equipment cleaning and operation, and use of a construction staging area could result in generation of dust, sediment, debris, and garbage. Adequately implemented Construction Site Management (Housekeeping) BMPs and appropriate staging areas would reduce potential impacts resulting from daily Contractor activity.
- **Vegetation removal/trimming.** Removal or trimming of vegetation would be required for both construction and access. Such activity would eliminate the groundcover that protects the topsoil. Vegetation removal needs vary at each project location, but would be relatively minimal for the project, except at Patrick Creek Narrows Location 2 and the Washington Curve site. In general, Erosion and Sediment Control BMPs would minimize potential discharges to receiving waters.
- **Grading.** Grading includes removing naturally stabilizing groundcover and creating engineered slopes using fill material. Conducting land-disturbing activities during dry periods and minimizing bare soil exposure will minimize potential short-term erosion and sediment transport. Projects requiring multiple seasons or a higher number of work days may require stabilizing disturbed soil where activities have been completed. Erosion and Sediment Control BMPs would reduce potential sediment discharges.
- **Temporary roads.** Temporary road construction requires grading, vegetation removal, and other changes to the topography and watershed drainage characteristics. These temporary roads are typically composed of native material and/or aggregate base rock. Work activities would be conducted from the existing roadway for most project locations, except at Patrick Creek Narrows Location 2 and the Washington Curve site. Adequate BMPs would address any required temporary roads.
- **Cut slope expansion.** Expanding cut slopes to widen the roadway has been identified as an alternative for several project locations. Aside from disturbing soil, this activity generates dust that may lead to airborne discharges. Depending on wind direction, dust could reach receiving waters. If required, Dust Control BMPs would address potential airborne sediment discharges. Dust Control BMPs would be applied without generating excessive runoff. Areas where NOA has been identified (i.e., Patrick Creek Narrows Location 1 and the Washington Curve site) will likely have to employ watering techniques to prevent airborne fibers. Any excess water resulting from this measure will need full containment and appropriate disposal. Point-source waste discharges to the Smith River or its tributaries are prohibited.

- **Dewatering.** Construction activities may require dewatering excavations where surface water flowed or where shallow groundwater exists. Dewatering will likely be needed at locations where work requires deep borings. Dewatering activities would be continuous but temporary for the duration of work in a particular area.

  The North Coast RWQCB usually allows discharging naturally occurring water (where sediment is the pollutant of concern) to an infiltration basin located above the ordinary high water mark defining jurisdictional waters of the United States. Depending on the volumes generated, water may need to be transported for discharging to a location that has available room to construct an infiltration basin. The North Coast Basin Plan prohibits point-source waste discharges to the Smith River or its tributaries.

  Any groundwater or surface water from an excavation that comes into contact with wet concrete will need to be fully contained. Besides sediment, there are concerns that concrete contact water may alter pH and discharge heavy metals to groundwater. The North Coast RWQCB may require that contact water be characterized and may require issuing individual Waste Discharge Requirements along with a Monitoring and Reporting Program before allowing concrete contact water disposal to land.

- **Replacing and/or upgrading culverts.** Several culverts have been identified for either replacing or upgrading at various project locations. Temporarily increased turbidity and sedimentation could result from these activities. Any culvert replacement or upgrades would be conducted during the non-rainy season. However, some drainage courses may continue to flow year-round. Clear water diversions will be used where flow is present to isolate work areas. Short-duration impacts may occur while installing a clear water diversion. However, clear water diversions ensure continuous discharges do not occur to flowing water.

  Minor dewatering may also be required where excavation is needed to install new culverts. Typically, sediment is a concern associated with excavation water. In most cases, it should be possible to discharge this water to an area where it may infiltrate. At locations generating large water volumes, it will need to be transported to a constructed percolation basin.

- **Construction of temporary structures.** To support construction equipment, laborers, and construction forms, it may be necessary to erect falsework. Falsework is typically constructed of wood and metal connectors. Temporary structures may be required for some project locations that would be immediately adjacent to or span receiving waters (i.e., Patrick Creek Narrows Location 2 bridge replacement alternatives). Construction Site Management and Erosion Control BMPs would be used to reduce potential impacts.

- **Seeding and application of fertilizers and nutrients.** To prepare the ground for temporary and/or permanent cover and promote better growth, fertilizers may be applied before and after planting. Fertilizer application and seed use will have to adhere to Forest Service and other regulatory guidelines and applicable ecological principles. Areas of disturbed soil where rocky surfaces predominate are unlikely to be seeded or fertilized.

- **Bridge demolition.** Airborne dust and incidental falling debris could potentially increase sediment, floating materials, and/or turbidity in the receiving waters. BMPs that isolate receiving waters would minimize or prevent impacts associated with potential bridge demolition.

Water Quality Impacts from Contamination

Accidental lubricant and liquid releases from vehicles and heavy equipment used during construction are potential temporary impact sources. Accidental spill and leaks pose a threat to water quality, vegetation, and wildlife habitat. The impact severity would depend on the amount and material released. The following are some common construction activities that may cause impairment:

- **Cement and grout.** As part of the construction process, concrete and grout work will occur. Spillage of concrete and grout into receiving waters during construction can increase turbidity and alter the pH. Construction Site Management includes BMPs for handling concrete waste appropriately. Concrete washouts are typically placed a significant distance from receiving waters. BMPs would reduce accidental releases directly into receiving waters.
- **Vehicle/equipment fueling and maintenance.** During construction, these activities can release gasoline, diesel, oil, grease, hydraulic fluids, and other fluids into the environment, all of which can degrade the beneficial uses of adjacent water bodies. Spill contingency measures are included in the Construction Site Management BMP category. BMPs are included for addressing equipment and vehicle leaks. Fueling activities are usually conducted at specific areas that are located away from receiving waters.
- **Application and storage of chemicals.** Accidental spills, improper storage, and improper application of chemicals during construction can potentially affect water quality. Standard construction practices have been developed and are regularly implemented for storing chemicals adequately. Minimizing the residence time for chemicals stored on site by having them delivered close to the use date would reduce the potential for accidental spills.
- **Application and storage of oils, greases, and fuels.** Improper storage of oils and fuels could result in accidental spills and/or leaks within the construction area. Stormwater Pollution Prevention Plan (SWPPP) construction site management requirements address accidental lubricant and liquid releases.

Specific Design Pollution Prevention, Treatment, and Construction Site BMPs will be selected for the project during project design. The Project Engineer will select appropriate BMPs per the Storm Water Data Report (SWDR) and the Project Planning and Design Guide. It is expected that standard BMPs will be selected based on Evaluation Documentation Form and Construction Site BMP Consideration forms from the Project Planning Development Guide manual. Additional BMPs may be selected by the Contractor in the SWPPP submitted to the Engineer for authorization.

Avoidance, Minimization, and/or Mitigation Measures

The project must comply, and will be designed and constructed in conformance with, the following laws and permits:

- The CWA of 1972, the major Federal legislation governing water quality.
- The Porter-Cologne Water Quality Act, the basis for water quality regulation in California.
- The Department's Statewide NPDES Permit, Order No. 99-06-DWQ, covering all Department facilities in the state. In compliance with this permit, the Department developed the SWMP in 2003 to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout the state.

- Statewide Construction General Permit, Order 2009-0009-DWQ, adopted by the California State Water Resources Control Board in 2009.

These regulatory control measures are currently in place. By implementing pollution prevention BMPs at each location, there would be no adverse impacts to water quality, and potential sediment transport and non-storm water releases would be avoided or minimized. After construction, storm water conveyance systems and permanent erosion control measures would be maintained in compliance with the Department's SWMP. BMPs in the Department's SWMP have been demonstrated to be effective for reducing impacts to water quality from storm water runoff to non-significant levels.

Implement Standard Specifications, Special Provisions, and Permit Requirements

Contract standard specifications, special provisions, and permit requirements reduce potential short-term impacts. Construction-related impacts are managed by the 2006 Standard Specifications, Section 7-1.01G; the 01-20-12 Amendments to 2006 Standard Specifications Section 7-1.50B, FHWA-1273; 2010 Standard Specifications Section 13; 2010 Revised Standard Specifications Section 13-1.01 (01-20-12); Standard Special Provision (SSP) 07-345 (2006); various 2010 SSPs, as appropriate; Construction General Permit Order No. 2009-0009-DWQ; NPDES General Permit No. CAS000002; the Department stormwater permit, Order 99-06-DWQ; and NPDES Permit No. CAS000003. Short-term protections are contained in the Department's Construction Site BMP manual.[2] These are minimum requirements that must be met by all Contractors working on Department projects. The Department has a program to research and test the effectiveness of new BMPs for construction sites (CTSW-RT-03-049), which allows for continued improvement of BMPs for construction sites. An active SWPPP program also provides BMP inspection and sampling to ensure their maintenance until the project is complete and the site stabilized.

Minimize Sediments, Turbidity, and Floating Material

Suspended material is the most likely pollutant resulting from Department construction projects. Erosion of sediments is the main source of suspended material. Turbidity and floating material are reduced through the use of BMPs. Implementing standard Department practices and procedures will reduce potential impacts.

The Department's 2006 Construction Site BMP Guidance is found at the following website: http://www.dot.ca.gov/hq/oppd/stormwtr/constssp.htm. The Department's Construction Site BMPs are found at the following website: http://www.dot.ca.gov/hq/construc/stormwater/factsheets.htm.

During the construction activities, the Construction Site BMPs listed at the above-mentioned website are most likely to be utilized to reduce or eliminate sediment, turbidity, and floating materials to receiving waters. The final selection of BMPs will be made by the Contractor in the SWPPP submittal to the Engineer. The actual BMPs used on these projects will be as authorized by the Engineer (in the authorized SWPPP) immediately prior to construction.

[2] http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm.

The Department also uses water pollution control worksite specifications containing BMPs such as Construction Site Management, 2006 SSP 07-346 (08-05-11), and Job Site Management, 2010 Standard Specification Section 13-7.

- SS-1 Scheduling
- SS-2 Preservation of Existing Vegetation
- SS-3 Hydraulic Mulch
- SS-4 Hydroseeding
- SS-5 Soil Binders
- SS-6 Straw Mulch
- SS-7 Geotextiles, Plastic Covers, Erosion Control Blankets: Cover Soil/Stockpiles
- SC-1 Silt Fence
- SC-5 Fiber Rolls
- SC-7 Street Sweeping and Vacuuming
- SC-10 Storm Drain Inlet Protection
- WE-1 Wind Erosion Control
- TC-l Stabilized Construction Entrance/Exit
- NS-1 Water Conservation Practices

Additional BMPs that may be used on this project for sediment control are as follows:

- SS-12 Streambank Stabilization
- SC-3 Sediment Trap
- SC-4 Check Dams
- SC-6 Gravel Bag Berms
- SC-9 Straw Bale Barrier
- TC-3 Entrance/Outlet Tire Wash
- NS-2 Dewatering Operations
- NS-4 Temporary Stream Crossing
- NS-5 Clear Water Diversion

In addition to BMPs required as part of the project-specific SWPPP, Design Pollution Prevention BMPs reduce the amount of erosion during construction using slope designs that reduce erosion potential via techniques such as slope rounding, benching, track walking, reducing slope length, and providing top of slope drains. Hydraulic design techniques also reduce erosion through the use of Pollution Prevention BMPs such as flared-ends sections, rock slope protection, paved

water conveyances, and energy-dissipater pads. These BMPs have been demonstrated to be effective for reducing erosion and sedimentation to non-significant levels.

Minimize Oil, Grease, and Chemical Contamination

Contract specifications and permit conditions prohibit the Contractor from discharging oils, greases, or chemicals into receiving waters. Construction operations are required to follow BMPs that provide potentially harmful chemical containment and spill protection. Construction site accidents may introduce pollutants to the environment. The Department addresses these problems with detection and reporting procedures to ensure prompt cleanup. By implementing Construction Site BMPs and SSPs, any build alternatives selected would reduce potential impacts from construction-related oils, greases, and chemicals. The following BMPs may be deployed to prevent and reduce releases of these pollutants during the active construction period. See the above-mentioned Department Construction Site BMP website for examples.

NS-3 Paving and Grinding Operations

NS-6 Illicit Connection/Illegal Discharge Detection and Reporting

NS-8 Vehicle and Equipment Cleaning

NS-9 Vehicle and Equipment Fueling

NS-10 Vehicle and Equipment Maintenance

NS-12 Concrete Curing

NS-13 Material and Equipment Use Over Water

NS-14 Concrete Finishing

NS-15 Structure Demolition/Removal Over or Adjacent to Water

WM-1 Material Delivery and Storage

WM-2 Material Usage

WM-3 Stockpile Management

WM-4 Spill Prevention and Control

WM-8 Concrete Waste Management

Additional BMPs that may be used prevent and reduce the release of these pollutants include:

WM-5 Solid Waste Management

WM-6 Hazardous Waste Management

WM-7 Contaminated Soil Management

WM-9 Sanitary/Septic Waste management

WM-10 Liquid Waste Management

2.4.8 Geology/Soils/Seismic/Topography

Potential Impacts on Worker Safety during Blasting Operations

Controlled blasting at Patrick Creek Narrows Location 2 and the Narrows may result in impacts on worker safety from falling rocks. Limiting flyrock during blasting, implementing rock scaling and rock bolting, and installing temporary rock fall barriers before construction, and/or other safety measures, if appropriate, would ensure the safety of workers. Impacts on workers would not be significant.

Potential Impacts on Worker Safety from Rock Fall during Construction of Cut Slopes

Construction of cut slopes at Patrick Creek Narrows Location 2, the Narrows, and at Washington Curve has the potential to result in injury and damage to workers or traffic from rock fall during construction. Implementation of rock scaling, construction of temporary rock fall barriers, and/or monitoring of the slopes prior to and during construction would minimize the risk of injury to workers. Additionally, the excavation volume for the Downstream Bridge Replacement Alternative, which is the selected preferred alternative, at Patrick Creek Narrows Location 2 would be substantially less than that for the Upstream Bridge Replacement Alternative; therefore, it would decrease the need for disposal areas, disturb less terrain, and reduce the total area of potential rock fall during construction.

Potential to Expose Workers to Naturally Occurring Geologic Hazardous Materials during Construction

It is anticipated that the vast majority of the bedrock that will be encountered during construction of the project does not contain asbestos. However, isolated areas of rock in the vicinity of Patrick Creek Narrows Location 1 and the Washington Curve site do contain naturally occurring asbestos (NOA) and could expose workers to NOA. The "Affected Environment" portion of Section 2.2.4, "Hazardous Waste/Materials," discusses potential effects related to NOA.

Potential for Debris to Enter the River during Bridge Demolition

After the construction of a new bridge at Patrick Creek Narrows Location 2 under two of the three alternatives, the existing bridge would be demolished. This could result in debris entering the Middle Fork Smith River. To avoid this potential effect, demolition and debris containment standards must be met if either of these alternatives is selected. A containment system would be constructed to catch material and contain it during demolition. Concrete would be separated from steel, then loaded into trucks and removed as it was collected. Most debris would be recycled at a permitted commercial facility. Concrete could also be disposed of at permitted disposal sites.

Potential for Construction-Related Soil Erosion and Sedimentation

Grading, blasting, and other earthwork that would be conducted during construction of the project could result in ground disturbance that would increase the potential for erosion or increase sedimentation rates above preconstruction levels. Accelerated erosion and sedimentation resulting from construction-related ground disturbance could affect water quality in nearby surface waters, including the Smith River, Middle Fork Smith River, and tributary creeks. Details regarding potential impacts and avoidance, minimization, and/or mitigation measures for construction-related soil erosion and sedimentation are included in Section 2.2.2, "Water Quality and Storm Water Runoff." As part of the project and to minimize the potential for erosion and

accelerated sedimentation, Contractors, on behalf of the Department, will prepare and implement a SWPPP as required by 2006 SSP 07-345, 2010 Standard Specifications Section 13, and the Department stormwater permit, Order No. 99-06-DWQ. Short-term protections are contained in the Department's Construction Site BMP manual. The SWPPP will specify BMPs that will be implemented to control runoff, accelerated wind and soil erosion, and sedimentation during construction, as well as measures to stabilize the project area once construction is complete. Section 2.2.2, "Water Quality and Storm Water Runoff," discusses BMPs.

Avoidance, Minimization, and/or Mitigation Measures

Implement Measures to Ensure Worker Safety during Blasting Operations

Blasting operations must comply with federal, state, and local blasting regulations. Regulations containing specific Cal/OSHA requirements for blasting activities include Title 8, California Code of Regulations, Ch 4, Subchapter 7, Group 18: "Explosive Materials. Controlled blasting would be directed by a licensed blaster in accordance with Cal/OSHA regulations and any environmental constraints." Department provisions for blasting and the use of explosives are found in the 2006 Standard Specifications, Section 7-1.10; 2006 SSP 19-700 (05-01-06); 2006 SSP 19-705 (11-21-08); 2006 SSP 19-706 (11-21-08); 2010 Standard Specifications Section 19-2.03E, 2010 SSP 19-4_X1 (05-20-11), and 2010 SSP 19-4_X2 (05-20-11).

Implement Measures to Ensure Worker Safety from Rock Fall during Construction of Cut Slopes

During construction of the cuts at Patrick Creek Narrows Location 2, the Narrows, and at Washington Curve, rock scaling, construction of temporary rock fall barriers, and/or monitoring of the slopes would be required prior to and during construction to minimize the risk of injury to workers.

Potential to Expose Workers to Naturally Occurring Geologic Hazardous Materials during Construction

During construction at Patrick Creek Narrows Location 1 and the Washington Curve site, the Contractor will be required to comply with Department and State standards to protect health and safety of workers and the traveling public when working with potentially hazardous materials, including naturally occurring asbestos. Details on NOA and avoidance, minimization, and mitigation measures are discussed in Section 2.2.4, "Hazardous Waste/Materials."

Potential for Debris to Enter the River during Bridge Demolition

If a bridge replacement alternative is selected at Patrick Creek Location 2 and the Downstream Bridge Replacement Alternative selected as the preferred alternative, demolition and debris containment standards must be met. A containment system would be constructed to catch material and contain it during demolition. Concrete would be separated from steel, then loaded into trucks and removed as it was collected. Most debris would be recycled at a permitted commercial facility. Concrete could also be disposed of at permitted disposal sites.

Potential for Construction-Related Soil Erosion and Sedimentation

Contractors will be required to implement a SWPPP in compliance with 2006 SSP 07-345 (10-21-11), 2010 Standard Specifications Section 13, and the Department stormwater permit, Order No. 99-06-DWQ. The SWPPP will specify BMPs that will be implemented to control runoff, accelerated wind and soil erosion, and sedimentation during construction, and to stabilize the project area once construction is complete.

2.4.9 Hazardous Wastes/Materials

The ISA reports identified the following potential hazardous materials/waste conditions related to the proposed project.

Effects Associated with Naturally Occurring Asbestos

The disturbance of rock and soil that contain NOA can result in the release of fibers to the air to which construction workers and the traveling public are potentially exposed. The inhalation of asbestos fibers into the lungs can result in a variety of adverse health effects, including inflammation of the lungs, respiratory ailments, and cancer.

Effects Associated with Aerially Deposited Lead

ADL may be encountered on the surface and in near-surface soils within 50 feet of highways because of the past use of lead additives in gasoline (now banned in California). Disturbance of these soils could expose construction workers or the traveling public to lead.

Effects Associated with Construction, Traffic, or Roadway Maintenance

During the construction phase of the project, accidental releases of small quantities of potentially hazardous substances (e.g., diesel fuel and hydraulic fluids) could contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard.

Effects Associated with the Removal or Modification of Facilities or Structures

Components of the proposed project involve the demolition or renovation of structures (e.g., guardrails and bridge components), or the roadbed, that may expose construction workers to hazardous wastes or materials, including TWW or ACMs, during demolition and removal of these components. Should any removal of yellow traffic markings in the existing portion of the roadway occur, it is important to note that they may contain heavy metals such as lead or chromium, which may produce toxic fumes when heated. Also, TWW may be generated during demolition, and if handled improperly, could release hazardous chemical preservatives into the environment that could be harmful to people, aquatic life, and land animals.

Impacts Identified by Project Location

A summary of the potential hazardous waste/materials–related issues for each project location is presented in Table 2.4-1. More detailed discussions are provided below by project location.

Table 2.4-1. Summary of Hazardous Waste/Materials Issues Where They Occur by Project Location

Location	ADL	LCP	TWW	NOA	ACM
Ruby 1	Yes	Yes	No	No	No
Ruby 2	Yes	Yes	No	No	No
Patrick Creek Narrows 1	Yes	Yes	Yes	Yes	No
Patrick Creek Narrows 2	Yes	Yes	Yes	No	Yes
Patrick Creek Narrows 3	Yes	Yes	Yes	No	No
The Narrows	Yes	Yes	Yes	No	No
Washington Curve	Yes	Yes	Yes	Yes	No

Ruby 1

The ISA concluded that this project location likely has nominal hazardous waste/material issues relating to ADL and LCP. Although the amount of ADL found at the project site is very nominal, it is possible that disturbance of soils near the roadway could subsequently expose construction workers to lead. The ISA also noted the likely presence of painted striping/markings that may contain lead. In the process of handling these markings, construction workers could be exposed to lead. Because of the presence of lead in the soil and pavement markings, lead compliance standards must be met to address worker safety.

Ruby 2

The ISA concluded that this project location likely has nominal hazardous waste/material issues relating to ADL and LCP. Although the amount of ADL found at the project site is very nominal, it is possible that disturbance of soils near the roadway could subsequently expose construction workers to lead. The ISA also noted the likely presence of painted striping/markings that may contain lead. In the process of handling these markings, construction workers could be exposed to lead. Because of the presence of lead in the soil and pavement markings, lead compliance standards must be met will be prepared to address worker safety.

Patrick Creek Narrows Location 1

The ISA for Patrick Creek Narrows Locations 1, 2, and 3 found that there is the likely presence of painted striping/markings that may contain lead at Patrick Creek Narrows Location 1. In the process of handling these markings, construction workers could be exposed. Therefore, lead compliance standards must be met to address worker safety regarding lead present in the paint and ADL in soil that would be disturbed. In addition, TWW will be generated during metal-beam guardrail replacement, which could release hazardous chemical preservatives into the environment unless it is stored and disposed of appropriately.

The NOA testing conducted at this project location indicates the presence of NOA above Asbestos Airborne Toxic Control Measures (ATCMs) for Construction, Grading, Quarrying, and Surface Mining Operations. (Geocon Consulting 2008). Construction activities would disturb soils containing NOA, thereby endangering the health of construction workers and the traveling public. Work at this location would require compliance with Department and State standards addressing asbestos, dust mitigation, and appropriate disposal of excavated materials.

Patrick Creek Narrows Location 2

The ISA for Patrick Creek Narrows Locations 1, 2, and 3 found that there is the likely presence of painted striping/markings that may contain lead at Patrick Creek Narrows Location 2. In the process of handling these markings, construction workers could be exposed to Lead Containing Paint (LCP). It is also known that virtually all road shoulders have elevated levels of lead from vehicle exhaust. Therefore, lead compliance standards must be met to address worker safety regarding the lead present. TWW may be generated during metal-beam guardrail replacement, which could release hazardous chemical preservatives into the environment without appropriate handling and disposal.

In addition to LCP and TWW, there is potential for construction workers to encounter ACMs during construction or demolition activities involving the Middle Fork Smith River Bridge. Compliance with Department and State standards for handling asbestos must be met asbestos compliance plan will need to be prepared and implemented to address safety measures in relation to the ACMs present. In addition, the Contractor performing the work will need appropriate licenses for handling and disposing of ACMs.

Patrick Creek Narrows Location 3

The ISA for Patrick Creek Narrows Locations 1, 2, and 3 found that there is the likely presence of painted striping/markings (LCP) at Patrick Creek Narrows Location 3. It is also known that virtually all road shoulders have elevated levels of lead from vehicle exhaust. As a result of the lead hazard present, lead compliance standards must be met by the Contractor to address worker safety. In addition, TWW may be generated during metal-beam guardrail replacement, which could release hazardous chemical preservatives into the environment unless it is handled and disposed of appropriately.

The Narrows

The ISA for this location noted the likely presence of painted striping/markings (LCP). It is also known that virtually all road shoulders have elevated levels of lead from vehicle exhaust. As a result of the lead hazard present, lead compliance standards must be met by the Contractor to address worker safety. In addition, the ISA noted that TWW may be generated during metal-beam guardrail replacement, which could release hazardous chemical preservatives into the environment that will require proper handling and disposal.

Washington Curve

The ISA for the Washington Curve site found that the site likely has the presence of painted striping/markings (LCP) and very low levels of ADL. As a result of the lead hazard present, lead compliance standards must be met by the Contractor to address worker safety. In addition, the ISA noted that TWW may be generated during metal-beam guardrail replacement, which could release hazardous chemical preservatives into the environment that will require proper handling and disposal.

The NOA testing conducted at this project location indicated the presence of NOA is not above ATCMs for Construction, Grading, Quarrying, and Surface Mining Operations (Geocon Consulting 2009). Regardless, construction activities will disturb soils containing a trace amount of NOA, thereby potentially endangering the health of construction workers. Therefore, the

Department will require asbestos compliance standards be met, and implementation of dust controls required in the ATCMs.

Potential for Hazardous Material Spills

Fueling or maintenance of construction vehicles would occur in the project area during construction. Therefore, a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials would exist. Gasoline, diesel, fuel, oil, and lubricants for operation of construction equipment are anticipated to be used on site during project construction. These materials are typically used, handled, and stored by Contractors on all roadway construction projects. Furthermore, Contractors are required to handle these materials in accordance with applicable laws, including those for stormwater runoff and health and safety. However, construction of this project could potentially result in an accidental release of these materials. This could pose a threat to water quality if discharges were to enter culverts; the Smith River, Middle Fork Smith River, or their tributaries; or groundwater. The magnitude of the impact from an accidental release would depend on the volume and type of material spilled.

Avoidance, Minimization, and/or Mitigation Measures

Health and Safety for Workers and the Traveling Public

The Contractor will be required to comply with Department and State standards to protect health and safety of workers and the traveling public when working with potentially hazardous materials, including LCP, soils containing ADL, ACMs, NOA, and TWW. The Contractor will be required to comply with Department and State standards regarding transport and storage of hazardous materials that are used or stored during construction.

Aerially Deposited Lead, Lead Paint Systems, and Pavement Striping and Marking Handling

In accordance with the Department's safety requirements for lead compliance, the Contractor will be required to prevent or minimize worker exposure to lead while managing and handling earth materials, paint system debris, traffic stripe residue, and pavement marking residue containing lead. Additionally, the Contractor must comply with specific Cal/OSHA requirements when working with lead, including Title 8, California Code of Regulations Section 1532.1. The Contractor is required to submit a Lead Compliance Plan to the Engineer for authorization. The authorized lead compliance provisions will be approved by a Certified Industrial Hygenist and implemented by the Contractor to address worker safety issues due to lead, dust control, and material disposal.

Applicable provisions for handling ADL include the 2006 Amendments to Standard Specifications Section 7-1.07 (01-20-12), 2006 SSP 15-027 (06-05-09), 2010 Standard Specification 1-1.07B, 2010 SSP 7-1.02K(6)(j)(iii) (05-20-11), 2010 SSP 14-11.03 (01-20-12), and 2010 SSP 14-11.04 (05/20/11).

Applicable provisions for handling existing lead paint systems include the 2006 Amendments to Standard Specifications Section 7-1.07 (01-20-12) and 2006 SSP 15-025 (01-20-12).

Applicable provisions for handling lead in existing striping and pavement markings include the 2006 Amentments to Standard Specifications Section 7-1.07 (01-20-12), 2006 SSP 14-001 (01-20-12), 2006 SSP 15-301 (06-05-09), 2006 SSP 15-305 (08-05-11), 2010 SSP 14-11.07 (01-20-12), 15-1.03B (05-20-11), and 2010 SSP 15-2.02C(2) (05-20-11), and 2010 SSP 14-11.08 (01-20-12).

Implement the Spill Prevention Plan

The Department has prepared a spill contingency plan, which is a part of the SWPPP. The SWPPP includes identification of procedures and response crews in the event of an accidental release of hazardous materials. The Contractor will be required to implement these plans during construction. The plans will address the proper use and storage of hazardous materials.

Dispose of Treated Wood Waste in Accordance with Appropriate Regulations

The Department will require Contractors to follow regulations adopted by the DTSC when managing TWW to prevent releases of hazardous chemical preservatives, scavenging, and exposure to people, aquatic life, and animals. The Alternative Management Standards to TWW regulations by DTSC allow disposal at approved Class III landfills rather than a hazardous waste landfill.

Applicable provisions for handling TWW include the 2006 Amendments to Standard Specifications Section 7-1.07 (01-20-12), 2006 SSP 14-010 (11-15-10), and 2010 SSP 14-11.09 (05-20-11).

Implement the Asbestos Compliance Plan and Dust Control Plan

The Department's Standard Special Provisions pertaining to dust control and dust palliatives are required in all construction contracts and would effectively reduce and control impacts from naturally occurring asbestos and dust emissions during construction, including the 2006 Amendments to Standard Specifications Sections 14-9.01 and 14-9.02 (01-20-12); 2006 Standard Specifications Sections 7-1.01F, 10, and 18; 2006 SSP S5-750 (03-13-09); 2006 SSP 19-910 (06-01-11); 2010 Standard Specifications Sections 14-9.02, 14-9.03, and 18; 2010 SSP 14-11.05 (05-20-11); and 2010 SSP 49-1.03 (05-20-11). These require the Contractor to comply with North Coast Unified Air Quality Management District (NCUAQMD) rules, ordinances, and regulations.

The Contractor will also implement the CARB's Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations (2008). The applicable text of the ATCM is provided below. These requirements are spelled out in the Department's 2006 SSP S5-750 (03-13-09), 2006 SSP 19-910 (06-01-11), 2010 SSP 14-11.05 (05-20-11), and 2010 SSP 49-1.03 (05-20-11).

- **Requirements for Road Construction and Maintenance.** These requirements shall apply to roads that are not part of a construction or grading project, quarry, or surface mine project.

- No person shall conduct any road construction or maintenance activities that disturb any area that meets any criterion listed in subsections (b)(1) or (b)(2) unless all of the following conditions are met.
  - The Air Pollution Control Officer (APCO) is notified in writing at least fourteen (14) days before the beginning of the activity or in accordance with a procedure approved by the district.
  - All of the following dust control measures are implemented during any road construction or maintenance activity:
    - Unpaved areas subject to vehicle traffic must be stabilized by being kept adequately wetted, treated with a chemical dust suppressant, or covered with material that contains less than 0.25% asbestos;
    - The speed of any vehicles and equipment traveling across unpaved areas must be no more than fifteen (15) miles per hour unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 miles per hour from emitting dust that is visible crossing the project boundaries;
    - Storage piles and disturbed areas not subject to vehicular traffic must be stabilized by being kept adequately wetted, treated with a chemical dust suppressant, or covered with material that contains less than 0.25% asbestos; and
    - Activities must be conducted so that no track-out from any road construction project is visible on any paved roadway open to the public.
  - Equipment and operations must not cause the emission of any dust that is visible crossing the project boundaries.
    - No person shall conduct any road construction or maintenance activity that disturbs the ground surface in an area that meets the criteria in subsection (b)(3) unless:
  - The APCO is notified no later than the next business day of the discovery that the area meets the criteria in subsection (b)(3); and
  - The requirements of subsections (d)(1)(B) through (d)(1)(C), are implemented within twenty-four (24) hours of the discovery.

- **Exemptions from the Requirements for Road Construction and Maintenance.** The following exemptions may apply in addition to the applicable general exemptions specified in subsection (c).
  - **Remote Locations**: The APCO may provide an exemption from the requirements of subsection (d) for any activity which will occur at a remote location.
    - The district shall grant or deny a request for an exemption within ninety (90) days of the receipt of a complete application.
    - If the request for an exemption is denied, the APCO shall provide written reasons for the denial.

The remaining text of the CARB's ATCMs can be found at the following website: http://www.arb.ca.gov/toxics/atcm/asb2atcm.htm.

2.4.10 Air Quality

Temporary Increase in Ozone Precursor (ROG and NO_x), CO, and PM10 Emissions during Grading and Construction Activities

Implementation of the proposed project would result in the construction of wider lanes, wider shoulders, and longer-radius curves. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade construction, and paving activities and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model (Version 6.3.2) was used to estimate construction-related ozone precursor (ROG and NO_x), CO, PM10, PM2.5, and CO_2 emissions from construction activities. The results of modeling for construction activities are summarized in Tables 2.4-2 to 2.4-6 for the Ruby 1 site, the Ruby 2 site, Patrick Creek Narrows Locations 1, 2, and 3; the Narrows site; and the Washington Curve site, respectively. For all project locations, construction activities were divided into four distinct phases and analyzed separately. At the Ruby 1 site (Table 2.4-2), construction is anticipated to last for approximately 1.7 months (50 days). A total of 150 cubic yards (yd^3) of soil is anticipated to be imported/exported from the site; therefore, without further detail provided, it was assumed that 3 yd^3 per day of soil would be imported/exported from the project site.

Table 2.4-2. Ruby 1 Construction Emission Estimates (tons per year)

Construction Phase	ROG	CO	NO_x	Total PM10	Exhaust PM10	Fugitive Dust PM10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	CO_2 [a]
Grubbing/land clearing	0.09	0.39	0.79	0.11	0.03	0.08	0.05	0.03	0.02	71.97
Grading/excavation	0.10	0.46	0.80	0.11	0.04	0.08	0.05	0.04	0.02	81.86
Drainage/utilities/sub-grade	0.09	0.37	0.69	0.11	0.04	0.08	0.05	0.03	0.02	66.78
Paving	0.05	0.20	0.31	0.03	0.03	0.00	0.02	0.02	0.00	26.41
Total	**0.33**	**1.42**	**2.59**	**0.36**	**0.14**	**0.23**	**0.17**	**0.12**	**0.05**	**247.02**

Notes: Emissions calculations based on Road Construction Emissions Model (Version 6.3.2). Values may not add up due to rounding.

[a] CO_2 presented in metric tons per year.

At the Ruby 2 site (Table 2.4-3), construction is anticipated to last for approximately 2.7 months (80 days) under the Four-Foot Shoulders Alternative, approximately 2.2 months (65 days) under the Two-Foot Shoulders Alternative, and approximately 2 months (60 days) under the Two-Foot Widening in Spot Locations Alternative, which is the selected preferred alternative. Under the Four-Foot Shoulders Alternative, a total of 1,170 yd^3 of soil is anticipated to be imported/exported from the site; therefore, without further detail provided, it was assumed that 15 yd^3 per day of soil would be imported/exported from the project site. Under the Two-Foot Shoulders Alternative, a total of 700 yd^3 of soil is anticipated to be imported/exported from the

site; therefore, without further detail provided, it was assumed that 11 yd^3 per day of soil would be imported/exported from the project site. Under the Two-Foot Widening in Spot Locations Alternative, a total of 350 yd^3 of soil is anticipated to be imported/exported from the site; therefore, without further detail provided, it was assumed that 3 yd^3 per day of soil would be imported/exported from the project site.

Table 2.4-3. Ruby 2 Construction Emission Estimates (tons per year)

Construction Phase	ROG	NO_x	CO	Total PM10	Exhaust PM10	Fugitive Dust PM10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	CO_2 [a]
Four-Foot Shoulders Alternative										
Grubbing/land clearing	0.16	0.65	1.20	0.58	0.05	0.53	0.16	0.05	0.11	123.67
Grading/excavation	0.18	0.82	1.29	0.59	0.07	0.53	0.17	0.06	0.11	143.17
Drainage/utilities/sub-grade	0.15	0.64	1.10	0.59	0.06	0.53	0.16	0.05	0.11	115.35
Paving	0.10	0.40	0.53	0.05	0.05	0.00	0.04	0.04	0.00	50.75
Total	**0.59**	**2.52**	**4.12**	**1.81**	**0.22**	**1.58**	**0.53**	**0.20**	**0.33**	**432.95**
Two-Foot Shoulders Alternative										
Grubbing/land clearing	0.13	0.53	0.97	0.60	0.04	0.56	0.15	0.04	0.12	100.48
Grading/excavation	0.14	0.66	1.05	0.61	0.05	0.56	0.16	0.05	0.12	115.96
Drainage/utilities/sub-grade	0.13	0.52	0.89	0.60	0.05	0.56	0.16	0.04	0.12	93.73
Paving	0.08	0.33	0.43	0.04	0.04	0.00	0.03	0.03	0.00	41.23
Total	**0.48**	**2.04**	**3.35**	**1.85**	**0.18**	**1.67**	**0.51**	**0.17**	**0.35**	**351.40**
Two-Foot Widening in Spot Locations Alternative (selected preferred alternative)										
Grubbing/land clearing	0.12	0.49	0.90	0.35	0.04	0.31	0.10	0.04	0.06	92.76
Grading/excavation	0.13	0.59	0.96	0.36	0.05	0.31	0.11	0.04	0.06	105.16
Drainage/utilities/sub-grade	0.12	0.48	0.82	0.36	0.04	0.31	0.11	0.04	0.06	86.52
Paving	0.08	0.30	0.40	0.04	0.04	0.00	0.03	0.03	0.00	38.06
Total	**0.44**	**1.87**	**3.08**	**1.10**	**0.17**	**0.94**	**0.35**	**0.15**	**0.19**	**322.49**

Notes: Emissions calculations based on Road Construction Emissions Model (Version 6.3.2). Values may not add up due to rounding.

[a] CO_2 presented in metric tons per year.

At Patrick Creek Narrows Location 1 (Table 2.4-4), construction is anticipated to last for approximately 90 to 100 days, so it was assumed that construction would last approximately 100 days (3.5 months) as a worst-case-scenario. At Patrick Creek Narrows Location 2, construction under the Upstream and Downstream Bridge Replacement Alternatives is anticipated to last for approximately 10 months (300 days), and construction under the Bridge Preservation with Upslope Retaining Wall Alternative is anticipated to last for approximately 8.35 to 10 months (250 to 300 days). At Patrick Creek Narrows Location 3, construction is anticipated to last for approximately 50 to 70 days**,** so it was assumed that construction would last for approximately 2.3 months (70 days) as a worst-case-scenario.

At Patrick Creek Narrows Location 1, a total of 850 yd^3 of soil is anticipated to be imported/exported from the site; therefore, without further detail provided, it was assumed that 9 yd^3 per day of soil would be imported/exported from the project site. At Patrick Creek Narrows Location 2, under the Upstream Bridge Replacement Alternative, a total of 35,000 yd^3 of soil is anticipated to be imported/exported from the site; therefore, without further detail provided, it was assumed that 117 yd^3 per day of soil would be exported from the project site. Under the

Downstream Bridge Replacement Alternative, the selected preferred alternative, a total of 20,000 yd^3 of soil is anticipated to be imported/exported from the site; therefore, without further detail provided, it was assumed that 67 yd^3 per day of soil would be imported/exported from the project site. Under the Bridge Preservation with Upslope Retaining Wall Alternative, a total of 15,000 yd^3 of soil is anticipated to be imported/exported from the site; therefore, without further detail

Table 2.4-4. Patrick Creek Narrows Locations 1, 2, and 3 Construction Emission Estimates (tons per year)

Construction Phase	ROG	NO_x	CO	Total PM10	Exhaust PM10	Fugitive Dust PM10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	CO_2[a]
Patrick Creek Narrows Location 1										
Grubbing/land clearing	0.17	0.73	1.43	0.18	0.06	0.13	0.08	0.05	0.03	145.23
Grading/excavation	0.19	0.91	1.52	0.20	0.07	0.13	0.09	0.07	0.03	166.48
Drainage/utilities/sub-grade	0.17	0.72	1.30	0.19	0.07	0.13	0.09	0.06	0.03	134.83
Paving	0.10	0.41	0.59	0.05	0.05	0.00	0.05	0.05	0.00	54.07
Total	**0.63**	**2.76**	**4.84**	**0.63**	**0.25**	**0.38**	**0.31**	**0.23**	**0.08**	**500.61**
Patrick Creek Narrows Location 2—Upstream Bridge Replacement Alternative										
Grubbing/land clearing	0.53	2.27	4.36	3.21	0.18	3.03	0.80	0.17	0.63	445.05
Grading/excavation	0.69	3.78	5.28	3.28	0.25	3.03	0.86	0.23	0.63	607.84
Drainage/utilities/sub-grade	0.53	2.24	3.97	3.24	0.21	3.03	0.82	0.19	0.63	413.85
Paving	0.34	1.33	1.86	0.16	0.16	0.00	0.15	0.15	0.00	171.57
Total	2.10	9.61	15.46	9.90	0.81	9.09	2.63	0.73	1.89	1638.32
Patrick Creek Narrows Location 2—Downstream Bridge Replacement Alternative (selected preferred alternative)										
Grubbing/land clearing	0.53	2.27	4.36	3.21	0.18	3.03	0.80	0.17	0.63	445.05
Grading/excavation	0.65	3.36	5.01	3.27	0.24	3.03	0.85	0.22	0.63	565.40
Drainage/utilities/sub-grade	0.53	2.24	3.97	3.24	0.21	3.03	0.82	0.19	0.63	413.85
Paving	0.34	1.33	1.86	0.16	0.16	0.00	0.15	0.15	0.00	171.57
Total	**2.06**	**9.19**	**15.19**	**9.89**	**0.80**	**9.09**	**2.62**	**0.73**	**1.89**	**1595.87**
Patrick Creek Narrows Location 2—Bridge Preservation with Upslope Retaining Wall Alternative										
Grubbing/land clearing	0.45	1.89	3.63	2.68	0.15	2.53	0.66	0.14	0.53	370.88
Grading/excavation	0.54	2.75	4.15	2.73	0.20	2.53	0.71	0.18	0.53	466.21
Drainage/utilities/sub-grade	0.44	1.86	3.31	2.70	0.17	2.53	0.68	0.16	0.53	344.88
Paving	0.28	1.11	1.55	0.14	0.14	0.00	0.12	0.12	0.00	142.98
Total	**1.71**	**7.61**	**12.63**	**8.24**	**0.66**	**7.58**	**2.18**	**0.60**	**1.58**	**1324.94**
Patrick Creek Narrows Location 3										
Grubbing/land clearing	0.12	0.51	1.00	0.23	0.04	0.19	0.08	0.04	0.04	101.66
Grading/excavation	0.14	0.67	1.09	0.24	0.05	0.19	0.09	0.05	0.04	120.34
Drainage/utilities/sub-grade	0.12	0.50	0.91	0.23	0.05	0.19	0.08	0.04	0.04	94.38
Paving	0.07	0.29	0.42	0.04	0.04	0.00	0.03	0.03	0.00	37.85
Total	**0.45**	**1.97**	**3.42**	**0.73**	**0.18**	**0.56**	**0.28**	**0.16**	**0.12**	**354.23**

Notes: Emissions calculations based on Road Construction Emissions Model (Version 6.3.2). Values may not add up due to rounding.

[a] CO_2 presented in metric tons per year.

provided, it was assumed that 60 yd^3 per day of soil would be imported/exported from the project site. At Patrick Creek Narrows Location 3, a total of 1,850 yd^3 of soil is anticipated to be imported/exported from the site; therefore, without further detail provided, it was assumed that 26 yd^3 per day of soil would be imported/exported from the project site.

At the Narrows site (Table 2.4-5), construction is anticipated to last for approximately 3.3 months (100 days). A total of 2,800 yd^3 of soil is anticipated to be excavated from the site; therefore, without further detail provided, it was assumed that 28 yd^3 per day of soil would be exported from the project site.

Table 2.4-5. The Narrows Construction Emission Estimates (tons per year)

Construction Phase	ROG	NO_x	CO	Total PM10	Exhaust PM10	Fugitive Dust PM10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	CO_2 [a]
Grubbing/land clearing	0.19	0.82	1.60	0.30	0.07	0.23	0.11	0.06	0.05	146.76
Grading/excavation	0.21	1.02	1.68	0.31	0.08	0.23	0.12	0.08	0.05	173.78
Drainage/utilities/sub-grade	0.18	0.76	1.40	0.30	0.07	0.23	0.12	0.07	0.05	136.37
Paving	0.12	0.44	0.64	0.06	0.06	0.00	0.05	0.05	0.00	55.63
Total	**0.70**	**3.04**	**5.32**	**0.97**	**0.28**	**0.69**	**0.40**	**0.26**	**0.14**	**512.54**

Notes: Emissions calculations based on Road Construction Emissions Model (Version 6.3.2). Values may not add up due to rounding

[a] CO_2 presented in metric tons per year.

At the Washington Curve site (Table 2.4-6), under the Cut Slope Alternative, which is the selected preferred alternative, construction is anticipated to last for approximately 5 months (150 days). Under the Retaining Wall Alternative, construction is anticipated to last for 250 to 300 days, so it was assumed that construction would last approximately 10 months (300 days) as a worst-case-scenario. A total of 14,000 yd^3 of soil is anticipated to be excavated from the site; therefore, without further detail provided, it was assumed that 93 yd^3 per day of soil would be exported from the project site under the Cut Slope Alternative and 47 yd^3 per day under the Retaining Wall Alternative.

Table 2.4-6. Washington Curve Construction Emission Estimates (tons per year)

Construction Phase	ROG	NO_x	CO	Total PM10	Exhaust PM10	Fugitive Dust PM10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	CO_2 [a]
Cut Slope Alternative (selected preferred alternative)										
Grubbing/land clearing	0.24	1.02	1.99	0.36	0.08	0.28	0.13	0.07	0.06	217.88
Grading/excavation	0.30	1.64	2.32	0.39	0.11	0.28	0.16	0.10	0.06	286.09
Drainage/utilities/sub-grade	0.24	1.03	1.82	0.37	0.09	0.28	0.14	0.09	0.06	202.28
Paving	0.15	0.61	0.85	0.07	0.07	0.00	0.07	0.07	0.00	81.10
Total	**0.93**	**4.29**	**6.98**	**1.19**	**0.36**	**0.83**	**0.50**	**0.32**	**0.17**	**787.35**
Retaining Wall Alternative										
Grubbing/land clearing	0.48	2.03	3.98	0.67	0.16	0.51	0.25	0.15	0.11	435.76
Grading/excavation	0.57	2.92	4.42	0.72	0.21	0.51	0.30	0.19	0.11	532.31
Drainage/utilities/sub-grade	0.48	2.06	3.63	0.70	0.19	0.51	0.28	0.17	0.11	404.56
Paving	0.29	1.22	1.69	0.15	0.15	0.00	0.13	0.13	0.00	162.21
Total	**1.83**	**8.23**	**13.73**	**2.23**	**0.70**	**1.53**	**0.96**	**0.64**	**0.32**	**1534.84**

Notes: Emissions calculations based on Road Construction Emissions Model (Version 6.3.2). Values may not add up due to rounding

[a] CO_2 presented in metric tons per year.

In addition to analyzing the various project locations separately, a summary of the cumulative emissions associated with all project components (i.e., improvements at all seven project sites)

occurring concurrently is presented in Table 2.4-7. The information in Table 2.4-7 represents a worst-case scenario. The location alternatives with the highest emissions were used in the summary: Ruby 2—Four-Foot Shoulders Alternative; Patrick Creek Narrows Location 2—Upstream Bridge Replacement Alternative; and Washington Curve—Cut Slope Alternative.

Table 2.4-7. Cumulative Concurrent Project Construction Emission Estimates (tons per year)

Construction Phase	ROG	NO_x	CO	Total PM10	Exhaust PM10	Fugitive Dust PM10	Total PM2.5	Exhaust PM2.5	Fugitive Dust PM2.5	CO_2a
Grubbing/land clearing	1.50	6.38	12.36	4.97	0.52	4.45	1.40	0.47	0.93	1252.22
Grading/excavation	1.81	9.29	13.99	5.13	0.68	4.45	1.54	0.61	0.93	1579.56
Drainage/utilities/sub-grade	1.48	6.26	11.17	5.03	0.58	4.45	1.46	0.53	0.93	1163.84
Paving	0.93	3.68	5.19	0.45	0.45	0.00	0.42	0.42	0.00	477.38
Total	**5.73**	**25.61**	**42.72**	**15.58**	**2.23**	**13.35**	**4.81**	**2.03**	**2.78**	**4473.01**

Notes: Emissions calculations based on Road Construction Emissions Model (Version 6.3.2). Values may not add up due to rounding

[a] CO_2 presented in metric tons per year.

Construction activities are subject to requirements found in the 2006 Amendments to Standard Specifications, Sections 14-9.01 and 14-9.02 (01-20-12); 2006 Standard Specifications Sections 7-1.01F, 10, and 18; 2006 SSP S5-750 (03-13-09); 2006 SSP 19-910 (06-01-11); 2010 Standard Specifications Sections 14-9.02, 14-9.03, and 18; 2010 SSP 14-11.05 (05-20-11); and 2010 SSP 49-1.03 (05-20-11). In addition, the NCUAQMD requires that all construction activities comply with its Rule 104 Prohibitions, Section 4.0, regarding fugitive dust emissions from any activity. Implementation of the avoidance, minimization, and/or mitigation measures outlined below would minimize air quality effects from construction activities.

Release of Naturally Occurring Asbestos Fibers into the Air during Grading and Construction Activities

According to the construction scenarios and geotechnical reports for the proposed project, NOA has been identified at the Washington Curve site and is likely to be present at the Patrick Creek Narrows locations. For the Washington Curve site, it is expected that excavated material will contain NOA at levels considered hazardous. With implementation of the "Implement Asbestos Airborne Toxic Control Measures" mitigation measure below, this effect is not anticipated to be adverse.

Avoidance, Minimization, and/or Mitigation Measures

The Department's Standard Specifications pertaining to air pollution control and dust control provisions are a required part of all construction contracts and would effectively reduce and control emission effects during construction. The provisions of the Department's Standard Specifications include the following.

- 2006 Amendments to Standard Specifications Section 14-9.01—Air Pollution Control
- 2006 Amendments to Standard Specifications Section 14-9.02—Dust Control
- 2006 Standard Specifications Section 7-1.01F—Air Pollution Control
- 2006 Standard Specifications Section 10—Dust Control

- 2006 Standard Specifications Section 18—Dust Palliative
- 2006 Standard Special Provision S5-750—Naturally Occurring Asbestos
- 2006 Standard Special Provision 19-910—Material Containing Naturally Occurring Asbestos
- 2010 Standard Specifications Section 14-9.02—Air Pollution Control
- 2010 Standard Specifications Section 14-9.03—Dust Control
- 2010 Standard Specifications Section 18—Dust Palliative
- 2010 Standard Special Provision 14-11.05—Naturally Occurring Asbestos
- 2010 Standard Special Provision 49-1.03 (includes provisions for management of naturally occurring asbestos during pile installation)

In addition, the measures below will be implemented to minimize impacts from fugitive dust, exhaust emissions, and asbestos fibers.

Implement NCUAQMD's Rule 104 Prohibitions, Section 4.0, to Control Fugitive Dust Emissions

The Department's Standard Specifications and special provisions specifically require compliance by the Contractor with all applicable laws and regulations related to air quality, including air pollution control district or air quality management district regulations and local ordinances. The Construction Contractor will be required to implement measures to reduce construction-related fugitive dust emissions. The applicable requirements from the NCUAQMD Rule 104 Prohibitions, Section 4.0, are described below:

- No person shall do or allow handling, transporting, or open storage of materials in such a manner which allows or may allow unnecessary amounts of particulate matter to become airborne.
- Reasonable precautions shall be taken to prevent particulate matter from becoming airborne, including, but not limited to, the following provisions:
    - Covering open-bodied trucks when used for transporting materials likely to give rise to airborne dust.
    - The use of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.
    - The application of asphalt, oil, water or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which can give rise to airborne dusts.
    - The paving of roadways and their maintenance in a clean condition.
    - The prompt removal of earth or other track out material from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water, or other means.

Implement Measures to Reduce Exhaust Emissions from Off-Road Diesel-Powered Equipment

The Construction Contractor will implement measures to reduce construction-related exhaust emissions. Appropriate measures include maintaining properly tuned engines; minimizing the idling time of diesel-powered construction equipment to 2 minutes; using alternative-fuel-powered construction equipment (i.e., compressed natural gas, biodiesel, or electric); using add-on mitigation devices such as diesel oxidation catalysts or particulate filters; using equipment that meets the CARB's most recent certification standard for off-road heavy-duty diesel engines; phasing project construction; and limiting heavy-duty equipment operating hours. The Construction Contractor may select any combination of the measures identified above. If alternative measures are to be implemented, they must be shown to achieve tangible reductions in construction-related exhaust emissions and approved by either the NCUAQMD or CARB.

Implement the Asbestos Compliance Plan and Dust Control Plan

See Section 2.4.9, "Hazardous Wastes/Materials," above for the full text of this measure.

2.4.11 Noise and Vibration

Del Norte County does not have an adopted noise ordinance or other regulations that apply to construction noise. The Department has contract Standard Specifications and special provisions regarding construction noise that, in general, include the following:

> Do not exceed 86 dBA L_{max} at 50 feet from the job site activities from 9 p.m. to 6 a.m. Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

Contract provisions include:

- 2006 Amendments to Standard Specifications Section 14-8.02—Noise Control (01-20-12)
- 2006 Standard Specifications—(various sections throughout contain noise control provisions for specific work)
- 2006 Standard Special Provision S5-310—Noise Control (06-01-11)
- 2010 Standard Specification Section 14-8.02—Noise Control
- 2010 Standard Special Provision 14-8.02—Noise Control (05-20-11) (night work in residential or urban areas)

Construction Noise Levels (Non-Blasting)

Table 2.4-8 summarizes noise levels produced by construction equipment commonly used on roadway construction projects and lists the additional pieces of equipment anticipated to be necessary to meet the needs of the project. For construction activity not related to controlled blasting activities, construction equipment is expected to generate noise levels ranging from 70 to 101 dBA at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance, with an additional 1 to 2

dB per doubling of distance because of acoustically soft ground absorption (i.e., not pavement or water). Shielding from buildings or topography found in the area would substantially reduce noise impacts on sensitive receptors in the vicinity of construction activity.

Controlled Blasting Activities

Controlled blasting may be necessary in some areas of the hill slope excavation under the Patrick Creek Narrows Location 2 Upstream Bridge Replacement, Downstream Bridge Replacement, and Bridge Preservation with Upslope Retaining Wall Alternatives. In addition, controlled blasting may be necessary to establish cut limits at the Narrows site. The two primary environmental effects of blasting are airblast and groundborne vibration. The following is a brief background and discussion of potential impacts that typically result from blasting.

Airblast/Air Overpressure

Energy released in an explosion creates an air overpressure (commonly called an airblast) in the form of a propagating wave. If the receiver is close enough to the blast, the overpressure can be felt as the pressure front of the airblast passes. The accompanying booming sound lasts for only a few seconds. The explosive charges used in construction are typically wholly contained in the ground, resulting in an airblast with frequency content below about 250 Hertz (Hz).

Table 2.4-8. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Air Compressor	81
Auger Drill Rig	85
Backhoe	80
Bulldozer	85
Compactor	83
Concrete Pump	82
Concrete Saw	90
Crane	85
Dump Truck/Heavy Truck	88
Excavator	85
Generator	82
Grader	85
Hoe Ram	90
Jack Hammer	89
Loader	85
Paver	89
Pneumatic Tools	85
Pump	81
Rock Drill	98
Roller	85
Scraper	89
Hydraulic Ram	90

Source: Federal Highway Administration 2006; Federal Transit Administration 2006.

Because an airblast lasts for only a few seconds, use of L_{eq} to describe blast noise is inappropriate. Airblast is properly measured and described as a linear peak air overpressure (i.e., an increase above atmospheric pressure) in pounds per square inch (psi). Modern blast monitoring equipment is also capable of measuring peak overpressure data in terms of un-weighted decibels. (Decibels, as used to describe airblast, should not be confused with or compared to dBA, which is commonly used to describe relatively steady-state noise levels.) An airblast with a peak overpressure of 130 dB can be described as being mildly unpleasant, whereas exposure to jet aircraft noise at a level of 130 dBA would be painful and deafening.

Groundborne Vibration

Blasting creates seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Ground vibration can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance will result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance.

Because seismic waves travel outward from a blast, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as peak particle velocity (PPV).

Human Response to Airblast and Groundborne Vibration

Human response to blast vibration and airblast is difficult to quantify. Vibration and airblast can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does blast frequency. Blast events are relatively short, on the order of several seconds for sequentially delayed blasts. Generally, as blast duration and vibration frequency increase, the potential for adverse human response increases. Studies have shown that a few blasts of longer duration will produce a less adverse human response than short blasts that occur more often.

Table 2.4-9 summarizes the average human response to vibration and airblast that may be anticipated when a person is at rest in quiet surroundings. If the person is engaged in any type of physical activity, the level required for the responses indicated is increased considerably.

It is important to understand that the forgoing describes the responses of average individuals. Individual responses can fall anywhere within the full range of the human response spectrum. At one extreme are those people who receive some tangible benefit from the blasting operation and probably would not be disturbed by any level of vibration and airblast as long as it does not damage their property. At the opposite extreme are people who would be disturbed by even barely detectable vibration or airblast. Individuals at either of these two extremes were not considered in the listing of average human response or in the impact conclusions that follow.

Table 2.4-9. Human Response to Airblast and Groundborne Vibration from Blasting

Response	Ground Vibration Range PPV (inches per second)	Airblast Range (dB)
Barely perceptible to distinctly perceptible	0.02–0.10	50–70
Distinctly perceptible to strongly perceptible	0.10–0.50	70–90
Strongly perceptible to mildly unpleasant	0.50–1.00	90–120
Mildly unpleasant to distinctly unpleasant	1.00–2.00	120–140
Distinctly unpleasant to intolerable	2.00–10.00	140–170

Source: California Department of Transportation 2004

Airblast Criteria

Conventional noise criteria for steady-state noise sources (e.g., traffic or standard construction-related noise) do not apply to air overpressures from blasting. U.S. Bureau of Mines (USBM) Report of Investigations 8485 (Siskind et al. 1980a) and the regulations issued more recently by the U.S. Office of Surface Mining and Reclamation Enforcement specify a maximum safe overpressure of 0.013 psi (133 dB) for impulsive airblast when recording is accomplished with equipment having a frequency response range of at least 2 to 200 Hz.

Groundborne Vibration Criteria

While there are no formal criteria for vibration impacts from blasting, USBM Report of Investigations 8507 (Siskind et al. 1980b) contains blasting-level criteria that can be appropriately applied to keep ground vibration well below levels that might cause damage to neighboring structures. The Report of Investigations 8507 indicates a vibration level criterion of 0.5 inch per second for potential cosmetic damage to structures due to blasting. Additionally, the U.S. Department of Transportation indicates a vibration damage threshold of 0.12 inch per second for extremely fragile historic buildings (Federal Transit Authority 2006). The distribution and frequency (timing) of explosions, distance from the blast, blast charge weight, charge depth, hole size, degree of confinement, initiation methods, and composition of the transmitting medium (soil and rock strata) between the blast site and affected structure are all factors in the resulting measured vibration level.

Potential for Disturbance from Construction Noise Levels (Non-Blasting)

Table 2.4-10 provides a summary of the projected noise levels (for standard construction practices aside from blasting) for each project location and alternative at a distance of 50 feet. In addition, potential blasting and/or nighttime work is indicated. Finally, the nearest sensitive receivers to proposed construction work for a given location/alternative are identified, including the type of land use and whether direct or partial line-of-sight exists between proposed construction activity and the nearest receiver. In the case that direct line-of-sight does not exist, it can be assumed that attenuation (or noise level reduction) on the order of at least 5 dB due to topography may reduce noise levels further in addition to the standard attenuation of 7 to 8 dB achieved per doubling of distance (under scenarios involving acoustically soft ground).

Table 2.4-10. Project Noise Levels for Standard Construction Practices

Project Location and Alternative	Three Loudest Pieces of Equipment Likely to Operate Simultaneously	A-Weighted Decibel Level at 50 feet		Other Factors		Nearest Sensitive Receiver(s)			
		L_{max}, Maximum	L_{eq}, Average	Blasting	Nighttime Work	Description	Distance (feet, approx.)	Land Use	Direct or Partial Line-of-Sight? (Y or N)
Ruby 1	Paver, compactor, and dump truck/heavy truck during widening	92	88	No	Possible	4700 SR 197	50–100	SFR	Y
						Ruby Van Deventer County Park campgrounds	50–100	CMP	Y
Ruby 2—Four-Foot Shoulders Alternative	Jack hammer, saw, and dump truck/heavy truck during general improvements	94	88	No	No	Residences on SR 197	50	SFR	Y
Ruby 2—Two-Foot Shoulders Alternative	Jack hammer, saw, and dump truck/heavy truck during general improvements	94	88	No	No	Residences on SR 197	50	SFR	Y
Ruby 2—Two-Foot Widening in Spot Locations Alternative (selected preferred alternative)	Jack hammer, saw, and dump truck/heavy truck during general improvements	94	88	No	No	Residences on SR 197	50	SFR	Y
Patrick Creek Narrows Location 1	Jack hammer, saw, and dump truck/heavy truck during general improvements	94	88	No	No	Sandy Beach day-use area (approx. PM 20.85)/Smith River	1,500–2,000	REC	Y
Patrick Creek Narrows Location 2—Upstream Bridge Replacement Alternative	Crane, ram, and heavy truck during bridge replacement	93	87	Possible	Possible	Private residence at 14975 US 199/approx. PM 25.5	1 mile+	SFR	N
Patrick Creek Narrows Location 2—Downstream Bridge Replacement Alternative (selected preferred alternative)	Crane, ram, and heavy truck during bridge replacement	93	87	No	Possible	Private residence at 14975 US 199/approx. PM 25.5	1 mile+	SFR	N
Patrick Creek Narrows Location 2—Bridge Preservation with Upslope Retaining Wall Alternative	Rock drill, ram, and generator during rock bolting	99	92	Possible	Possible	Private residence at 14975 US 199/approx. PM 25.5	1 mile+	SFR	N
Patrick Creek Narrows Location 3	Paver, compactor, and dump truck/heavy truck during widening	92	88	No	No	Private residence at 14975 US 199/approx. PM 25.5	250	SFR	Y
						Bar-O-Boys Ranch	300–600	JRP	Y

Project Location and Alternative	Three Loudest Pieces of Equipment Likely to Operate Simultaneously	A-Weighted Decibel Level at 50 feet		Other Factors		Nearest Sensitive Receiver(s)			
		L_{max}, Maximum	L_{eq}, Average	Blasting	Nighttime Work	Description	Distance (feet, approx.)	Land Use	Direct or Partial Line-of-Sight? (Y or N)
The Narrows	Crane, drill, and heavy truck during drilling by crane	99	92	Yes	No	Patrick Creek Campground picnic area	2,000	REC	N
						Patrick Creek Campground overnight area	2,200–2,800	CMP	N
						Patrick Creek Lodge	2,700	LDG	N
Washington Curve—Cut Slope Alternative (selected preferred alternative)	Excavator, saw, and heavy truck during roadway construction	93	88	No	Yes	Nearest building	2,000	JRP	N
Washington Curve—Retaining Wall Alternative	Excavator, drill, and pneumatic tools during soil-nailed retaining wall construction	98	92	No	Yes	Bar-O-Boys Ranch	2,000	JRP	N

Notes:
CMP = campground
JRP = juvenile residency program
LDG = lodging
REC = recreation
SFR = single-family residential

Potential for Disturbance from Controlled Blasting Activities

It is anticipated that the quantity of explosive needed per shot will be in the range of 12.5 to 37.5 pounds (Narwold pers. comm.). Potential airblast and vibration levels have been projected using methods recommended in the Department's 2004 *Transportation- and Construction-Induced Vibration Guidance Manual* and assuming a 37.5-pound charge and average normal confinement of the charge. Table 2.4-11 presents estimated maximum airblast and groundborne vibration levels as a function of distance based on these assumptions.

Table 2.4-11. Estimated Maximum Airblast and Groundborne Vibration Levels

Distance (feet)	PPV under Average Normal Confinement (inches/second)	Peak Air Overpressure (dB)
100	1.200	143
250	0.270	133
500	0.087	126
750	0.046	122
1,000	0.029	119
1,250	0.020	117
1,500	0.015	115
2,000	0.009	112

Source: California Department of Transportation 2004

The results presented in Table 2.4-11 indicate that ground vibration could exceed the USBM standard for potential damage of 0.5 inch per second at receivers within about 165 feet of the blast and that maximum airblast could exceed the 133-dB USBM standard at receivers within about 250 feet.

As indicated in Table 2.4-10, there are no occupied structures within 250 feet of either Patrick Creek Narrows Location 2 or the Narrows site. There would be no impacts on buildings or structures at the campground due to vibration because of the distance from the proposed blast sites.

In addition to proposed blasting activity, nighttime work would also have the potential to disturb nearby noise-sensitive land uses. However, no adverse noise impacts from construction are anticipated because construction would be conducted in accordance with the Department's provisions referenced at the beginning of this section. Controlled blasting at this site would occur during the daytime and construction noise would not affect campers sleeping at night in the campground.

Avoidance, Minimization, and/or Mitigation Measures

Employ Noise- and Vibration-Reducing Construction Measures

Implementation of the following possible measures, among others, would minimize the temporary noise and vibration impacts from construction:

- Using sound-control devices on all equipment that are no less effective than those provided on the original equipment by the manufacturer. No internal combustion equipment will have an unmuffled exhaust.
- Implementing appropriate additional noise mitigation measures as directed by the Department, including changing the location of stationary construction equipment to ensure it is as far away from sensitive receptors as possible, turning off idling equipment, rescheduling construction activity during the daytime and/or a season that has the least impact on sensitive receptors, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.
- Scheduling substantial noise-generating activity during daytime hours where feasible.
- Designating construction staging areas as far as practical from receivers that are likely to fall within the higher ranges of ground and air vibrations from construction work.
- Performing a pre-blast condition survey of all buildings, structures, and utilities within 1,000 feet of proposed controlled blasting activity. The survey will distinguish different types of existing cracks in structures—cosmetic and structural—by means of camera or video.
- Employ measures to control airblast and ground vibration from controlled blasting such that airblast and ground vibration do not exceed USBM standards for airblast and ground vibration whenever practicable. Such measures include reducing the quantity of explosive, modifying the confinement of explosive energy, modifying the powder factor, timing and spatial distribution of blasts, and using alternative methods such as high pressure gas methods to split rock.
- Conducting airblast and ground vibration monitoring at receivers within 1,000 feet of proposed controlled blasting using seismographs capable of recording PPV in three mutually perpendicular axes, with a fourth channel for recording airblast. The frequency response of the instrumentation will be from 2 to 250 Hz, with a minimum sampling rate of 1,000 samples per second per channel. The recorded data must be such that the frequency of the vibrations can be determined readily. If controlled blasting is found to exceed USBM standards for ground vibration and airblast, controlled blasting will cease, and alternative controlled blasting or excavation methods will be employed that result in the USBM standards not being exceeded.
- Responding to and investigating all complaints of disturbance.

2.4.12 Natural Communities

Temporary Disturbance and Temporary Effects on Natural Communities

Construction work at all locations would affect aquatic communities, forest communities, sparsely vegetated areas, and ruderal vegetation. Temporary effects include disturbances that are short term (1 to 2 years). Temporary impacts are typically due to construction activities. Temporary disturbance to natural communities includes soil-disturbing activities to areas that will become reestablished to pre-project conditions over 1 to 2 years by recolonization of organisms from adjacent habitats that were not disturbed by project activity. Temporary impacts include stream diversion and associated sediment discharges, soil excavation for trenching, and

noise of construction (including blasting). These temporary effects are not considered significant. Permanent effects (i.e., disturbances to plants and animals that are more long-term impacts (more than 2 years) or perpetual) are addressed in 2.3.1.2, ”Environmental Consequences” in the Natural Communities section.

Vegetated natural communities would be affected at the Ruby 1 site; the Ruby 2 site; Patrick Creek Narrows Locations 1, 2, and 3; and the Washington Curve site. Sparsely vegetated natural communities would be affected at Patrick Creek Narrows Locations 1 and 3, the Narrows site, and the Washington Curve site. Ruderal vegetation would be affected at all locations. Impacts on natural communities are summarized in Table 2.3.1-1 in Section 2.3.1, “Natural Communities.” These temporary effects are not significant because the areas disturbed are expected to revegetate over 1–2 years by recolonization from adjacent habitats that were not disturbed by project activity.

Ruby 1

The effect of the work at the Ruby 1 site would result in temporary disturbance of 0.05 acre of ruderal vegetation.

Ruby 2

All three alternatives at the Ruby 2 site would involve temporary impacts to natural communities. Forested and ruderal vegetation would be affected by construction activity.

Four-Foot Shoulders Alternative

Approximately 0.2 acre of ruderal vegetation would be temporarily affected by construction activity.

Two-Foot Shoulders Alternative

Approximately 0.3 acre of ruderal vegetation would be temporarily affected by construction activity.

Two-Foot Widening in Spot Locations Alternative

Approximately 0.3 acre of ruderal vegetation would be temporarily affected by construction activity.

Patrick Creek Narrows Location 1

Approximately 0.04 acre of ruderal vegetation would be temporarily affected by construction activity.

Patrick Creek Narrows Location 2

All three alternatives at Patrick Creek Narrows Location 2 would involve construction work in vegetated natural communities. The effects are considered temporary since the areas disturbed are expected to revegetate over time by recolonization from adjacent habitats that were not disturbed by project activity.

Upstream Bridge Replacement Alternative

Approximately 1.4 acre of ruderal vegetation would be temporarily affected by construction activity.

Downstream Bridge Replacement Alternative

Approximately 1.4 acre of ruderal vegetation would be temporarily affected by construction activity.

Bridge Preservation with Upslope Retaining Wall Alternative

Approximately 0.9 acre of ruderal vegetation would be temporarily affected by construction activity.

Patrick Creek Narrows Location 3

Approximately 0.05 acre of ruderal vegetation would be temporarily affected by construction activity.

The Narrows

Approximately 0.15 acre of ruderal vegetation would be temporarily affected by construction activity.

Washington Curve

Approximately 0.1 acre of ruderal vegetation would be temporarily affected by construction activity for either the Cut Slope Alternative or the Retaining Wall Alternative at Washington Curve.

Avoidance, Minimization, and/or Mitigation Measures

Delineate Environmentally Sensitive Areas with Exclusionary Fencing

The Department will restrict access to areas on project plans in order to avoid potential construction impacts on sensitive biological resources (i.e., sensitive natural communities and plant and lichen locations) adjacent to the construction sites and staging areas. Temporary exclusionary fencing will be placed around areas of sensitive natural communities and special-status and sensitive plant and lichen species that are adjacent to proposed staging/storage and construction areas, thereby prohibiting construction activities in those areas.

Control Plant Pathogens

To avoid the spread of plant diseases such as sudden oak death and Port Orford cedar (POC) root disease, best management practices will be implemented. These include the following practices:

- washing heavy equipment before and after ground-disturbing activities;
- removing POC from road areas to lower infection risk (sanitation logging);
- directing water runoff away from POC areas; and
- using pathogen-free water for dust control.

Protect Tree Roots

There are many large old redwood trees (greater than 36 inch dbh) and large Douglas-fir trees (greater than 24 inch dbh) within the project areas. To minimize potential impacts on these trees, only hand tools or a pneumatic excavation tool (such as an air spade) will be used for excavation

within the Structural Root Zone of large trees. The Structural Root Zone of a tree is a circular area (the tree trunk is at the center of the circle) with a radius three times the dbh of the trunk. Only an air spade or handwork will be used for excavation within the Structural Root Zone of redwood trees that are 36 inches dbh or greater. The pneumatic excavation tool turns compressed air into a high-speed air jet, which dislodges soil particles but does not harm solid material, such as tree roots. This tool is commonly used by arborists when it is necessary to excavate within the root zone of a tree. Within the Structural Root Zone, any root encountered that needs to be removed will be cut cleanly to optimize healing potential.

The following avoidance and minimization measures will be implemented for work near large old trees:

- An arborist shall be present to monitor any ground-disturbing construction activities.
- All excavation below the finish grade within a setback equal to three times the diameter of any large old trees shall be conducted with hand tools, air spade, or other methods approved by the construction engineer and arborist to minimize disturbance or damage to the roots, with exception of culvert work. Mechanized equipment can be used at the culvert locations upon approval of the construction engineer and arborist.
- The contractor will be required to use a pneumatic excavator (such as an air spade) while excavating soil within the structural root zone of trees greater than 36 inches dbh to minimize physical injury to the tree roots.
- Within the Structural Root Zone, smaller roots, less than 2 inches in diameter, that must be cut shall be cut cleanly with sharp instruments to promote healing. Roots larger than 2 inches diameter will not be cut without approval of the on-site arborist.
- After construction, cut-and-fill slopes will be replanted.
- Prior to excavation or fill the upper 4 to 6 inches of duff and native soil will be set aside for placement on finished slopes to provide the nutrients and seedbank for natural revegetation.
- To help minimize potential stress on the large trees during construction, watering will be provided. In areas where roadway excavation will take place below the finish grade and within the Structural Root Zone of trees 36 inches dbh or greater, watering equivalent to 0.5 inch deep to an area defined as from the edge of existing pavement to 25 feet beyond the edge of pavement shall be performed. Watering shall be performed not more than 24 hours after the roadway excavation work at a site and shall occur weekly thereafter between the dates of June 1 and September 30.
- Any duff layer shall be raked off the area within the clearing limits, stored, and replaced for erosion control. For areas within the Structural Root Zone of trees 36 inches dbh or greater, the duff will be hand raked.
- Where feasible and appropriate, structural fill will use one of the following methods to increase air and water porosity, minimize compaction of the roots, decrease the thickness of the structural section, and/or minimize thermal exposure to roots from hot-mix asphalt paving:

  - a 0.75 foot thick layer of Class 1, Type A permeable material shall be placed and compacted as the first lift of the fill to increase water infiltration and air circulation, or
  - Cement Treated Permeable Base (CTPB) will be considered, or
  - Cornell Mix or CU-Structural Soil will be considered.
- In locations where more than 4 inches of fill would be placed next to the trunk of a tree greater than 36 inches dbh, a brow log shall be used to keep the soil from the tree trunk andincrease air circulation.
- Equipment staging areas/storage areas shall be on the paved roadway or on existing unvegetated gravel/paved pullouts so that there will be no staging in sensitive natural communities.
- The contract will state that no heavy equipment will be staged or parked within the drip line of large old trees, except in improved areas (paved or graveled).

2.4.13 Wetlands and Other Waters of the United States

Temporary Disturbance and Placement of Fill in Wetlands and Other Waters

Temporary impacts on waters of the United States are summarized in Table 2.3.2-2 and quantified by project site and alternative in Table 2.3.2-3 in Section 2.3.2, "Wetlands and Other Waters of the United States." Temporary effects include disturbances that are short term (1 to 2 years). Temporary impacts are typically due to construction activities. If the effect is temporary, the pre-construction wetland or watercourse is expected to re-establish (either by recolonization or planting/seeding) within two years after construction is complete. These temporary effects are not considered significant. There would be minor, short-term impacts on riparian and emergent wetlands and other waters of the United States at culvert inlets and outlets when they are replaced or lengthened. Approximately 770 linear feet of the 40-foot-wide Middle Fork Smith River would be temporarily affected if a bridge replacement alternative is selected for Patrick Creek Narrows Location 2; the Downstream Bridge Replacement Alternative was identified as the preferred alternative.

Ruby 1

Two unnamed tributaries to the Smith River are present within the BSA, and flow under the highway (PMs 4.47 and 4.54) through 24-inch-diameter corrugated steel pipe**.** They would both have new inlets installed and would be extended (at the inlet end) approximately 15 feet (~30 feet total). Replacement of one and extension of two culverts would result in impacts on other waters of the United States. Tributaries will be subjected to minor, short-term impacts on riparian vegetation at culvert inlets and outlets when they are replaced or lengthened. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

Ruby 2

The wetlands present at the Ruby 2 site would not be affected by the proposed work. Culverts would be replaced on two drainages at the Ruby 2 site and will result in impacts on other waters of the United States. Tributaries will be subjected to minor, short-term impacts on riparian

vegetation at culvert inlets and outlets when they are replaced or lengthened. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

Patrick Creek Narrows Location 1

Replacement of the culvert pipe in the perennial channel at PM 20.52 (replaced in kind) and placement of rock slope protection (RSP) in the channel at the approach to the inlet to minimize erosion would result in impacts on other waters of the United States. Tributaries will be subjected to minor, short-term impacts on riparian vegetation at culvert inlets and outlets when they are replaced or lengthened. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

Patrick Creek Narrows Location 2

Culvert replacement at PM 24.07 may result in impacts on other waters of the United States Tributaries will be subjected to minor, short-term impacts on riparian vegetation at culvert inlets and outlets when they are replaced or lengthened. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

Upstream and Downstream Bridge Replacement Alternatives

Temporary fill to other waters of the United States (Middle Fork Smith River) under these alternatives may result from the following activities: bridge construction, expanding the existing cut slope, and bridge demolition. Bridge construction includes building a crane platform, abutments and foundations, falsework, and superstructure and completing the bridge. Temporary fill may include discharge of sediment, concrete waste (high pH), and construction debris from erecting and demolishing falsework. Temporary impacts include removal of herbaceous riparian vegetation, pier removal, construction, and excavation activities. Permanent impacts include additional length of culvert and removal of mature riparian trees.

Bridge Preservation with Upslope Retaining Wall Alternative

Temporary fill to other waters of the United States (Middle Fork Smith River) under the Bridge Preservation with Upslope Retaining Wall Alternative may result from expanding the existing cut slope. Temporary fill may include discharge of sediment, concrete waste (high pH), and construction debris. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

Patrick Creek Narrows Location 3

Constructing the retaining wall may require dewatering activities and may result in temporary fill in other waters of the United States. Two culverts within the project limits would be replaced to match the new roadway width. Work would be done during the dry season, but water diversion or dewatering may be required during construction. An existing overside drain would be replaced. Replacement of the culverts and overside drain may result in temporary and permanent fill to other waters of the United States, and compensatory mitigation may required by the USACE and RWQCB. Tributaries will be subjected to minor, short-term impacts on riparian vegetation at culvert inlets and outlets when they are replaced

or lengthened. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

The Narrows

Replacement of the culvert (in-kind) at PM 22.9 may result in temporary fill to other waters of the United States, and compensatory mitigation may required by the USACE and RWQCB. Proposed construction work planned in the vicinity of the seep and depressional wetland at PM 22.98 includes sliver cuts (high but shallow cuts) into the steep rock slope and reduction of a rock outcrop, and may result in temporary and permanent fill to the wetland and other waters of the United States; compensatory mitigation may required by USACE and RWQCB. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

Washington Curve

Sediment discharges during the construction of both alternatives at the Washington Curve site could result in temporary fill to other waters. No work is proposed at the culvert at PM 26.31. Temporary impacts include removal of herbaceous riparian vegetation, construction, and excavation activities. Permanent impacts include additional length of culvert.

Avoidance, Minimization, and/or Mitigation Measures

Limit Construction in Waters of the State/United States to the Dry Season

To minimize and avoid impacts on waters of the United States, work in watercourses will be scheduled to take place during periods of low flow or when the watercourse is dry, which can be as early as June 15 and as late as October 15. When watercourses are dry, no stream diversion is required; sediment discharge is avoided. Many frog and salamander species move to other areas when seasonal streams dry-up. Therefore, impacts to these species would be avoided by working when the watercourse is dry. Specific work windows and limitations on construction will be determined as a result of Endangered Species Act Section 7 consultations and permits from federal and state regulatory agencies.

Implement Erosion and Pollution Control Measures

To maintain water quality and minimize the movement of soils and sediment into and within the project watercourses, effective erosion and pollution control measures will be developed and implemented. These measures will be implemented for all ground-disturbing activities during and after construction as is practicable. It is expected that minor amounts of sediment discharge due to this project are unavoidable. However, the Department will ensure that applicable BMPs are used to stabilize all disturbed soil areas to minimize adverse effects on water quality, aquatic habitat, and listed fish species. The following measures and BMPs are applicable to the proposed project.

- Temporary construction BMPs will include the following measures and features:
    - **Soil stabilization and wind erosion control:** scheduling, preservation of existing vegetation, hydraulic mulch, erosion control blankets, and stream bank stabilization

  - **Sediment control:** silt fences, check dams, fiber rolls, gravel bag berms, street sweeping, and storm drain inlet protection
  - **Tracking control:** stabilized construction entrances/exits; non-stormwater management measures to address paving and grading operations; temporary dewatering and clear water diversions, and structure demolition/removal over or adjacent to water
  - **Waste management and material pollution control:** material handling and storage, concrete waste management, and sanitary waste management

- Site-specific temporary construction BMPs will be identified in the Water Pollution Control Program or Storm Water Pollution Prevention Plan developed by the Contractor and authorized by the Resident Engineer.
- Water pollution control BMP measures considered would include flow conveyance systems such as dikes, overside drain outlet protection and velocity dissipation devices; slope and surface protection systems such as vegetated surfaces and hard surfaces.
- On-site duff, composed of leaf litter and small branches, will be collected prior to construction whenever feasible, stockpiled, then reapplied.
- All trees removed, that are not used for other purposes for the project, will be processed through a chipper and the chips applied to the areas of exposed soil within the project area as a soil-stabilizing mulch.
- Excess material excavated from the work site will be disposed of offsite at an appropriately permitted state-owned or private disposal site or placed in the typical limits of work, as shown on the project layouts, in accordance with the Department's specifications.

Evaluate and Implement Permanent Storm Water Treatment Options

Approximately 1 to 2 acres of additional impervious surface will be added to the highway facility as a result of the proposed project. Storm water treatment BMPs would be incorporated to address pollutant removal from stormwater runoff. Treatment BMPs evaluated will include Low-Impact Development–type BMPs such as biofiltration strips and swales. Because traction sand is applied occasionally, traction sand traps will be evaluated and constructed where feasible. Treatment BMPs will be designed to meet approved guidelines.

Compensate for Temporary and Permanent Impacts on Wetlands and Other Waters

Compensation may be a combination of onsite restoration/creation, offsite restoration, or mitigation credits. Compensation ratios (number of acres restored or created for every 1 acre filled) will be based on site-specific information and determined through coordination with state and federal agencies, as part of the permitting process for the project. Concurrent measures such as working when a site is dry (seasonal avoidance) and erosion control BMPs along with post-project mitigation measures would be implemented.

2.4.14 Plant Species

Temporary Disturbance to Habitat for Sensitive Plant Species

The impact of construction at all project locations on non-special-status plants would consist of the loss of habitat and displacement. The project would result in localized effects on plant species. The BSA is located at the edge of higher-quality habitat for plant species.

No effects on special-status or sensitive plants, bryophytes, lichen, or fungi would occur at the Ruby 1 or Ruby 2 sites because none was found at these sites**.** CNPS List 4 plant species will be permanently affected at all three Patrick Creek Narrows locations, but no special-status plants, bryophytes, lichens, or fungi will be affected at these locations. There are no special-status plants, bryophytes, or fungi at any of the Patrick Creek Narrows locations, and the only special-status lichen species at these three locations is at Location 2; it will be avoided. CNPS List 4 plant species will be permanently affected at the Narrows site, as detailed below. No special-status plants, bryophytes, lichens, or fungi were found at the Narrows site. No special-status plants, bryophytes, or lichens are within proposed construction areas at the Washington Curve site. The CNPS List 4 sensitive plant populations and special-status fungus will be avoided. The special-status and CNPS List 4 species outside the construction areas, at/near potential staging areas, will not be disturbed. Temporary effects include disturbances that are short term (1–2 years). Temporary impacts are typically due to activities of construction. If the effect is temporary, the pre-construction plant population is expected to re-establish (either by recolonization or planting/seeding) within 2 years after construction is complete. These temporary effects are not considered significant.

Ruby 1

No effects on special-status or sensitive plants would occur at the Ruby 1 site. The impact of construction at the Ruby 1 site on non-special-status plants would consist of the loss of habitat and displacement. The project would result in localized effects on plant species.

Ruby 2

No effects on special-status or sensitive plants would occur at the Ruby 2 site. The impact of construction at the Ruby 2 site on non-special-status plants would consist of the loss of habitat and displacement. The project would result in localized effects on plant species.

Two-Foot Shoulders Alternative

No effects on special-status or sensitive plants would occur at the Ruby 2 site under the Two-Foot Shoulders Alternative. The impact of construction of the Two-Foot Shoulders Alternative at the Ruby 2 site on non-special-status plants would consist of the loss of 0.2 acre of habitat. The project would result in localized effects on plant species.

Four-Foot Shoulders Alternative

No effects on special-status or sensitive plants would occur at the Ruby 2 site under the Four-Foot Shoulders Alternative. The impact of construction of the Four-Foot Shoulders Alternative at the Ruby 2 site on non-special-status plants would consist of the loss of 0.4 acre of habitat. The project would result in localized effects on plant species.

Two-Foot Widening in Spot Locations Alternative

No effects on special-status or sensitive plants would occur at the Ruby 2 site under the Two-Foot Widening in Spot Locations Alternative. The impact of construction of the Two-Foot Widening in Spot Locations Alternative at the Ruby 2 site on non-special-status plants would consist of the loss of 0.1 acre of habitat. The project would result in localized effects on plant species.

Patrick Creek Narrows Location 1

Several populations of special-status and CNPS List 4 plants were recorded at this location. The placement of the retaining wall south of the highway will impact two CNPS List 4 species: Howell's lomatium (*Lomatium howellii*) (two plants) and Piper's bluegrass (*Poa piperi*) (20 plants), which are present south of US 199 on the slope between the highway and the Middle Fork Smith River. The other populations of special-status and CNPS List 4 species at this location, which occur in the seeps and ditches along the toe of the slope north of the highway and along the highway shoulders to the west of the proposed retaining wall, will not be disturbed.

Patrick Creek Narrows Location 2

Several populations of special-status and rare plants were recorded at this location. Bridge work at Patrick Creek Narrows Location 2 will affect areas of one special-status plant, yellow-tubered toothwort. This plant is locally abundant, but rare elsewhere. John McRae (Six Rivers National Forest Botanist) said there have been about 25 reported occurrences of this species in the project vicinity, and it has no special status with the Forest Service (McRae pers. comm.). All three alternatives involve a slope cut west of the highway that will remove approximately 35 to 45 yellow-tubered toothwort plants. All three alternatives will avoid impacts on other populations of yellow-tubered toothwort at Patrick Creek Narrows Location 2. One other special-status plant, Coast Range lomatium, will not be affected. Several populations of CNPS List 4 plants were recorded at this location, but will not be affected. None of the three alternatives will have an impact on the special-status lichen.

Upstream Bridge Replacement Alternative

In addition to the plant impacts listed above, this alternative would remove the most southerly 10% of an area that includes approximately 50 yellow-tubered toothwort plants west of the highway and north of the bridge, affecting approximately 5 to 10 plants.

Downstream Bridge Replacement Alternative

In addition to the plant impacts listed above (under "Patrick Creek Narrows Location 2"), this alternative affects about 10% of the yellow-tubered toothwort population that occupies the habitat east of the highway and north of the bridge. This area contains 1,000 to 2,000 plants and covers more than 0.75 acre. The portion of this area that would be affected has the lowest yellow-tubered toothwort density. It is estimated that fewer than 10% of the plants at this location would be removed. This alternative would avoid impacts on a group of about five yellow-tubered toothwort plants on the hillside southwest of the bridge.

Bridge Preservation with Upslope Retaining Wall

In addition to the plant impacts listed above (under "Patrick Creek Narrows Location 2"), this alternative affects about 5% of the yellow-tubered toothwort plants that occupy the habitat east of the highway and north of the bridge. This area contains 1,000 to 2,000 plants and covers more

than 0.75 acre. The portion of this area that would be affected has the lowest yellow-tubered toothwort density. It is estimated that fewer than 5% of the plants at this location would be removed.

Patrick Creek Narrows Location 3

The downslope retaining wall proposed at Patrick Creek Narrows Location 3 may affect a small group of yellow-tubered toothwort plants. Six plants were found in an area south of the proposed wall (east of the highway). A portion of these would likely be removed by construction for the retaining wall. A single Del Norte pea (*Lathyrus delnorticus*) (CNPS List 4.3) plant was found west of the highway at the north end of the Patrick Creek Narrows Location 3 BSA. This plant will not be affected.

The Narrows

The slope cut at the Narrows site will remove one Del Norte willow (*Salix delnortensis*), three Piper's bluegrass (*Poa piperi*) plants, and approximately 10 to 20 California lady's-slipper (*Cypripedium californicum*) plants north of US 199. No other rare plants were found in the BSA of this location.

Washington Curve

Both alternatives proposed for the Washington Curve site will have no impact on two populations of CNPS List 4 plant species: slender false lupine and Piper's bluegrass. No special-status or other rare plants were found in the BSA at the Washington Curve site. Neither alternative will have an impact on the sensitive fungus.

Avoidance, Minimization, and/or Mitigation Measures

Minimize Effects on Special-Status and CNPS List 4 Plants, Lichen, and Fungi

All special-status lichen and fungi identified during botanical surveys will be avoided.

Typically, mitigation is proposed when potential impacts on rare or listed plant species are anticipated to be adverse. With the exception of one rare species, yellow-tubered toothwort (CNPS 1B.3), all species that would be affected by proposed construction activities (i.e., California lady's-slipper, Howell's lomatium, Piper's bluegrass, and Del Norte willow) are CNPS List 4 species and considered uncommon but not rare. Potential impacts on yellow-tubered toothwort are minor (i.e., 3% to 10%, when accounting for total number of yellow-tubered toothwort across all US 199 project locations and the total number affected by proposed activities), so mitigation for potential impacts on yellow-tubered toothwort is not necessary.

Impacts on List 4 species are generally not mitigated unless the population is significant, but good stewardship and recognition of the potential significance of the List 4 species occurring within project limits prompts the Department to assess and attempt minimization measures for species that would be affected by proposed construction activities. As noted above, only four (of nine) List 4 species within project areas would be affected by project activities. One of the List 4 species that would be affected by proposed construction is California lady's-slipper, a CNPS List 4.2 species. This species is more sensitive than List 4.3 species because it is threatened by horticultural collecting and logging; many protected populations on Forest Service land are not

reproducing; and its habitat is restricted to wet areas, usually associated with serpentine, an uncommon soil/habitat (California Native Plant Society 2010). Although this species is more sensitive than other List 4 species within project limits, only ~8 to 15% of plants within project areas would be affected, and minimization measures are proposed below in an attempt to offset impacts on this species at the Narrows. The other CNPS List 4.2 species is California pitcherplant; it is threatened by horticultural collecting and mining and is restricted to generally serpentinite seeps or wet areas, which are also uncommon habitats. Construction activities have been amended to avoid potential impacts on this species.

The minimization measures proposed below are for one special-status species, yellow-tubered toothwort, and for the following sensitive species: California lady's-slipper, Howell's lomatium, Piper's bluegrass, and Del Norte willow, all of which occur in areas anticipated to have construction impacts.

Designate and Fence Environmentally Sensitive Areas for Sensitive Plants, Lichen, and Fungi and Their Habitats

The Department will avoid and minimize potential impacts on sensitive plants and sensitive plant habitat to the greatest extent practicable during project construction.

Wherever any sensitive plants are close to construction, staging, or disposal areas, temporary exclusionary fencing or stakes/flagging will be placed to protect them, buffering them from disturbance. These areas will be designated as Environmentally Sensitive Areas and shown on the project plans. No construction workers or construction equipment will be permitted in these areas.

Relocate Sensitive Plants, When Possible

The Department will attempt to relocate special-status and sensitive (i.e., all CNPS-listed) plants that are in areas of soil disturbance. These will be salvaged with methods appropriate to the particular species (i.e., digging up and replanting clumps of yellow-tubered toothwort tubers at Patrick Creek Narrows Locations 2 and 3; collecting and sowing seed of Piper's bluegrass at Patrick Creek Narrows Location 1 and the Narrows and potentially transplanting some plants; digging up rhizome clusters and surrounding soil of California lady's-slipper at the Narrows; collecting and sowing seed from Howell's lomatium at Patrick Creek Narrows Location 1; and taking and replanting Del Norte willow cuttings at the Narrows). Experimental trials of proposed minimization measures in 2010 will determine the feasibility and potential success of the proposed measures. These trials are proposed for species that occur in areas where proposed construction impacts are likely (e.g., collecting seed of Piper's bluegrass at Patrick Creek Narrows Location 1 where the retaining wall is proposed), and transplantation/seed sowing will occur nearby but outside proposed project limits and in suitable habitat for each species. This will occur in consultation with the Forest Service because these trials will likely be planted within the easement with the Forest Service. The Department will monitor the results of the trials in 2011 to determine success. If results are positive, the measures will be expanded to encompass remaining sensitive plant areas anticipated to be affected. The collected plant material will be stored in a safe location until construction is complete, and replanting will occur in suitable habitat in the project vicinity within the Department's right-of-way or in a location agreed upon

by the Department and the landowner of the parcel where transplanting is proposed. Transplants will be watered, if necessary, and monitored for a 3-year period to assess successful re-establishment of at least some individuals in each transplanted species and success of the transplanting techniques used.

Some studies show that transplantation is often unsuccessful (e.g., Fiedler 1991 in California Native Plant Society 1998) and not considered viable mitigation by the CNPS and others for project impacts on rare and listed plant species (California Native Plant Society 1998). However, transplantation is proposed as a minimization measure for California lady's-slipper, a sensitive but not rare species, at the Narrows in an attempt to maintain genetic diversity and minimize loss of individuals that would occur if no minimization measures were implemented.

Successful re-establishment will be assessed by recording survival of transplanted material or obvious expression of germinated seed, such as concentrations in the area that was seeded. Results will be noted in the monitoring reports. The Department acknowledges that the proposed transplanting and seed collection is experimental. Attempts to assist in re-establishing existing genetic diversity and individuals combined with weeding of invasive plant species in disturbed soil areas is responsible stewardship and will increase knowledge of sensitive plant re-establishment.

Implement Invasive Weed Control Program

As a compensatory measure to improve habitat for native plants in and adjacent to disturbed soil areas at project locations and to minimize competition from non-native/invasive plants, the Department will implement a 3-year program of invasive weed control in all areas of disturbed soil.

2.4.15 Animal Species

Temporary Disturbance to Special-Status Animal Species and Their Habitat

The impact of construction at all project locations on animal species would consist of the loss of habitat and displacement. The project would result in localized effects on animal species. The project area is located at the edge of higher-quality habitat for animal species. Animal species will be permanently and temporarily affected by construction at all project locations. Temporary effects include disturbances that are short term (1–2 years). Temporary impacts are typically due to activities of construction. If the effect is temporary, the pre-construction animal habitat is expected to re-establish (either by recolonization or planting/seeding) within two years after construction is complete. These temporary effects are not considered significant.

Ruby 1

Approximately 0.1 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at the Ruby 1 site. Approximately 0.006 acre of amphibian (northern red-legged frog, foothill yellow-legged frog, and southern torrent salamander) habitat will be temporarily affected. Approximately 0.16 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 1.1 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Ruby 2

The impact of construction under all three Ruby 2 alternatives on animal species would consist of the loss of habitat and displacement. The project would result in localized effects on animal species. The project area is located at the edge of higher-quality habitat for animal species.

Two-Foot Shoulders Alternative

Approximately 0.2 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at the Ruby 2 site under the Two-Foot Shoulders Alternative. Approximately 0.015 acre of amphibian habitat will be temporarily affected. Approximately 0.6 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 4.6 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Four-Foot Shoulders Alternative

Approximately 0.4 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at the Ruby 2 site under the Four-Foot Shoulders Alternative. Approximately 0.015 acre of amphibian habitat will be temporarily affected. Approximately 1.0 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 4.6 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Two-Foot Widening in Spot Locations Alternative

Approximately 0.1 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at the Ruby 2 site under the Two-Foot Widening in Spot Locations Alternative. Approximately 0.015 acre of amphibian habitat will be temporarily affected. Approximately 0.7 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 4.6 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Patrick Creek Narrows Location 1

Approximately 0.01 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at Patrick Creek Narrows Location 1. Approximately 0.007 acre of amphibian habitat will be temporarily affected. Approximately 0.25 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 3.9 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Patrick Creek Narrows Location 2

The impact of construction under all three Patrick Creek Narrows Location 2 alternatives on animal species would consist of the loss of habitat and displacement. The project would result in localized effects on animal species. The project area is located at the edge of higher-quality habitat for animal species.

Upstream Bridge Replacement Alternative

Approximately 0.6 acre of habitat for mammals, birds, reptiles, fish, and amphibians will be permanently lost at Patrick Creek Narrows Location 2 under the Upstream Bridge Replacement Alternative. Approximately 0.71 acre of fish and amphibian habitat will be temporarily affected.

Approximately 3.0 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 7.4 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Downstream Bridge Replacement Alternative

Approximately 0.2 acre of habitat for mammals, birds, reptiles, fish, and amphibians will be permanently lost at Patrick Creek Narrows Location 2 under the Downstream Bridge Replacement Alternative. Approximately 0.007 acre of fish and amphibian habitat will be temporarily affected. Approximately 3.0 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 7.4 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Bridge Preservation with Upslope Retaining Wall Alternative

Approximately 0.6 acre of habitat for mammals, birds, reptiles, fish, and amphibians will be permanently lost at Patrick Creek Narrows Location 2 under the Bridge Preservation with Upslope Retaining Wall Alternative. Approximately 0.007 acre of fish and amphibian habitat will be temporarily affected. Approximately 2.0 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 7.4 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Patrick Creek Narrows Location 3

Approximately 0.1 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at Patrick Creek Narrows Location 3. Approximately 0.006 acre of amphibian habitat will be temporarily affected. Approximately 0.3 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 6.9 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

The Narrows

Approximately 0.2 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at the Narrows site. Approximately 0.007 acre of amphibian habitat will be temporarily affected. Approximately 2.0 acres of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 11.0 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Washington Curve

The impact of construction under all Washington Curve alternatives on animal species would consist of the loss of habitat and displacement. The project would result in localized effects on animal species. The project area is located at the edge of higher-quality habitat for animal species.

Cut Slope Alternative

Approximately 0.1 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at the Washington Curve site under the Cut Slope Alternative. Approximately 0.006 acre of amphibian habitat will be temporarily affected. Approximately 1.0 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 4.7 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Retaining Wall Alternative

Approximately 0.23 acre of habitat for mammals, birds, reptiles, and amphibians will be permanently lost at the Washington Curve site under the Retaining Wall Alternative. Approximately 0.006 acre of amphibian habitat will be temporarily affected. Approximately 0.6 acre of reptile, bird, and mammal foraging and dispersal habitat will be permanently affected. The quality of approximately 4.7 acres of reptile, bird, and mammal foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Avoidance, Minimization, and/or Mitigation Measures

Minimize Effects of Nighttime Construction Lighting

To minimize effects on nocturnal species such as Pacific fisher and American martin, if night work is required, the lighting will be directed downward toward the roadway and will not substantially exceed the level of disturbance of the existing traffic headlights.

Contact and Consult with DFW and Forest Service if Nesting Osprey Are Found

If osprey are found to be nesting in or near the project area at the time of construction, the Department will contact DFW and Forest Service, consult with those agencies to identify and implement avoidance and minimization measures.

Limit Vegetation Removal to the Non-Nesting Season for Migratory Birds

In compliance with the MBTA, grass, tree, and shrub removal will take place between September 1 and March 1 to avoid impacts on nesting birds. If vegetation must be removed outside these dates, a biological survey for nesting birds must be conducted prior to vegetation removal.

Limit Construction in Watercourses to the Dry Season

Work involving seasonal creeks/drainages will take place when they are dry and there is no precipitation occurring or anticipated. Work in the water of perennially flowing channels will take place during the dry season, generally between June 15 and October 15, to minimize impacts on amphibians and other aquatic organisms.

Conduct Pre-Construction Surveys for Western Pond Turtle

Measures will be implemented to minimize impacts on western pond turtles that may be present in the work area. Every day, prior to any in-stream work with active water flow, a Biological Monitor will survey for turtles in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly starting upstream giving turtles an opportunity to escape downstream.

Conduct Pre-Construction Surveys for Northern Red-Legged Frog

Measures will be implemented to minimize impacts on northern red-legged frogs that may be present in the work area. Every day, prior to any in-stream work with active water flow, the Biological Monitor will survey for frogs and frog egg masses in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly, starting upstream to give frogs an opportunity to escape downstream.

Conduct Pre-Construction Surveys for Foothill Yellow-Legged Frog

Measures will be implemented to minimize impacts on foothill yellow-legged frogs that may be present in the work area. Every day, prior to any in-stream work with active water flow, the Biological Monitor will survey for frogs and frog egg masses in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly, starting upstream to give frogs an opportunity to escape downstream.

Implement Avoidance and Minimization Measures for Chinook Salmon and Salmonids

The Department will avoid and minimize potential impacts on the salmonids and their Critical Habitat and EFH to the greatest extent practicable during project construction. Specific work windows and limitations on construction will be determined through consultations with resource agencies. To avoid, minimize, and offset impacts, the following measures will be included by the Department:

- Large woody debris obtained from tree removal in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish rearing habitat.
- All trees not taken by resource agencies or used by other government or private entities, with approval from the Department, will be put through a chipper and the chips will be applied to areas of exposed soil on-site as erosion control mulch.
- Sediment and erosion control measures will be implemented to minimize sediment discharge to the river or other waters.
- A vacuum sweeper will be used to clean the pavement.
- No material will be placed where it may enter the river due to precipitation.

- Noise blankets are being considered to help reduce the noise from controlled blasting activities at the Narrows.
- If feasible during controlled blasting activities at the Narrows, K-rail will be placed near the centerline, and a chain link fence will be placed on top of that.
- No impact pile driving will be used for bridge work or retaining walls.
- Debris resulting from bridgework at Patrick Creek Narrows Location 2 will be contained to the maximum extent practicable.

Implement Avoidance and Minimization Measures for Coastal Cutthroat Trout

The Department will avoid and minimize potential impacts on the coastal cutthroat trout and its habitat during project construction by the measures outlined above for chinook salmon so there will be no adverse impacts to coastal cutthroat trout.

Protect Migratory Birds

Per the Federal MBTA, the Contractor will be instructed that migratory birds and their (active) nests, eggs, and young are protected and measures must be implemented to avoid the harassment or take of any birds. These measures include:

- Tree and shrub removal should occur from September 1 to March 1 to avoid taking nesting birds.
- If vegetation removal cannot occur within this window, then surveys by the Department Biologist or biological monitor will be required prior to the removal of any trees.
- If nesting birds are present, tree and shrub removal will not be permitted until a Department Biologist or biological monitor has given authorization to proceed.

Use Removed Trees and Stumps to Improve Fish Rearing Habitat

Large trees and stumps that are removed in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish rearing habitat.

Implement Measures to Minimize Impacts on Reptiles and Amphibians

Measures will be implemented to minimize impacts on western pond turtles and special-status frogs that may be present in the work area. Every day prior to any drainage work that involves a watercourse with active water flow, the Biological Monitor will survey for frogs and turtles in the area. If any are found, they will be moved to similar habitat nearby.

Every day, prior to any in-stream work with active water flow, the Biological Monitor will survey for western pond turtles, frogs, and frog egg masses in the area. If any are found, they will be moved to similar habitat downstream. Gravel or any other material added to the stream for construction purposes will be introduced slowly, starting upstream to give frogs an opportunity to escape downstream.

2.4.16 Threatened and Endangered Species

Temporary Disturbance to Threatened and Endangered Species and Their Habitat

The impact of construction at all project locations on threatened and endangered species (marbled murrelet, northern spotted owl, and Southern Oregon/Northern California Coast ESU coho salmon) may consist of the loss of habitat and displacement. The project may result in localized effects to threatened and endangered species. The project area is located at the edge of higher quality habitat for threatened and endangered species. Threatened and endangered species may be permanently and temporarily affected by construction at all project locations. Temporary effects include disturbances that are short term (1 to 2 years). Temporary impacts are typically due to activities of construction. If the effect is temporary, the pre-construction animal habitat is expected to re-establish (either by recolonization or planting/seeding) within 2 years after construction is complete. These temporary effects are not considered significant.

Ruby 1

Approximately 0.16 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at the Ruby 1 site. The quality of approximately 1.1 acres of threatened and endangered species foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Ruby 2

The impact of construction of the proposed project under all three Ruby 2 site alternatives on threatened and endangered species (marbled murrelet, northern spotted owl) may consist of the loss of habitat and displacement. The project may result in localized effects on threatened and endangered species. The project area is located at the edge of higher-quality habitat for threatened and endangered species. Threatened and endangered species may be permanently and temporarily affected by construction under all three alternatives.

Two-Foot Shoulders Alternative

Approximately 0.6 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at the Ruby 2 site under the Two-Foot Shoulders Alternative. The quality of approximately 4.6 acres of threatened and endangered species foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Four-Foot Shoulders Alternative

Approximately 1.0 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet**,** northern spotted owl) would be permanently affected at the Ruby 2 site under the Four-Foot Shoulders Alternative. The quality of approximately 4.6 acres of threatened and endangered species foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Two-Foot Widening in Spot Locations Alternative

Approximately 0.25 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at the Ruby 2 site under

the Two-Foot Widening in Spot Locations Alternative. The quality of approximately 3.9 acres of threatened and endangered species foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Patrick Creek Narrows Location 1

Approximately 1.0 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at Patrick Creek Narrows Location 1. The quality of approximately 4.6 acres of threatened and endangered species foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Patrick Creek Narrows Location 2

The impact of construction of the proposed project under all three Patrick Creek Narrows Location 2 alternatives on threatened and endangered species (marbled murrelet, northern spotted owl, and Southern Oregon/Northern California Coast ESU coho salmon) may consist of the loss of habitat and displacement. The project may result in localized effects on threatened and endangered species. The project area is located at the edge of higher-quality habitat for threatened and endangered species. Threatened and endangered species may be permanently and temporarily affected by construction under all three alternatives.

Upstream Bridge Replacement Alternative

Approximately 3.0 acres of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at Patrick Creek Narrows Location 2 under the Upstream Bridge Replacement Alternative. About 0.71 acre of Southern Oregon/Northern California Coast ESU coho salmon critical habitat would be temporarily affected by bridge work. The quality of approximately 7.4 acres of marbled murrelet and northern spotted owl foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Downstream Bridge Replacement Alternative

Approximately 0.2 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at Patrick Creek Narrows Location 2 under the Downstream Bridge Replacement Alternative. This habitat is all low-quality habitat because it is adjacent to the highway and subject to regular disturbance by traffic and fragmentation. About 0.71 acre of Oregon/Northern California Coast ESU coho salmon critical habitat would be temporarily affected by bridge work. The quality of approximately 7.4 acres of marbled murrelet and northern spotted owl foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Bridge Preservation with Upslope Retaining Wall Alternative

Approximately 2.0 acres of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at Patrick Creek Narrows Location 2 under the Bridge Preservation with Upslope Retaining Wall Alternative. The quality of approximately 7.4 acres of marbled murrelet and northern spotted owl foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Patrick Creek Narrows Location 3

Approximately 0.3 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at Patrick Creek Narrows Location 3. The quality of approximately 6.9 acres of marbled murrelet and northern spotted owl foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

The Narrows

Approximately 0.4 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected at the Narrows site. The quality of approximately 11.0 acres of marbled murrelet and northern spotted owl foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Washington Curve

The impact of construction of the proposed project for both Washington Curve alternatives on threatened and endangered species (marbled murrelet, northern spotted owl) may consist of the loss of habitat and displacement. The project may result in localized effects to threatened and endangered species. The project area is located at the edge of higher-quality habitat for threatened and endangered species. Threatened and endangered species may be permanently and temporarily affected by construction under both alternatives.

Cut Slope Alternative

Approximately 1.0 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected under the Cut Slope Alternative at the Washington Curve site. The quality of approximately 4.7 acres of marbled murrelet and northern spotted owl foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Retaining Wall Alternative

Approximately 0.6 acre of foraging and dispersal habitat for threatened and endangered species (marbled murrelet, northern spotted owl) would be permanently affected under the Retaining Wall Alternative at the Washington Curve site. The quality of approximately 4.7 acres of marbled murrelet and northern spotted owl foraging and dispersal habitat will be temporarily degraded by noise and visual disturbance during construction.

Avoidance, Minimization, and/or Mitigation Measures

Construct During Specific Work Windows to Protect Marbled Murrelet and Northern Spotted Owl

At all locations, to avoid adverse effects on northern spotted owl during the critical breeding season (March 1 to June 30), no night work will take place, and there will be no blasting at any time during this period. To avoid potential noise impacts on migrating marbled murrelet between March 24 and September 15, there will be no construction activity involving equipment with noise levels in excess of ambient traffic noise (including blasting) in the morning for a 3-hour period, starting 1 hour before sunrise and lasting until 2 hours after sunrise. In the evening, no

construction activity (including blasting) will occur in a 3-hour window beginning 2 hours before sunset and lasting until 1 hour after sunset. Therefore, from July 1 to September 15, there can be night work starting 1 hour after sunset and ending 1 hour before sunrise. After September 15 (until March 1), there will be no restrictions on night work. Final work windows will be determined through Section 7 consultation and may include additional restrictions or restrictions based upon noise levels and frequency.

Avoid and Minimize Impacts on Salmonids

The Department will avoid and minimize potential impacts on salmonids and their critical habitat and EFH to the greatest extent practicable during project construction. To avoid, minimize, and offset impacts, the following measures will be evaluated by the Department:

- Large woody debris obtained from tree and stump removal in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish-rearing habitat.
- All trees not taken by resource agencies or used by other government or private entities, with approval from the Department, will be put through a chipper and the chips will be applied to areas of exposed soil on-site as erosion control mulch.
- Sediment and erosion control measures will be implemented to minimize sediment discharge to the river or other waters.
- A vacuum sweeper will be used to clean the pavement.
- No material will be placed where it may enter the river.
- Noise blankets will be considered to help reduce the noise from blasting at the Narrows.
- If feasible during blasting activities at the Narrows, K-rail segments will be placed near the centerline and a chain link fence will be placed on top of that.
- No impact pile driving will be used for bridge work or retaining walls.
- All debris resulting from bridgework at Patrick Creek Narrows Location 2 will be contained and not allowed to enter the river.

Implement Compensatory Mitigation for Coho Salmon—Southern Oregon/Northern California Coast ESU

Compensatory mitigation measures will be implemented in consultation with NMFS and DFW for impacts on coho salmon. To offset impacts to coho salmon from this project, fish passage at culverts on other watercourses in the Smith River watershed will be identified and the fish passage improved. This work may be done in advance of this project, concurrently and/or after.

Limit Timing of Construction Activity to Avoid Noise Effects on Migrating Marbled Murrelet

To avoid potential noise impacts on migrating marbled murrelet between March 24 and September 15, there will be no construction activity (including blasting) in the morning for a 3-

hour period, starting 1 hour before sunrise and lasting until 2 hours after sunrise. In the evening, no construction activity involving equipment with noise levels in excess of ambient traffic noise (including blasting) will occur in a 3-hour window starting 2 hours before sunset and lasting until 1 hour after sunset. Therefore, from July 1 to September 15, there can be night work starting 1 hour after sunset and ending 1 hour before sunrise. After September 15 (until March 1), there will be no restrictions on night work. Final work windows will be determined through Section 7 consultation, and may include additional restrictions or restrictions based upon noise levels and frequency.

Use Removed Trees and Stumps to Improve Fish Rearing Habitat

Large trees and stumps that are removed in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish rearing habitat.

2.5 Cumulative Impacts

2.5.1 Regulatory Setting

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

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

State CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the State CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in 40 CFR, Section 1508.7 of the CEQ regulations.

2.5.2 Projects Considered in the Cumulative Analysis

Past, present, and reasonably foreseeable projects that may contribute to cumulative impacts on the resources identified below include other roadway construction and development projects in Del Norte County, in portions of Humboldt County and surrounding areas, and along connecting roadways. Initially, more than 200 past, present, and foreseeable projects were reviewed in the cumulative analysis. Of these projects, fewer than five have the potential to contribute to cumulative impacts. Information on the projects was gathered as part of research activities and consultation with the Department, District 1; the California Department of Forestry and Fire Protection (for timber harvesting plans); Del Norte County; the local transportation commission; and the U.S. Forest Service. An expanded discussion of specific projects is provided below, followed by a summary of the project types (activities or components in each project) included in the cumulative analysis.

2.5.2.1 US 101 Richardson Grove Improvement Project

The US 101 Richardson Grove Improvement Project (PM 1.1–PM 2.2), the construction date for which is uncertain, includes adjustments to the current alignment of US 101 at Richardson Grove to accommodate STAA truck access. In addition, the project would improve safety and operations along this section of highway for all motorists. This project is located on US 101, approximately 160 miles south of Crescent City in Humboldt County, just north of the Mendocino County line.

The Richardson Grove Improvement Project would make US 101 between San Francisco and the California/Oregon state line, as well as beyond (to Brookings, Oregon), accessible to STAA trucks. Both the Eureka and Crescent City areas would be accessible to STAA trucks coming from the south (STAA truck access on US 101 is already available from north of the study area). The proposed project would provide STAA access to the east, connecting Crescent City and the US 101 corridor to Grants Pass and the I-5 corridor.

2.5.2.2 Dr. Fine Bridge Project

The Department is planning to replace the Dr. Fine Bridge at the US 101/SR 197 intersection in Del Norte County; the construction start date is uncertain. This project would replace the physically deficient and functionally obsolete bridge with a two-lane structure, with an acceleration lane and standard shoulders to meet current design standards and demands. In addition to shifting the roadway alignment, which would require modifications to the US 101/SR 197 intersection, the project would include a pedestrian walkway, traffic barriers, a pedestrian handrail, and metal-beam guardrails and crash cushions. The Dr. Fine Bridge Project and the resulting improvements to the US 101/SR 197 intersection are planned to occur regardless of the proposed improvements along the SR 197–US 199 corridor. However, the proposed project in combination with the Dr. Fine Bridge Project could contribute to cumulative impacts.

2.5.2.3 US 101 Confusion Hill Project

A recently completed project in the vicinity of the Richardson Grove Improvement Project is the US 101 Confusion Hill Project, which realigned a portion of US 101 and constructed new bridges (PM 98.5–PM 100.0). The proposed project in combination with changes pertaining to access to US 101, as part of the Richardson Grove Improvement Project, could contribute to cumulative impacts.

2.5.2.4 Timber Harvesting Projects

Two future timber projects in the vicinity of SR 197 could contribute to cumulative impacts. In 2009, three applications for timber harvesting plans (THPs) were submitted in Del Norte County. Two of the applications were for projects in the vicinity of the SR 197–US 199 corridor, the 54-acre Morris THP, which includes winter operations, erosion control, and slope work near the SR 197/US 101 intersection at the westernmost end of the project area, and the 94-acre Green Diamond Resource Company THP, which includes clear-cutting and selection logging, near the SR 197/US 199 intersection. An additional application (Green Diamond Resource Company THP) was submitted for clear-cutting and selection logging on a 152-acre parcel located along

US 101. The proposed project in combination with timber harvesting and related timber activities could contribute to cumulative impacts.

2.5.2.5 California Department of Transportation Highway Projects in Del Norte County

Other recently completed, ongoing, or planned Department projects in Del Norte County include the Hardscrabble Bridge Replacement Project (US 199, PM 10.9–PM 11.2), completed in 2009; the Last Chance Grade Road Stabilization Project (US 101, PM 14.8–PM 15.6), completed in 2010; the Smith River Left-Turn Channelization Safety Project (US 101, PM 43.6–PM 45.9), completed in 2009; the Del Norte 199 Cable Mesh Drape Project (US 199, PM 18.3–PM 18.6), completed in 2011; and the Klamath Grade Raise Project (US 101, PM 4.4–PM 9.4), which was unprogrammed after circulation of the DEIR/EA for this project. After the Klamath Grade Raise Project was unprogrammed, a new project (called a "CapM" project) was developed to resurface the roadway within the same project limits as the Klamath Grade Raise Project; this is expected to be constructed within the next 4 years. Also, the Klamath River Bridge Hinge Repair Project (US 101, PM 4.04–4.2) was developed after circulation of the DEIR/EA for this project and is likely to be constructed in 2013. Additional projects were developed after circulation of the DEIR/EA, the construction schedules for which are unknown, except where noted below. These additional projects include the Hiouchi Community Improvements Project (US 199, PM 5.4–6.2); Major Bridge Seismic Retrofit Project at five bridges (US 101 and US 199, various locations); a maintenance project for a thin blanket overlay (US 199, PM 0.7–4.2), planned for 2014; three storm damage repair projects on US 199 (PMs 8.6–8.8, 21.7, 24.67, and 26.31, these being called "Patrick Creek Slipout," "Dollar Bend Soldier Pile Wall," and "Siskiyou Forks Slipout"), and three on US 101 (PMs 12.7-15.5, 15.1-15.3, and 17.5, called "Rubberized Hot Mix Asphalt Overlay," "Last Chance Slips," and "Historic Log Fill," respectively) to repair storm damage from March 2011 storms; Hamilton Road High Friction Surface Treatment (US 101, PM 22.5–23.0); and the Smith River Canyon Safety Project (US 199, PM 8.1–8.4). The proposed project, in combination with these projects, could contribute to cumulative impacts.

2.5.2.6 Additional Cumulative Projects Summary

Projects identified as having the potential to contribute to cumulative impacts include past, present, and reasonably foreseeable projects in the vicinity of SR 197 and US 199 (projects from 1990 to 2018). Of those projects, those that would occur on SR 197, US 199, or adjacent/adjoining roadways (e.g., US 101) with approximately the same construction period and similar impacts (temporary lane closures, traffic delays, changes in access) were considered.

All projects were organized by "type" so that an aggregate number of potential projects with similar impacts could be analyzed. These were further narrowed down to projects that would occur within 3 years of the proposed project's construction timeframe, which is 2012 to 2015. Therefore, the cumulative project scenario includes those projects that fall within the 2009–2018 timeframe, thereby effectively extending the number of years when highway work would require full or partial lane closures or traffic delays in the project vicinity.

Most of the projects involve several types of activities (e.g., a project could include roadwork/structural improvements as well as the installation of guardrails and bridge enhancements). The types of activities and other project information can be found in Table 2.5-1.

Table 2.5-1. Cumulative Project Summary

Project Type/Work Component	Project Type Description	Number of Projects (1990–2018)	Number of Projects (work would occur between 2009–2018)	Potentially Cumulative Impact Issues
Roadwork/ Structural Improvements	Projects that include changes to the existing roadway. This includes roadway widening, paving and grading, turnouts, shoulder widening, realignments, and/or any type of activity involving built structures (highway advisory radio, rest stations, foundation construction).	59	15	Visual/Aesthetics, Land Use/Community Impacts, Timberlands, Temporary Construction Impacts (Traffic and Transportation)
Metal-Beam Guardrails (MBGR)/Retaining Walls	Projects that include MBGR installation, upgrade and maintenance, and construction, upgrade, and maintenance of crib walls, soldier pile walls, retaining walls, and scenic barriers.	19	3	Temporary Construction Impacts, Water Quality
Lighting/Signage/Markings	Projects that include signs, road markers, flashing beacons, and overhead lighting.	6	2	Visual/Aesthetics, Temporary Construction Impacts
Bridge Construction, Rehabilitation, and Replacement	Projects that include bridge construction, upgrades (widening, realignments), and maintenance as well as related work in rivers, creeks, and streams (fish baffles, passage structures, etc.).	11	5	Visual/Aesthetics, Temporary Construction Impacts, Water Quality
Drainage/Culverts	Projects that include construction, update, and maintenance of drainages and culverts.	26	7	Temporary Construction Impacts
Earthwork/Planting/Timber Harvesting	Projects that include earthwork, planting/irrigation activities, and timber harvesting-related activities. Includes rock slope protection (mesh drapery, etc.), embankment repair, storm damage removal (slide removal), and erosion control activities.	24	9	Biological Resources, Visual/Aesthetics, Temporary Construction Impacts Water Quality

Notes: The projects listed in this table have been derived from a variety of sources and are continually changing to include updated and new information. This list is intended to reflect the number and types of projects that were foreseeable at the time the analysis was conducted for cumulative impacts, both for the draft and final EIR/EA.
Furthermore, some of the projects considered in the 2009–2018 timeframe included more than one project component (and therefore are shown twice).

2.5.3 Cumulative Analysis by Resource Topic

To assess the cumulative impacts of a project, it is important to define which of the resources to consider. If the project will not cause either direct or indirect impacts on a resource, it will not contribute to a cumulative impact on that resource and need not be further evaluated. Net impacts were analyzed in this cumulative impact analysis (i.e., impact minus minimization and/or mitigation). If the impact is fully offset, there is no contribution to cumulative impacts.

2.5.3.1 Resources Not Affected Directly or Indirectly by the Proposed Project

The resources listed below would not be directly or indirectly affected by the proposed project; therefore, the proposed project would not contribute to cumulative effects on these resources.

- **Farmlands—**As discussed in Chapter 2, "Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures," the project area is not located on or adjacent to lands used for agriculture. No farmland would be affected by the proposed project.
- **Timberlands—**As discussed in Chapter 2, while SR 197 and US 199 pass through forested areas, the proposed project is not located within Timber Production Zones. Further, existing state highways are exempt from the California Timberland Productivity Act. The proposed project would not affect timberlands.
- **Cultural Resources—**No previously recorded archaeological resources were identified in the Area of Potential Effect (APE), and a pedestrian survey did not result in the identification of any archaeological resources. In the event that archaeological resources are identified as part of the project, avoidance, minimization, and mitigation measures presented in Section 2.1.7, "Cultural Resources," would offset potential impacts.
- **Paleontology—**No paleontological resources were identified as part of the proposed project. Given the geologic formations and the location and scope of the proposed project, there is low to no potential for encountering paleontological resources during construction.
- **Energy—**Because the proposed project would not modify energy supplies or energy use patterns, increase the capacity of the roadways in the corridor, or result in a substantial increase in traffic volumes, the project would not result in a permanent increase in energy consumption. Temporary energy consumption during construction would occur but would not require new energy sources. The project would not cause energy impacts.

2.5.3.2 Resources Affected Directly or Indirectly by the Proposed Project

The resources listed below would be affected directly or indirectly by the proposed project. This section includes a brief description of the individual resource study area (RSA) for each resource and background on the health and historical context, as appropriate. For greater detail on specific resource areas, refer to the individual sections in Chapter 2.

Land Use

The study area for land use impacts includes the SR 197–US 199 corridor, the communities of Hiouchi and Gasquet, and the Crescent City area. For the most part, the direct land use impacts of the proposed project are site specific and occur at or adjacent to the seven project sites. These site-specific impacts include conflicts with existing land uses adjacent to the project sites from right-of-way acquisition and temporary air quality and noise impacts caused by the construction of roadway improvements. A review of relevant past, present, and future projects found that no projects, except for a new storm damage repair project called "Siskiyou Forks Slipout," which is directly adjacent to Washington Curve, are located at or very near the project sites, indicating that only the one project would add to the site-specific direct land use impacts of the proposed project. Therefore, because direct land use impacts are site specific and only the storm damage repair project would be located adjacent to Washington Curve, no other direct land use impacts would be at or very near the project sites, and the new project is repairing the cut slope in an area where land use is restricted because of the steep nature of the cut slope next to the roadway, the combined direct land use impacts of the project and other projects are not significant. Furthermore, the project's incremental effects to direct land use impacts are not cumulatively considerable.

As discussed in Chapter 4 of the Community Impact Assessment (CIA) prepared for this project (Trott 2010), permanent indirect land use impacts, including reduced air quality and increased roadway noise caused by a greater volume of trucks, could result from changes in the use of SR 197 and US 199 once project construction has been completed and STAA truck restrictions have been removed. Projects that could add traffic from heavy trucks to the SR 197–US 199 corridor would contribute cumulatively to indirect land use impacts on communities along the STAA truck route.

The severity of cumulative indirect land use impacts would be related directly to the magnitude of the increase in the number of heavy trucks along the SR 197–US 199 corridor after the removal of STAA truck restrictions. Changes pertaining to heavy trucks along the route were evaluated in the draft traffic analysis prepared for the project (Fehr & Peers 2010). The traffic analysis conducted for future (2030) conditions considered the effects of future background regional growth as well as the effects of the Richardson Grove Improvement Project on traffic from heavy trucks.

By including the effects of regional growth and the Richardson Grove Improvement Project, the traffic study's assessment of future (2030) with-project conditions serves as a cumulative impact assessment of the change in the number of heavy trucks along the SR 197–US 199 corridor. Under future (2030) with-project conditions, an additional 92 one-way trips from heavy trucks are projected along the SR 197–US 199 corridor, with the percentage of total average daily trips attributable to heavy trucks increasing from 15.0% to 17.9% along SR 197, from 10.0% to 11.4% along the segment of US 199 between SR 197 and Gasquet, and from 17.0% to 19.2% along the segment of US 199 between Gasquet and the California/Oregon state line. The traffic analysis concludes that increased traffic from heavy trucks would be minimal along the SR 197–US 199 corridor, indicating that increases in truck emissions and noise, as well as resulting effects on the health and aesthetics of local communities along the route, would also be minimal. As previously mentioned, there are no projects located at or very near the project site, except for the Siskiyou Forks Slipout storm damage repair project, which is directly adjacent to Washington Curve;

therefore, the combined indirect land use impacts (including reduced air quality, increased roadway noise, and health and aesthetic effects) of the project and other projects are not significant. Similarly, the adverse indirect land use impacts of the proposed project on communities are anticipated to be minor and are not cumulatively considerable.

Growth

The RSA for cumulative growth impacts includes Del Norte and Humboldt Counties. From the perspective of closely related projects that could add to the potential growth-inducement impacts of the proposed project, the most relevant project is the Richardson Grove Improvement Project. The growth impacts of that project are discussed in the Richardson Grove Operational Improvement Project Draft Environmental Impact Report/EA and Programmatic Section 4(f) Evaluation (California Department of Transportation 2008a).

The growth-inducing aspects of improved STAA truck access to the study area are described in Section 2.1.2, "Growth," of this EIR/EA. As discussed in that section, the proposed project is anticipated to increase employment, which could support an upper-range population increase of about 179 persons (78 in Del Norte County and 101 in Humboldt County). This estimate is based on the unlikely assumption that all jobs induced by the proposed project would be filled by persons who are new to the two-county area.

An economic study commissioned by the Department for the Richardson Grove Improvement Project, *Realigning Highway 101 at Richardson Grove: The Economic Impact on Humboldt and Del Norte Counties* (Gallo 2008), evaluated the extent of impacts on business activity in Humboldt and Del Norte Counties related to STAA truck restrictions at Richardson Grove (see "Permanent Operational Economic Effects" for more information on this study). The study estimated the increased transportation costs from STAA truck restrictions and the resulting lost sales, income, and employment in the two-county study area. According to this study, an estimated 55 full- and part-time jobs are lost in the two-county area as a result of STAA truck restrictions on US 101 at Richardson Grove, suggesting that removal of these restrictions could produce 55 additional jobs in the area. (Note: The study did not provide estimates of jobs specific to each county.) These jobs could support an estimated population increase of about 130 in the two-county area, assuming that all jobs are filled by persons who are new to the study area and that the jobs do not duplicate those generated by removing STAA truck restrictions along the SR 197–US 199 corridor (Table 2.5-2).

Considered together, the 197/199 Safe STAA Access Project and the Richardson Grove Improvement Project could induce population growth in the two-county area, adding about 310 persons. This upper-range estimate of growth represents less than 0.2% of both the estimated 2008 and projected 2030 combined populations of the two-county area, a relatively minor increase and well within the growth levels anticipated for the two counties over the next 20 years. Therefore, the combined impact of the project and other projects on growth is not cumulatively significant.

Whether providing improved STAA truck access to the study area from both the east (SR 197–US 199 corridor in Del Norte County) and the south (US 101 in Humboldt County) would create a synergistic effect that would generate economic and population growth beyond that projected separately for the two projects is debatable and speculative. As discussed for the cumulative

Table 2.5-2. Estimated Cumulative Employment and Upper-Range Population Growth Generated by the 197/199 STAA Safe Access Project and the Richardson Grove Improvement Project

Project	Number of New Jobs[a]	Average Population Per Household[b]	Estimated Maximum Population Increase[c]	Percentage Increase over 2008 Population[d]	Percentage of Projected 2030 Population[e]
197/199 Safe STAA Access Project:					
Del Norte County	30	2.608	78	0.27%	0.18%
Humboldt County	43	2.349	101	0.03%	0.07%
Subtotal	*73*	*NA*	*179*	*0.11%*	*0.10%*
Richardson Grove Improvement Project	55	2.40	132	0.08%	0.07%
Total	**128**	**NA**	**311**	**0.19%**	**0.17%**

Notes: NA = not applicable.

[a] For the 197/199 Safe STAA Safe Access Project, employment estimates are based on the business survey in Fehr & Peers 2010. See the "Permanent Effects on Employment and Income" section in Chapter 4 of the CIA. For the Richardson Grove Improvement Project, employment estimates are from Gallo 2008. Estimates from this source are for the two-county area.

[b] Source: California Department of Finance 2009. For the Richardson Grove Improvement Project, a weighted average based on the 2008 populations of Del Norte and Humboldt Counties was used to derive an average population per household.

[c] Assumes that all jobs are filled by persons new to the study area and that jobs generated by the two projects are not duplicative.

[d] Based on estimated populations of 29,420 in Del Norte County and 132,180 in Humboldt County at the beginning of 2008 (California Department of Finance 2009).

[e] Based on projected 2030 populations of 42,420 in Del Norte County and 142,220 in Humboldt County at the beginning of 2008 (California Department of Finance 2007).

indirect land use effects of the proposed project, the traffic study prepared by Fehr & Peers (2010) considered the combined effects of the two projects on traffic from heavy trucks on US 101 and along the SR 197–US 199 corridor, concluding that the increase in cargo hauling by heavy trucks would be relatively minor. This conclusion suggests that the economic activity generated by the two projects would also be relatively minor when considered together. In addition, the business survey conducted by Fehr & Peers to support the traffic study asked several trucking firms in Del Norte and Humboldt Counties whether their trucking routes would change if the SR 197–US 199 corridor were upgraded in conjunction with the Richardson Grove project. About two-thirds of the trucking firms stated that providing STAA truck access on both routes would have no or little effect on their routes. The responses further suggest that the combined growth effects of simultaneously having STAA truck access available on both routes would be small.

Economic activity and subsequent growth in Del Norte and Humboldt Counties will continue to face challenges in the form of distance to markets and small local market areas, with or without the improved STAA truck access provided by the proposed project and the Richardson Grove Improvement Project. Future growth in the area will be influenced predominately by regional and national economic trends, land and housing costs, zoning, public sentiment, and the political climate of Del Norte and Humboldt Counties. There are numerous existing environmental, geographic, and political barriers to growth in both counties, and any expansion of existing industry within the area or entry of new businesses to the area that may be induced by improved STAA truck access will remain subject to local land use controls. Any changes to local land use and growth plans or regulations would involve substantial public review and input.

The removal of STAA truck restrictions on the SR 197–US 199 corridor and the US 101 southbound route would cumulatively foster a small amount of economic and population growth but is not expected to directly or indirectly encourage unplanned growth or greatly hasten planned growth in Del Norte or Humboldt Counties. Therefore, the proposed project's incremental growth is not cumulatively considerable, and it would not result in significant or adverse impacts resulting from growth in the two-county study area.

Community Impacts

The study area for community impacts is the SR 197–US 199 corridor, including the communities of Hiouchi and Gasquet and the Crescent City area.

With the exception of temporary access and circulation impacts on motorists and emergency services providers during construction, the cumulative social impacts of the proposed project are anticipated to be minor. None of the projects considered as part of the cumulative impact assessment would incrementally add to the impacts of the proposed project on community cohesion, parking, and environmental justice effects. Projects that are constructed on SR 197 or US 199 at the same time as the proposed project improvements could cumulatively add to traveling delays for motorists, including emergency services providers, which could be lengthy at times during construction of the proposed project improvements. As described in Section 2.4.3, "Community Impacts," of this EIR/EA, traffic delays would occur over a period of 3 to 4 years, with delays occurring at multiple locations and project sites along US 199 during three of the 3 to 4 years; however, cumulative delays in the SR 197–US 199 corridor will not be allowed to exceed 90 minutes during daytime construction. The traffic delays could interfere with public access to the recreational facilities within the Smith River NRA during the construction seasons.

Two THPs, the Morris THP (54 acres) and the Green Diamond Resource Company THP (94 acres) are planned for the SR 197–US 199 corridor. Depending on when the timber harvesting operations actually occur, they could add more traffic from heavy trucks to the highway during construction at the Ruby 1 and Ruby 2 sites. In addition, a review of present and foreseeable future highway construction and maintenance projects indicates that one other projects—a maintenance asphalt overlay project (US 199, PM 0.7–4.2)—has been scheduled for construction along US 199 in the 2009–2015 time frame. This project could, in conjunction with construction of the proposed STAA project, contribute to additional delays along US 199. As a result, the proposed project would contribute to temporary cumulative traffic delays on SR 197 and US 199. However, with implementation of the construction-period avoidance, minimization, and mitigation measures specified in Section 2.4, "Construction Impacts," the contribution to cumulative traffic delays would not be adverse or significant.

Economic Impacts

Other projects that could cause temporary delays or detours along the SR 197–US 199 corridor over the 2009–2018 construction seasons could contribute to delays caused by construction of proposed project improvements. In addition to the inconvenience this would cause local residents and visitors to the area, these cumulative delays could generate economic impacts on businesses and tourism, resulting in increased cargo transportation costs and lengthier drive times for tourists.

Cumulative operations-related (post-construction) beneficial economic impacts could include effects on businesses, employment, and personal income as a result of improved STAA truck access in the study area. STAA trucks can move a larger volume of cargo than California Legal trucks because they can pull longer trailers. High-weight items, however, do not benefit from STAA truck access because both STAA and California Legal trucks have the same weight restrictions. As mentioned previously, the Richardson Grove Improvement Project would also improve North Coast STAA truck access, potentially contributing to the cumulative economic impacts of the proposed project. The purpose of the Richardson Grove project is to adjust the roadway alignment of US 101 at Richardson Grove in southern Humboldt County to accommodate STAA truck travel, thereby removing the restriction for STAA trucks and improving goods movement along the US 101 corridor. Once the proposed project and the Richardson Grove Improvement Project have been completed, STAA truck access to the North Coast would be available from the east via the SR 197–US 199 corridor and from the south via US 101. STAA truck access from the north is already available via US 101 from Brookings.

Improved STAA truck access from the east and south could result in lower costs for transporting goods, thereby generating potential beneficial effects for some businesses in Del Norte and Humboldt Counties, including trucking firms, product exporters (e.g., lily bulb producers and timber product producers), and product importers (e.g., retailers). The potential general benefits of improved STAA truck access to the North Coast region are discussed in the "General Business Effects of Providing STAA Access" section of Chapter 4 of the CIA.

The proposed STAA truck access improvements along the SR 197–US 199 corridor would lower transportation costs by about 15% for an estimated 20% of the trucking firms and about 60% of the producers in the two-county study area, according to responses to a business survey conducted by Fehr & Peers (2010). Large retailers in the study area are not expected to see major benefits from the opening of an STAA truck route along the SR 197–US 199 corridor, although some retailers, such as grocers and automobile dealers and transporters, may benefit by avoiding the need to reload incoming shipments, which could be hauled by STAA trucks. Most large retailers are not expected to be affected by improved STAA truck access because routes for the haulers that serve these businesses are already established and are not likely to change. The regional benefits of the proposed project in terms of jobs would be beneficial but are not expected to be large. According to the responses to the business survey conducted for the proposed project, about 30 new jobs could be created in Del Norte County and about 43 in Humboldt County (Table 2.5-3). Total personal income generated from the effects of greater economic activity is estimated to be about $3.95 million annually within the two counties.

Removing STAA truck restrictions on US 101 at Richardson Grove is anticipated to result in similar regional economic impacts. Although it does not appear likely that the volume of truck traffic would increase substantially as a result of the Richardson Grove Improvement Project, it is anticipated that there would be economic benefits to Humboldt County (California Department of Transportation 2008a). Representatives of the business community in Humboldt County have indicated that the lack of STAA truck access is a disadvantage to doing business in the county.

Table 2.5-3. Estimated Annual Cumulative Employment and Income Effects in Del Norte and Humboldt Counties

County	Jobs[a]	Personal Income[b]
197/199 Safe STAA Access Project		
Del Norte County	30	$1,362,600
Humboldt County	43	$2,584,100
Subtotal	*73*	*$3,946,700*
Richardson Grove Improvement Project	55	$3,434,300
Total	**128**	**$7,381,000**

Notes:

[a] For the 197/199 Safe STAA Safe Access Project, employment estimates are based on the business survey in Fehr & Peers (2010). See the "Permanent Effects on Employment and Income" section of Chapter 4 of the CIA. For the Richardson Grove Improvement Project, employment estimates are from Gallo (2008) and represent the employment effect attributable to reduced export sales caused by STAA truck restrictions on US 101 at Richardson Grove. Estimates from Gallo are for the two-county area and are not available for individual counties. Assumes that all jobs are filled by persons new to the study area and that jobs generated by the two projects are not duplicative. Includes full- and part-time jobs.

[b] For the 197/199 Safe STAA Safe Access Project, personal income estimates (in 2009 dollars) are based on statewide IMPLAN model database relationships of income per job, adjusted to 2009 dollars (Minnesota IMPLAN Group 2008). For the Richardson Grove Improvement Project, personal income estimates are from Gallo (2008), adjusted from 2004 to 2009 dollars, and represent the income effect attributable to reduced export sales caused by STAA truck restrictions on US 101 at Richardson Grove. As defined for purposes of the IMPLAN model, personal income includes employee compensation and proprietor income.

According to a survey by the Humboldt County Workforce Investment Board (2008), approximately 39 businesses identified STAA truck restrictions as contributing to unnecessarily high operating costs. This voluntary, anonymous survey indicated that STAA truck restrictions increase local truck transportation costs for the identified industries by 16.9%. Although this is not the only factor limiting economic development in this region, eliminating the restrictions would be certain to have positive impacts (California Department of Transportation 2008b).

The Department commissioned a report to assess the economic impacts on Humboldt and Del Norte Counties of STAA truck restrictions on US 101 at Richardson Grove (Gallo 2008). This study estimates that the restrictions cost the regional economy 55 jobs and $3.05 million in personal income annually (or about $3.43 million when adjusted to 2009 dollars) because sales from exports are weakened by higher transportation costs, suggesting that removal of these restrictions would produce beneficial economic effects within the two-county area.

Considered together, the 197/199 Safe STAA Access Project and the Richardson Grove Improvement Project would improve economic conditions in Del Norte and Humboldt Counties by lowering transportation costs for some businesses. This would result in increased profitability for affected businesses, increased employment and income within the region, and small reductions in prices for some consumer products (refer to the "Effects on Consumer Goods Prices for Study Area Residents" section in Chapter 4 of the CIA for a discussion of this potential effect). As summarized in Table 2.5-3, the cumulative effects of the 197/199 Safe STAA Access Project and the Richardson Grove Improvement Project include nearly 130 additional jobs and a $7.4 million increase in jobs-related personal income in the two counties. While beneficial, these economic impacts would be relatively small in the context of the combined economies of the two counties, representing a 0.2% increase in both employment and personal income over 2007 levels, as reported by the U.S. Bureau of Economic Analysis (2009).

Utilities/Emergency Services

The study area for utilities/emergency services includes the SR 197–US 199 corridor and nearby communities, including the Crescent City area. All project impacts pertaining to utilities and emergency services would be temporary and related to construction activities (e.g., relocation of utility lines), which would differ by project site. Construction activities would be coordinated with the service providers. Notification of construction activity would be provided in accordance with the Transportation Management Plans (TMPs) for each project site, and emergency access would be maintained to prevent unanticipated disruptions or delays. Therefore, the project, in combination with other projects, is not considered to have a significant impact on utilities/emergency services, and the project's incremental effects to utilities and emergency services are not cumulatively considerable.

Traffic and Transportation

The study area for traffic and transportation is US 101 from Crescent City to the California/Oregon state line, SR 197 from US 101 to the intersection with US 199, and US 199 from US 101 to the California/Oregon state line. No bicycle or pedestrian facilities are anticipated to be affected by the project improvements.

The proposed project is expected to increase the number of trucks by 17 per day under existing/baseline conditions and by 92 per day under 2030 build conditions. The 2030 with-project analysis (refer to Section 2.1.5, "Traffic and Transportation/Pedestrian and Bicycle Facilities") evaluates roadways during peak travel periods under 2030 traffic and geometric conditions considered with the changes in truck traffic due to the proposed STAA truck access improvements. Under this scenario, all of the directional segments studied would operate at acceptable levels of service (LOS) according to the thresholds established in the route concept reports for SR 197, US 199, and US 101 (California Department of Transportation 1999a, 1999b, 2002). For SR 197, all segments would operate at LOS C or better (target LOS E). All segments of US 199 would operate at LOS D or better (target LOS D). All two-lane segments of US 101 would operate at LOS D or better (target LOS D for two-lane segments in rural areas). Therefore, the increase in truck traffic by 2030 due to the project would not result in a significant adverse effect on traffic operations. Traffic is expected to continue to move at free-flow speeds on all study roadways. Therefore, the proposed project, in combination with other projects, is not considered to have a significant impact to traffic and transportation, and the project's incremental effects on traffic and transportation are not cumulatively considerable. See "Traffic and Transportation/Pedestrian and Bicycle Facilities" Section 2.1.5.3, "Environmental Consequences," for further discussion on this topic.

Visual/Aesthetics

The study area for aesthetics/visual resources would be the project sites on SR 197 and US 199 as well as available vantage points (refer to Section 2.1.6, "Visual/Aesthetics"). Project impacts on visual resources would be site specific, and therefore the project's visual/aesthetic impact in combination with other projects would not be significant. Any visual/aesthetic impacts from the proposed project would be minor/temporary, related to construction activities, and would not be cumulatively considerable. Therefore, the proposed project is not expected to contribute considerably to adverse impacts on aesthetic/visual resources.

Hydrology and Floodplain

The proposed project would not have any effect on hydrology and/or floodplains. Therefore, the project would not either on its own or in combination with other projects have a cumulative impact. Implementing BMPs as part of the proposed project would offset potential impacts, ensuring that the project would not contribute considerably to adverse impacts related to flooding.

Water Quality and Stormwater Runoff

The proposed project would introduce new impervious surfaces. This would result in an incremental reduction in the amount of natural soil surfaces available for infiltration of rainfall and runoff, thereby potentially generating additional runoff during storm events. Additional runoff can contribute to the flood potential of natural stream channels and accelerate soil erosion and stream channel scour. Furthermore, there is the potential for reduced water quality from the introduction of contaminants (contaminants used in maintenance and landscaping or resulting from an accidental spill), erosion (increased turbidity), and the loss of wetlands and other jurisdictional waters. All state and local projects, including the current project, must incorporate construction stormwater treatment measures, erosion control measures, and stormwater runoff control measures to meet the water quality regulations of the RWQCB. With each project meeting the requirements of the RWQCB, there should be no net effect. Therefore, the proposed project, in combination with other projects and incrementally on its own, would not contribute to a cumulative impact.

Geology/Soils/Seismic/Topography

The proposed project is geotechnically feasible to design and construct. All impacts related to geology, soils, and seismicity (i.e., excavation, erosion, etc.) would be minor and site specific; and would be addressed by avoidance, minimization, and mitigation measures. Therefore, impacts of the project in combination with other projects would not be significant, and the projects incremental effect would not be cumulatively considerable.

Hazardous Waste/Materials

Hazardous materials, including aerially deposited lead (ADL), naturally occurring asbestos (NOA), other asbestos-containing materials, lead, and treated wood waste, exist within the project area. Furthermore, construction of the proposed project would enable larger STAA trucks to use the SR197–US199 corridor, potentially increasing the volume of hazardous materials being transported along the route. However, the difference between the current number of trucks that transport hazardous materials and the projected number would be small. Therefore, compared with current levels, a substantial increase in the number of trucks that transport hazardous materials would not result from project operation. See "Hazardous Waste/Materials" Section 2.2.4.3, "Environmental Consequences," for further discussion on this topic.

Construction of the proposed project would result in potential hazardous waste/materials conditions (e.g., exposure to ADL and NOA, contamination of soils, degrading the quality of surface and groundwater) related to the removal or modification of facilities/structures. Implementation of avoidance, minimization, and mitigation measures (including preparation of a health and safety plan) would offset any potential hazardous waste/materials impacts related to the project in combination with other projects, and ensure that the proposed project incrementally on its own would not make a cumulatively considerable contribution to hazardous waste/materials exposure.

Air Quality

Air quality impacts under the proposed project are predicted to be temporary (e.g., construction-related emissions, release of NOA) and are not anticipated to increase substantially under the 2030 build scenario. No operational adverse air quality impacts are expected.

Temporary increases in construction-related emissions and the release of NOA are anticipated. However, these impacts would be addressed by measures discussed in Section 2.2.5, "Air Quality." Therefore, implementation of avoidance, minimization, and mitigation measures would ensure that the proposed project in combination with other projects would not result in a significant cumulative impact, or incrementally on its own make a cumulatively considerable contribution to air quality impacts during construction.

Noise and Vibration

Existing noise levels (L_{eq}) in the project corridor range from 44 to 63 dBA. Noise levels with the proposed project are not predicted to increase perceptibly under the 2030 build scenario. No operational adverse noise impacts are expected. Temporary increases in noise could occur as a result of construction activities. However, these increases would be addressed by measures discussed in Section 2.2.6, "Noise." Noise impacts would be site specific, and impacts related to the project in combination with other projects, would not be significant. Implementation of avoidance, minimization, and mitigation measures would ensure that the proposed project would not make a cumulatively considerable contribution to construction noise.

Biological Environment

The study area for biological resources is the SR 197–US 199 corridor and areas in the immediate vicinity. Two of the proposed alternatives for the Ruby 2 site—the Two-Foot Shoulders Alternative and the Four-Foot Shoulders Alternative—include actions that would result in a significant impact by removing large old-growth redwood trees.

Old-growth redwood stands are protected in state and national parks; however, they are still harvested outside of these parks despite the fact that approximately 96% of the old-growth redwood has already been removed by logging (U.S. Fish and Wildlife Service 1997). In addition to the intrinsic value of this resource, other species are associated with old-growth redwoods. Among these are the endangered marbled murrelet and northern spotted owl. Consequently, the few remaining stands of old-growth redwood are unique and essentially irreplaceable biological resources. Removal of old-growth redwood trees individually would be an adverse impact that cannot be totally mitigated because of the uniqueness of this natural community. The Department selected the Two-Foot Widening in Spot Locations Alternative for Ruby 2, which is the only build alternative for Ruby 2 that avoided cutting large redwood trees. Therefore, other than the potential impacts on large redwoods at the Ruby 2 site, the proposed project would not include actions that would result in an adverse direct, indirect, and/or cumulative impact on biological resources that could not be offset by implementation of avoidance, minimization, and/or mitigation measures. Therefore, implementation of either the Two-Foot Shoulders Alternative or Four-Foot Shoulders Alternative at the Ruby 2 site would contribute to adverse cumulative impacts on large old-growth redwoods.

Cumulative Analysis Conclusions

Given the analysis presented above, the proposed project, in combination with other projects and the project's individual incremental contribution, would not result in a cumulative impact on any resource. The DEIR/EA included Section 2.5.4, "Avoidance, Minimization, and/or Mitigation Measures," which discussed the avoidance of cumulative impacts on large redwood trees at Ruby 2 through the selection of the Two-Foot Widening in Spot Locations Alternative as the preferred alternative. As mentioned above, the Department selected this alternative as the preferred alternative for Ruby 2. For this reason, it was not necessary to include Section 2.5.4 in the final EIR/EA. No additional measures to reduce cumulative impacts are considered necessary because the project would not result in a cumulative impact on any resource.

Chapter 3 California Environmental Quality Act (CEQA) Evaluation

3.1 Determining Significance under CEQA

The proposed project is a joint project by the California Department of Transportation (Department) and the Federal Highway Administration (FHWA) and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). FHWA's responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable Federal laws for this project is being, or has been, carried out by the Department under its assumption of responsibility pursuant to 23 U.S.C. 327. The Department is the lead agency under CEQA and NEPA.

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

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

3.2 Discussion of Significance of Impacts

The effects of the proposed project have been listed below in three categories: less-than-significant effects, significant effects that can be reduced to less-than-significant levels with the implementation of mitigation measures, and unavoidable significant effects. Detailed discussions of these effects are in Chapter 2.0, Affected Environment; Environmental Consequences; and Avoidance, Minimization, and/or Mitigation Measures.

3.2.1 Less-than-Significant Effects of the Proposed Project

The project effects upon each of the resource topics listed below are considered less than significant.

- Land Use
- Growth-Inducing Impacts
- Community Impacts
- Utilities/Emergency Services
- Traffic and Transportation
- Visual/Aesthetics
- Cultural Resources
- Hydrology and Floodplain
- Water Quality and Stormwater Runoff
- Geology/Soils/Seismic/Topography
- Hazardous Waste/Materials
- Air Quality
- Noise and Vibration
- Natural Communities
- Wetlands and Other Waters
- Plant Species
- Invasive Species

3.2.2 Significant Environmental Effects of the Proposed Project

No significant environmental effects are expected as a result of this project with the implementation of avoidance and mitigation measures for each of the listed resource topics below.

- Animal Species
- Threatened and Endangered Species

3.2.3 Unavoidable Significant Environmental Effects

Two alternatives proposed for the Ruby 2 location would have resulted in the permanent removal of large, old redwood trees with a dbh of 36 inches or more. The Ruby 2, Four-Foot Shoulder Alternative would have removed ten large redwood trees, and the Ruby 2 Two-Foot Shoulder

Alternative would have removed four large redwood trees. The removal of large old redwood trees would be a significant environmental effect that could not be fully mitigated.

These significant effects will be avoided because the Department selected the Two-Foot Widening in Spot Locations Alternative as the preferred alternative at Ruby 2. This alternative does not remove any large, old redwood trees.

3.2.4 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), 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's in 1988, has led to increased efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs related to human activity that include carbon dioxide (CO2), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (1, 1, 1, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

There are typically two terms used when discussing the impacts of climate change. "Greenhouse Gas (GHG) Mitigation" is a term for reducing GHG emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation," refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)[1].

Transportation sources (passenger cars, light duty trucks, other trucks, buses and motorcycles) in the state of California make up the largest source (second to electricity generation) of greenhouse gas emitting sources. Conversely, the main source of GHG emissions in the United States is electricity generation followed by transportation. The dominant GHG emitted is CO2, mostly from fossil fuel combustion.

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improve system and operation efficiencies, 2) reduce growth of vehicle miles traveled (VMT) 3) transition to lower GHG fuels and 4) improve vehicle technologies. To be most effective all four should be pursued collectively. The following regulatory setting section outlines state and federal efforts to comprehensively reduce GHG emissions from transportation sources.

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

3.2.4.1 Regulatory Setting

State

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level.

Assembly Bill 1493 (AB 1493), Pavley. Vehicular Emissions: Greenhouse Gases (AB 1493), 2002: requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. In June 2009, the United States Environmental Protection Agency (U.S. EPA) Administrator granted a Clean Air Act waiver of preemption to California. This waiver allowed California to implement its own GHG emission standards for motor vehicles beginning with model year 2009. California agencies will be working with Federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger cars model years 2017-2025.

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

AB32 (AB 32), the Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action Team.

Executive Order S-01-07: Governor Schwarzenegger set 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 ten percent by 2020.

Senate Bill 97 (Chapter 185, 2007): required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State CEQA Guidelines for addressing greenhouse gas emissions. The Amendments became effective on March 18, 2010.

Federal

Although climate change and GHG reduction is a concern at the federal level, currently there are no regulations or legislation that have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and Executive Order 13514- Federal Leadership in Environmental, Energy and Economic Performance.

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also direct federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a U.S. strategy for adaptation to climate change.

On April 2, 2007, in Massachusetts v. EPA, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the U.S. EPA has the authority to regulate GHG. The Court held that the U.S. EPA Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases—CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA's *Proposed Greenhouse Gas Emission Standards for Light-duty Vehicles*, which was published on September 15, 2009[2]. On May 7, 2010 the final *Light-duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards* was published in the Federal Register.

U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) 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. These steps were outlined by President Obama in a memorandum on May 21, 2010.[3]

The final combined U.S. EPA and NHTSA standards that make 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 require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon (MPG) if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards will cut GHG emissions

[2] http://www.epa.gov/climatechange/endangerment.html
[3] http://epa.gov/otaq/climate/regulations.htm

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 January 24, 2011, the U.S. EPA along with the U.S. Department of Transportation and the State of California announced a single timeframe for proposing fuel economy and greenhouse gas standards for model years 2017-2025 cars and light-trucks. Proposing the new standards in the same timeframe (September 1, 2011) signals continued collaboration that could lead to an extension of the current National Clean Car Program.

3.2.4.2 Project Analysis

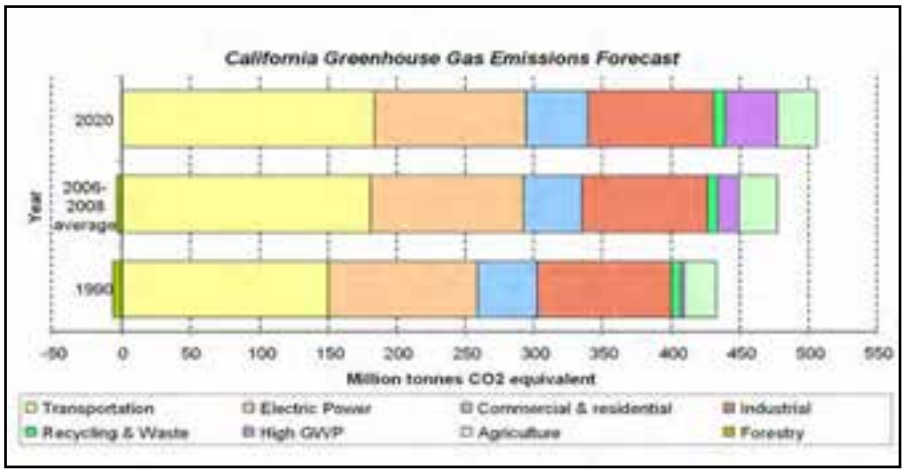
An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG.[4] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See 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. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG. As part of its supporting documentation for the Draft Scoping Plan, CARB released the GHG inventory for California (Figure 3-1, next page) (Forecast last updated: 28 October 2010). The forecast is an estimate of the emissions expected to occur in the year 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.

The Department and its parent agency, the Business, Transportation, and Housing 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, the Department has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006).[5]

[4] 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 SCAQMD (Chapter 6: : The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

[5] 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



Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Figure 3-1. California Greenhouse Gas Forecast

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 as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Mitigation measures described in Chapter 2, Section 2.4.10, to reduce particulate, exhaust, and fugitive dust emissions would reduce the severity of this impact.

Operational Emissions

Effects associated with GHGs are long-term climatic changes. As previously noted, GHG contaminant emissions tend to accumulate in the atmosphere because of their relatively long lifespan. As a result, their effect on the atmosphere is mostly independent of the point of emission; GHG contaminant emissions are more appropriately evaluated on a regional, state, or even national scale than on an individual project level.

It is anticipated that GHG emissions would increase with implementation of the proposed project alternatives, although the increase would be minimal. The primary purpose of the proposed project is to improve SR 197 and US 199 facilitating improved operations and goods movement and classify the routes as part of the STAA network of truck routes. The secondary purpose is to enhance safety on the routes for automobiles, trucks, other larger vehicles using the routes, and non-motorized traffic.

The project supports the goals of Del Norte County Regional Transportation Plan and their *Comprehensive Economic Development Strategy* for connectivity to Interstate 5 and safety. It is

also part of the 2012/2013 Federal Statewide Transportation Improvement Program and included in the State Transportation Improvement Program adopted by the California Transportation Commission on June 13, 2008 Specific roadway conditions that support the need for this project and proposed improvements are described by location in the Traffic section of this document.

To assess the project's potential climate change impacts, quantification of CO_2 emissions was conducted using the Department's CT-EMFAC emission model and traffic data for the two routes (Route 1 and Route 2) studied by the project traffic engineers, Fehr & Peers (Fehr & Peers 2010). Route 1 includes traffic volumes on SR 197 and US 199 from the US 101 interchange to Grant Pass, Oregon. Route 2 includes traffic volumes on US 101 and I-5 from the SR 197 interchange to Grant Pass, Oregon.

Table 3-1 shows the CO_2 emissions for Route 1; it includes existing/ baseline 2008 CO_2 emissions as well as the projected CO_2 emissions for both the No Project and Build conditions for 2015 and 2030. In 2008, the CO_2 emissions were modeled to be 57,214.75 metric tons per year. In 2015 under the No Build condition the CO_2 emissions increase to 61,088.22; with the project the CO_2 emissions increase by an additional 456.44 metric tons per year when compared with the 2015 No Build. In 2030, the CO_2 emissions for the No Build and Build alternative are 69,379.20 and 70,964.58 respectively. The increase in CO_2 attributable to the proposed project on Route 1 in the design-year (1,585.38 metric tons) amounts to 2.77% increase in CO_2 when compared with existing conditions.

Similarly, Table 3-2 shows the CO_2 emissions for Route 2. In 2008, the CO_2 emissions were modeled to be 338,388.44 metric tons per year. Although there is a substantial decrease in VMT on Route 2 in the Build condition in the future years (2015 and 2030), CO_2 emissions modeled for those years still show an increase. This is mainly due to the increase in the percentage of truck traffic and the predicted increase in vehicle speeds. In 2015 under the No Build condition the CO_2 emissions increase to 353,354.15, and with the project the CO_2 emissions increase by an additional 767.64 metric tons per year when compared with the No Build. In 2030, the CO_2 emissions for the No Build and Build alternative are 385,498.22 and 387,716.92 respectively. The increase in CO_2 attributable to the proposed project on Route 2 in the design-year (1,585.38 metric tons) amounts to 0.66% increase in CO_2 when compared with existing conditions.

Ultimately, on Route 1, implementation of the proposed project would result in an increase of approximately 2.29 percent of operational CO_2 emissions in 2030; on Route 2, the proposed project would result in an additional 0.58 percent of operational CO_2 emissions in 2030. Although yearly VMT is expected to decrease on Route 2 by 1,692,870, there is expected to be an overall increase in yearly VMT with implementation of the proposed project because VMT is anticipated to increase by 2,558,650 on Route 1 (Tables 3-1 and 3-2). The resulting increase in yearly VMT for project implementation, including Route 1 and Route 2, is 865,780. It is important to note, however, that even without the proposed project, VMT and operational emissions are predicted to increase. These increases are likely due to population growth and land use changes that would occur with or without the project.

Table 3-1. Summary of Operational Emissions (tons per year) for Route 1

Route 1—US 101 to Grants Pass, OR (via SR 197 and US 199)							
Scenario	Yearly VMT	Tons per year					
		ROG	NO_X	CO	PM10	PM2.5	CO_2[1]
2008 Existing/ Baseline Conditions	143,673,125	63.01	225.43	1,091.41	3.17	3.00	57,214.57
2015 No Project	153,691,645	37.46	137.76	613.69	2.92	2.72	61,088.22
2015 Build	154,192,060	37.52	139.25	614.27	2.95	2.75	61,544.66
2030 No Project	175,160,215	15.82	40.32	200.50	2.55	2.35	69,379.20
2030 Build	177,718,865	16.03	41.55	202.95	2.61	2.41	70,964.58
Alternative Differences							
2015 Build − 2015 No Project	500,415	0.06	1.48	0.59	0.03	0.03	456.44
2030 Build − 2030 No Project	2,558,650	0.21	1.24	2.45	0.06	0.06	1,585.38

[1] CO_2 presented in metric tons per year.
Adapted from: Fehr & Peers 2009.

Table 3-2. Summary of Operational Emissions (tons per year) for Route 2

Route 2—SR 197 to Grants Pass, OR (via US 101, OR-42, and I-5)							
Scenario	Yearly VMT	Tons per year					
		ROG	NO_X	CO	PM10	PM2.5	CO_2[1]
2008 Existing/ Baseline Conditions	754,680,935	368.08	1,323.75	6,636.90	19.26	17.88	338,388.44
2015 No Project	786,248,325	211.22	793.77	3,520.29	17.12	15.52	353,354.15
2015 Build	784,724,815	210.42	798.53	3,505.55	17.22	15.61	354,121.79
2030 No Project	853,892,315	86.27	222.03	1,084.83	14.22	13.27	385,498.22
2030 Build	852,199,445	85.89	225.26	1,079.09	14.33	13.37	387,716.92
Alternative Differences							
2015 Build − 2015 No Project	-1,523,510	-0.79	4.76	-14.74	0.10	0.09	767.64
2030 Build − 2030 No Project	-1,692,870	-0.39	3.23	-5.74	0.11	0.10	2,218.69

[1] CO_2 presented in metric tons per year.
Adapted from: Fehr & Peers 2009.

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 mph; the most severe emissions occur from 0–25 miles per hour (see Figure 3-2). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO_2, may be reduced.

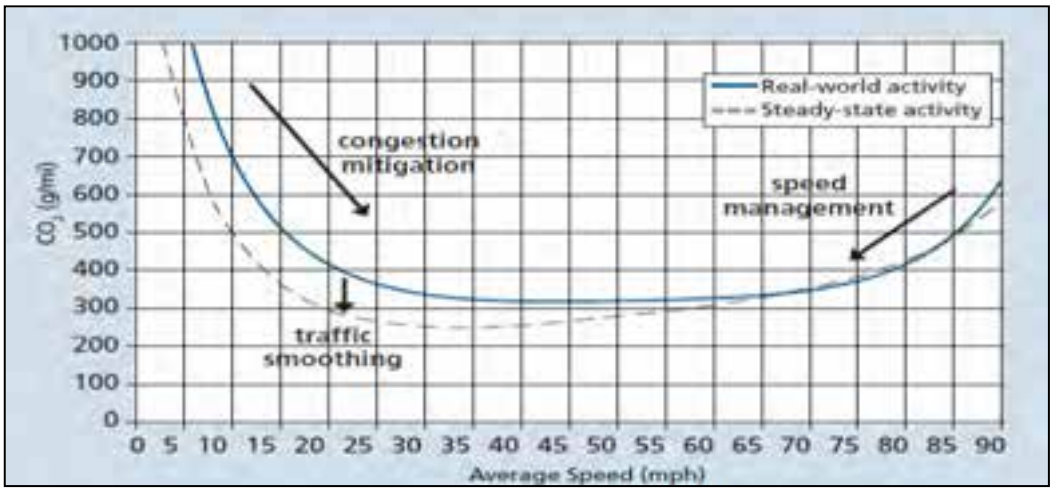


Figure 3-2. Possible Effect of Traffic Operation Strategies in Reducing On-road CO_2 Emission[6]

3.2.4.3 Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate CO_2 emissions from mobile sources, the model does have limitations when it comes to accurately reflecting CO_2 emissions. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008), studies have revealed that brief but rapid accelerations can contribute significantly to a vehicle's carbon monoxide and hydrocarbon emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idle) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts. Although work by EPA and the CARB is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling. In addition, EMFAC does not include speed corrections for most vehicle classes for CO_2; for most vehicle classes, emission factors are held constant, which means that EMFAC is not sensitive to the decreased emissions associated with improved traffic flows for most vehicle classes. Therefore, unless a project involves a large number of heavy-duty vehicles, the difference in modeled CO_2 emissions due to speed change will be slight.

CARB is currently not using EMFAC to create its inventory of GHG emissions, and is unclear why the CARB has made this decision. Its Web site only states:

> REVISION: Both the EMFAC and OFFROAD Models develop CO_2 and CH_4 [methane] emission estimates; however, they are not currently used as the basis for [CARB's] official

[6] **Traffic Congestion and Greenhouse Gases:** Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010) <http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>

> [GHG] inventory which is based on fuel usage information. However, CARB is working towards reconciling the emission estimates from the fuel usage approach and the models.

Other Variables

With the current science, project-level analysis of GHG emissions is limited. Although a GHG analysis is included for this project, there are numerous key GHG variables that are likely to change dramatically during the design life of the proposed project and would thus dramatically change the projected CO_2 emissions.

First, vehicle fuel economy is increasing. The EPA's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008 (http://www.epa.gov/oms/fetrends.htm)," which provides data on the fuel economy and technology characteristics of new light-duty vehicles, including cars, minivans, sports utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005 and is now the highest since 1993. Most of the increase since 2004 is due to higher fuel economy for light trucks, following a long-term trend of slightly declining overall fuel economy that peaked in 1987. These vehicles also have a slightly lower market share, peaking at 52 percent in 2004, with projections at 48 percent in 2008. Table 3-3 shows the alternatives for vehicle fuel economy increases currently being studied by the National Highway Traffic Safety Administration in its Draft EIS for New Corporate Average Fuel Economy (CAFE) Standards (June 2008).

Table 3-3. Model Year 2015 Required Miles per Gallon (mpg) by Alternative

No Action		25% Below Optimized	Optimized (Preferred)	25% Above Optimized	50% Above Optimized	Total Costs Equal Total Benefits	Technology Exhaustion
Cars	27.5	33.9	35.7	37.5	39.5	43.3	52.6
Trucks	23.5	27.5	28.6	29.8	30.9	33.1	34.7

Source: National Highway Traffic Administration 2008.

Second, near-zero carbon vehicles will come into the market during the design life of this project. According to a March 2008 report released by University of California Davis (UC Davis), Institute of Transportation Studies:

> Large advancements have occurred in fuel cell vehicle and hydrogen infrastructure technology over the past 15 years. Fuel cell technology has progressed substantially resulting in power density, efficiency, range, cost, and durability all improving each year. In another sign of progress, automotive developers are now demonstrating over 100 fuel cell vehicles (FCVs) in California – several in the hands of the general public – with configurations designed to be attractive to buyers. Cold-weather operation and vehicle range challenges are close to being solved, although vehicle cost and durability improvements are required before a commercial vehicle can be successful without incentives. The pace of development is on track to approach pre-commercialization within the next decade.
>
> A number of the United States Department of Energy (DOE) 2010 milestones for FCV development and commercialization are expected to be met by 2010. Accounting for a five to six year production development cycle, the scenarios developed by the U.S. DOE suggest that

> 10,000s of vehicles per year from 2015 to 2017 would be possible in a federal demonstration program, assuming large cost share grants by the government and industry are available to reduce the cost of production vehicles.[7]

Third, and as previously stated, California has recently adopted a low-carbon transportation fuel standard. The CARB is scheduled to present draft regulations for low-carbon fuels in late 2008, with implementation of the standard to begin in 2010.

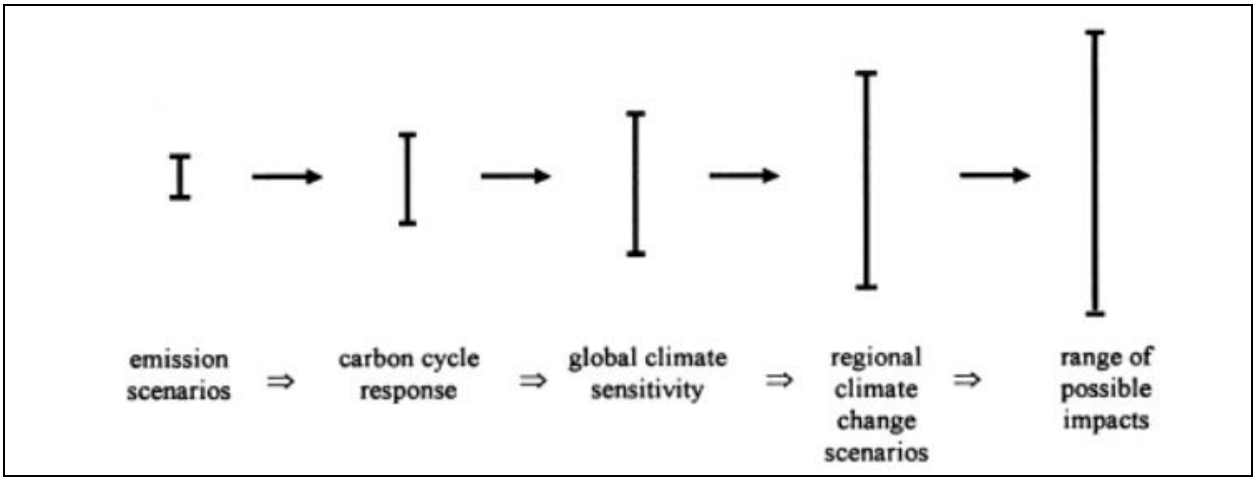
Fourth, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, "Effects of Gasoline Prices on Driving Behavior and Vehicle Market,"[8] the Congressional Budget Office found the following results based on data collected from California: (1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly; (2) the market share of sports utility vehicles is declining; and (3) the average prices for larger, less-fuel-efficient models have declined over the past five years as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel efficient vehicles.

Limitations and Uncertainties with Impact Assessment

Figure 3-3 is taken from the National Highway Traffic Safety Administration Draft Environmental Impact Statement for New CAFE Standards and illustrates how the range of uncertainties in assessing GHG impacts grows with each step of the analysis:

> Cascade of uncertainties typical in impact assessments showing the "uncertainty explosion" as these ranges are multiplied to encompass a comprehensive range of future consequences, including physical, economic, social, and political impacts and policy responses.

Figure 3-3. Cascade of Uncertainties



Source: National Highway Traffic Safety Administration 2008.

Much of the uncertainty in assessing an individual project's impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels

[7] Cunningham, Joshua, Sig Cronich, Michael A. Nicholas. March 2008. *Why Hydrogen and Fuel Cells are Needed to Support California Climate Policy*, UC Davis, Institute of Transportation Studies, pp. 9–10.

[8] http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf.

of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what the modeled 7.4 metric ton increase in CO_2 emissions would mean for climate change given the overall California GHG emissions inventory of approximately 430 million metric tons of CO_2 equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global GHG emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce GHG emissions. Non-mitigation IPCC scenarios project an increase in global GHG emissions by 9.7 up to 36.7 billion metric tons of CO_2 from 2000 to 2030, which represents an increase of between 25 and 90 percent.

The assessment is further complicated by the fact that changes in GHG emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some types of GHG emissions, rather than causing "new" GHG emissions. The extent to which the modeled 11.4–20.9-metric ton increase in CO_2 emissions represents a net global increase, reduction, or no change, is uncertain, and there are no models approved by regulatory agencies that operate at the global or even statewide scale.

The complexities and uncertainties associated with project level impact analysis are further borne out in the recently released Draft EIS completed by the National Highway Traffic Safety Administration CAFE standards (June 2008). As the text quoted below shows, even when dealing with GHG emission scenarios on a national scale for the entire passenger car and light truck fleet, the numerical differences among alternatives is very small and well within the error of sensitivity of the model.

> In analyzing across the CAFE 30 alternatives, the mean change in the global mean surface temperature, as a ratio of the increase in warming between the B1 (low) to A1B (medium) scenarios, ranges from 0.5 percent to 1.1 percent. The resulting change in sea level rise (compared to the No Action Alternative) ranges, across the alternatives, from 0.04 centimeter to 0.07 centimeter. In summary, the impacts of the Model Year 2011-2015 CAFE alternatives on global mean surface temperature, sea level rise, and precipitation are relatively small in the context of the expected changes associated with the emission trajectories. This is due primarily to the global and multi-sectoral nature of the climate problem. Emissions of CO_2, the primary gas driving the climate effects, from the United States automobile and light truck fleet represented about 2.5 percent of total global emissions of all GHGs in the year 2000 (EPA, 2008; CAIT, 2008). While a significant source, this is a still small percentage of global emissions, and the relative contribution of CO_2 emissions from the United States light vehicle fleet is expected to decline in the future, due primarily to rapid growth of emissions from developing economies (which are due in part to growth in global transportation sector emissions).

3.2.4.4 CEQA Conclusion

As discussed above, both the future with project and future no build show increases in CO2 emissions over the existing levels; the future build CO2 emissions are higher than the future no build emissions. In addition, as discussed above, there are also limitations with EMFAC and with assessing what a given CO2 emissions increase means for climate change. Therefore, it is Caltrans determination that in the absence of further regulatory or scientific information related

to greenhouse gas emissions and CEQA significance, it is too speculative to make a determination regarding significance of the project's direct impact and its contribution on the cumulative scale to 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

AB 32 Compliance

The Department continues to be actively involved on the Governor's Climate Action Team, just as CARB 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 the Department is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including $100.7 in transportation funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together are expected to reduce congestion. 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 depicted in Figure 3-4.

Figure 3-4. Mobility Pyramid

The Department 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. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light- and heavy-duty trucks; the Department is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation

on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by the U.S. EPA and CARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California, Davis.

Table 3-4 summarizes department and statewide efforts that the Department is implementing in order to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program available from the Department (California Department of Transportation 2006b).

Table 3-4. Climate Change/CO_2 Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Transportation System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.07	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
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	4.2 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	18.18

To the extent that it is applicable or feasible for the project and through coordination with the project development team, the following measures will also be include in the project to reduce GHG emissions and potential climate change impacts from the project:

- According to Caltrans Standard Specifications, the contractor must comply with all local Air Pollution Control District's rules, ordinances, and regulations in regards to air quality restrictions. Include information regarding the local AQMD regulations regarding idling time during construction.

3.2.4.5 Adaptation Strategies

Adaptation strategies refer to how the Department 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, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result 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 CEQ, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration, released its interagency report October 14, 2010 outlining recommendations to President Obama for how Federal Agency policies and programs can better prepare the United States to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the Federal Government implement actions to expand and strengthen the Nation's capacity to better understand, prepare for, and respond to climate change.

Climate change adaption must also involve the natural environment as well. 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 will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed Executive Order S-13-08 which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This Executive Order set in motion several agencies and actions to address the concern of 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 Climate Adaptation Strategy 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 Executive Order 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 Environmental Protection; 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 Resources Agency was also directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010 to advise how California should plan for future sea level rise. The report is to include:

- 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; and
- a discussion of future research needs regarding sea level rise for California

Prior to the release of the final Sea Level Rise Assessment Report, all state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order 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 regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data.

Until the final report from the National Academy of Sciences is released, interim guidance has been released by The Coastal Ocean Climate Action Team as well as Caltrans as a method to initiate action and discussion of potential risks to the states infrastructure due to projected sea level rise.

All projects that have filed a Notice of Preparation (NOP), and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these planning guidelines. A NOP was issued for this project on August 26, 2008.

Furthermore Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance and operational improvements of the system and economy of the state. The

Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of 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. The Department is an active participant in the efforts being conducted in response to Executive Order S-13-08 and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment which is due to be released in 2012.

3.2.5 Beneficial Effects

Community Impacts

Following is discussion of an anticipated post-construction beneficial effect on local residents, businesses, and visitors to the area as a result of improvement in highway safety, operations and access.

Utilities/Emergency Services

Post-construction beneficial effect on law enforcement, fire, and other emergency service providers as a result of enhanced travel routes on SR 197 and US 199.

3.3 Mitigation Measures for Significant Impacts under CEQA

Animal Species

Contact and Consult with DFG and Forest Service if Nesting Osprey Are Found

If osprey are found to be nesting in or near the project area at the time of construction, the Department will contact DFG and Forest Service, and consult with those agencies to identify and implement avoidance and minimization measures.

Limit Vegetation Removal to the Non-Nesting Season for Migratory Birds

In compliance with the MBTA, grass, tree, and shrub removal will take place between September 1 and March 1 to avoid impacts on nesting birds. If vegetation must be removed outside these dates, a biological survey for nesting birds must be conducted prior to vegetation removal.

Limit Construction in Watercourses to the Dry Season

Work involving seasonal creeks/drainages will take place when they are dry and there is no precipitation occurring or anticipated. Work in the water of perennially flowing channels will take place during the dry season, generally between June 15 and October 15, to minimize impacts on amphibians and other aquatic organisms.

Implement Avoidance and Minimization Measures for Chinook Salmon and Salmonids

The Department will avoid and minimize potential impacts on the salmonids and their Critical Habitat and EFH to the greatest extent practicable during project construction. Specific work windows and limitations on construction will be determined through consultations with resource agencies. To avoid, minimize, and offset impacts, the following measures will be included by the Department:

- Large woody debris obtained from tree removal in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish rearing habitat.
- All trees not taken by resource agencies or used by other government or private entities, with approval from the Department, will be put through a chipper and the chips will be applied to areas of exposed soil on-site as erosion control mulch.
- Sediment and erosion control measures will be implemented to minimize sediment discharge to the river or other waters.
- A vacuum sweeper will be used to clean the pavement.
- No material will be placed where it may enter the river due to precipitation.
- Noise blankets are being considered to help reduce the noise from blasting at the Narrows.
- If feasible during blasting activities at the Narrows, K-rail will be placed near the centerline, and a cyclone fence will be placed on top of that.
- No impact pile driving will be used for bridge work or retaining walls.
- Debris resulting from bridgework at Patrick Creek Narrows Location 2 will be contained to the maximum extent practicable.

Implement Avoidance and Minimization Measures for Coastal Cutthroat Trout

The Department will avoid and minimize potential impacts on the coastal cutthroat trout and its habitat during project construction by the measures outlined above for chinook salmon so there will be no adverse impacts on coastal cutthroat trout.

Protect Migratory Birds

Per the Federal MBTA, the contractor will be instructed that migratory birds and their (active) nests, eggs, and young are protected and measures must be implemented to avoid the harassment or take of any birds. These measures include:

- Tree and shrub removal should occur from September 1 to March 1 to avoid taking nesting birds.
- If vegetation removal cannot occur within this window, then surveys by the Department Biologist or biological monitor will be required prior to the removal of any trees.

- If nesting birds are present, tree and shrub removal will not be permitted until a Department Biologist or biological monitor has given authorization to proceed.

Threatened and Endangered Species

Construct During Specific Work Windows to Protect Marbled Murrelet and Northern Spotted Owl

To avoid adverse effects to northern spotted owl during the critical breeding season (March 1–June 30), no night work will take place and there will be no blasting. To avoid potential noise impacts on migrating marbled murrelet between March 24 and September 15, there will be no construction activity (including blasting) in the morning for a 3-hour period, starting 1 hour before sunrise and lasting until 2 hours after sunrise. In the evening, no construction activity involving equipment with noise levels in excess of ambient traffic noise (including blasting) will occur in a 3-hour window beginning 2 hours before sunset and lasting until 1 hour after sunset. Therefore, from July 1 to September 15, there can be night work starting 1 hour after sunset and ending 1 hour before sunrise. After September 15 (until March 1), there will be no restrictions on night work. Final work windows will be determined through Section 7 consultation and may include additional restrictions or restrictions based upon noise levels and frequency.

Avoid and Minimize Impacts on Salmonids

The Department will avoid and minimize potential impacts on salmonids and their critical habitat and EFH to the greatest extent practicable during project construction. To avoid, minimize, and offset impacts, the following measures will be implemented by the Department:

- Large woody debris obtained from tree and stump removal in the project area will be made available to resource agencies for placement in nearby streams and rivers. This will have a positive effect on fish-rearing habitat.
- All trees not taken by resource agencies or used by other government or private entities, with approval from the Department, will be put through a chipper and the chips will be applied to areas of exposed soil on-site as erosion control mulch.
- Sediment and erosion control measures will be implemented to minimize sediment discharge to the river or other waters.
- A vacuum sweeper will be used to clean the pavement.
- No material will be placed where it may enter the river.
- Noise blankets will be considered to help reduce the noise from blasting at the Narrows.
- If feasible during blasting activities at the Narrows, K-rail segments will be placed near the centerline and a cyclone fence will be placed on top of that.
- No impact pile driving will be used for bridge work or retaining walls.
- All debris resulting from bridgework at Patrick Creek Narrows Location 2 will be contained and not allowed to enter the river.

Implement Compensatory Mitigation for Coho Salmon—Southern Oregon/Northern California Coast ESU

Compensatory mitigation measures will be implemented in consultation with NMFS and DFG for impacts on coho salmon. To offset impacts on coho salmon from this project, fish passage at culverts on other watercourses in the Smith River watershed will be identified and the fish passage improved. This work may be done in advance of this project, concurrently, and/or afterwards.

Limit Timing of Construction Activity to Avoid Noise Effects on Migrating Marbled Murrelet

To avoid potential noise impacts on migrating marbled murrelet between March 24 and September 15, there will be no construction activity (including blasting) in the morning for a 3-hour period, starting 1 hour before sunrise and lasting until 2 hours after sunrise. In the evening, no construction activity involving equipment with noise levels in excess of ambient traffic noise (including blasting) will occur in a 3-hour window starting 2 hours before sunset and lasting until 1 hour after sunset. Therefore, from July 1 to September 15, there can be night work starting 1 hour after sunset and ending 1 hour before sunrise. After September 15 (until March 1), there will be no restrictions on night work. Final work windows will be determined through Section 7 consultation, and may include additional restrictions or restrictions based upon noise levels and frequency.

Chapter 4 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and avoidance, minimization, and/or compensation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including: project development team meetings, interagency coordination meetings, and public open house meetings. This chapter summarizes the results of the Department's efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Public Participation and Outreach

A public meeting was held on April 17, 2008, from 5:30 to 7:30 p.m. at the Hampton Inn, 100 A Street, Crescent City, CA 95531, during the project development phase of this project, prior to circulation of this draft EIR/EA. The purpose of this meeting was to provide the public with an overview of the project as well as solicit comments and concerns. The meeting was announced via a news release on March, 27, 2008. A formal presentation explaining the proposed project was given. Informational exhibits and maps were on display, and project staff was available to answer questions. Approximately 109 people attended, resulting in the submittal of 66 written responses. Comments received included support for the project as well as concerns about truck safety, hazardous road conditions, tourism, aesthetics, large trees, benefits to the trucking industry, slope stability, hazardous materials, and noise. The primary issues were concerns regarding road safety with increased truck traffic, preserving the natural beauty of the project locations, and potential tourism impacts.

A Department web page with information regarding the project was created. It includes displays from the public scoping meeting, links with brief descriptions of each project location, as well as information regarding STAA trucks (http://www.dot.ca.gov/dist1/d1projects/197-199_staa/).

Representatives from the Department have met quarterly with the Citizens Advisory Team (CAT). The CAT was developed to maintain communication between various private citizen groups and organizations and the Del Norte Local Transportation Commission and to allow these groups to share their concerns with the Department's project development team for this project.

4.2 Scoping Process for the EIR/EA

A Notice of Preparation (NOP) for the proposed project was distributed on August 26, 2008. The NOP was also filed with the State Clearinghouse and sent to the appropriate elected officials, agencies, and interested parties. The State Clearinghouse recorded the comment period as September 2 to October 1, 2008.

A public scoping meeting for the EIR/EA was held on September 16, 2008, from 5:30 to 7:30 p.m. at the Del Norte County Cultural Center, 1001 Front Street, Crescent City, CA 95531. The meeting was announced in the NOP and via a news release on September 2, 2008. The purpose of the scoping meeting was to identify concerns of both the public and agencies in order to clearly define the environmental issues and alternatives to be examined in the draft EIR/EA. Maps and other project information displays were available, and Department staff were on hand to answer questions and receive comments regarding the scope and content of the EIR/EA. Thirty-two people attended this meeting, resulting in the submittal of 19 written responses. Written comments received during the scoping meeting and during the NOP comment period were compiled and summarized. The comments were broad and included most of the topics typically addressed in environmental documents. The primary topics raised at this meeting included requests for more detailed project information, information regarding how STAA trucks might benefit the local economy, concerns regarding increased truck traffic, concerns about potential impacts on tourism/recreation/aesthetics/biological resources, safety issues for motorists and pedestrians, concerns about the potential for an increase in accidents, and support for the project.

4.3 Consultation and Coordination with Public Agencies

During the preparation of the technical studies prepared for the proposed project, formal and informal coordination was conducted with the federal, state, and local agencies and entities listed below.

4.3.1 Agency Coordination

4.3.1.1 U.S. Army Corps of Engineers (USACE)

A preliminary jurisdictional determination of wetlands and other waters of the United States has been prepared and will be submitted to the USACE. In addition, Carol Heidsiek of the Arcata Office of the USACE was present at a May 19, 2005, field meeting for advice on 404 permitting requirements. Section 404 authorization for fill of waters of the United States has not yet been initiated.

4.3.1.2 Forest Service

Mike McCain, Forest Service Fisheries Scientist, of the Smith River National Recreation Area and Gasquet Ranger District of the Six Rivers National Forest was consulted regarding fisheries along this stretch of the Smith River (February and March 2009). Brenda Devlin, Wildlife Biologist of the same district, was consulted regarding marbled murrelet, northern spotted owl, and other animals that may be in the project area (March 2009).

Lisa Hoover and John McRae, Botanists for the Six Rivers National Forest in Eureka, were first consulted about Forest Service sensitive botanical species that may be in the project area in March 2009. Mr. McRae emailed a list of these species in May and June 2009. Coordination regarding Forest Service special-status cryptogamic species (bryophytes, lichens, and fungi) was

initiated in fall 2009. Coordination with the Forest Service regarding sensitive plant and cryptogamic species is ongoing.

Draft letters were included in the DEIR/EA, addressed to Mary Kay Vandiver, District Ranger of the Smith River National Recreation Area, Six Rivers National Forest, requesting concurrence with the conclusions of the Section 4(f) evaluation and potential effects on the Middle Fork Smith River as required by the Wild and Scenic Rivers Act. Final letters addressed to Tyrone Kelley, Forest Supervisor of the Six Rivers National Forest, were sent on March 26, 2012, after the public had been afforded an opportunity to review and comment on the effects of the proposed project. Written concurrence was obtained from the Forest Service in the concurrence letter signed on April 5, 2012. The concurrence letters are included at the end of this chapter.

Julie Burcell, District Archaeologist of the Six Rivers National Forest, was contacted in December 2009 and from February to May 2010 to request further information regarding cultural resources sites and previous cultural resources studies. To date, no further information regarding cultural resources studies or sites has been presented.

An initial coordination meeting with George Frey of Six Rivers National Forest regarding various project aspects, including aesthetics, 4(f) evaluation, and Wild and Scenic River coordination for proposed work on US 199 was conducted by Department staff in fall 2009. Additional meetings with George Frey of Six Rivers National Forest occurred in 2011 (See Section 4.3.2.2, below).

4.3.1.3 U.S. Fish and Wildlife Service (USFWS)

Ray Bosch of USFWS was consulted prior to circulation of the DEIR/EA regarding northern spotted owl and marbled murrelet (March 2009). Dave Imper, USFWS Botanist, was contacted about sensitive plants in the project area (2008). The USFWS also was contacted to obtain an updated list of all federal candidates, proposed, and listed endangered or threatened species that could occur in the vicinity of the proposed project. Endangered Species Act (Section 7) consultation with Greg Schmidt of USFWS occurred in 2011 and 2012 for threatened and endangered species potentially affected by the proposed project, which included periodic attendance by Department staff at multi-agency coordination meetings between USFWS, NMFS, CDFW, and the Department (group titled “Level 1/Level 2”) to update these agencies on project issues (see Section 4.3.2.2, below). The Biological Opinion was received from USFWS on September 13, 2012, and is included in Appendix P.

4.3.1.4 National Marine Fisheries Service (NMFS)

Bob Pagliuco of NMFS was contacted regarding impacts to coho salmon and marbled murrelet in March 2009, prior to circulation of the DEIR/EA. Consultation with Kasey Sirkin of NMFS occurred in 2011 and 2012 for Section 7 consultation for threatened and endangered species, which included periodic attendance from Department staff at multi-agency coordination meetings between USFWS, NMFS, CDFW, and the Department (group titled “Level 1/Level 2”) to update these agencies on project issues (see Section 4.3.2.2, below). The Letter of Concurrence for an informal consultation was signed by NMFS on May 7, 2012, and is included in Appendix P.

4.3.1.5 California Department of Fish and Wildlife (CDFW)

Gordon Leppig of the California Department of Fish and Wildilfe (CDFW) was contacted regarding impacts to coho salmon and marbled murrelet in March 2009 and regarding sensitive plants starting in spring 2008. Consultation with Scott Bauer of CDFW occurred in 2011 and 2012 so that CDFW could determine whether a consistency determination was necessary for biological opinions prepared by USFWS and NMFS, which included periodic attendance by Department staff at multi-agency coordination meetings between USFWS, NMFS, CDFW, and the Department (group titled "Level 1/Level 2") to update these agencies on project issues (see Section 4.3.2.2, below). Coordination regarding special status plants also occurred periodically. Discussions at the Level 1/Level 2 meetings also included preliminary discussions regarding the Section 1602 streambed alteration agreements that likely would be necessary for all project locations. The Department is consulting with JoAnn Dunn, of CDFW, on the Section 1602 agreements. Applications for these agreements would be submitted after the FEIR/EA is signed and prior to construction.

4.3.1.6 Native American Heritage Commission and Coordination with Local Native American Tribes

The NAHC was contacted in October 2008 to request sacred lands database search and provide a list of Native American representatives that might have any information or concerns regarding the project. In November 2008, the NAHC provided both a sacred lands search and a list of six Native American representatives, who were contacted by letter in November 2008. The same individuals were contacted by phone and email in July and August 2009, and in January and February 2010. The letters are included at the end of this chapter.

A meeting was conducted by Department staff and a representative of a local Native American Tribe on November 1, 2011 to ensure that no sensitive cultural resources would be affected by proposed construction activities for Ruby 1 and/or Ruby 2.

4.3.1.7 North Coastal Information Center

The North Coastal Information Center was contacted in November 2008 to perform a records search of archaeological and historical resources for the project.

4.3.1.8 Del Norte County Parks Department

A letter to Ed Fulton, Building/Parks Maintenance Superintendent, at the Del Norte County Parks Department was prepared and submitted regarding the proposed temporary construction easement at Ruby Van Deventer County Park. The letter also requested concurrence with the conclusions of the evaluation for Ruby Van Deventer County Park, a Section 4(f) resource. Written concurrence was obtained from the Del Norte County Parks Department in a letter signed on April 26, 2012. The concurrence letter is included at the end of this chapter.

4.3.1.9 National Park Service

Coordination with the National Park Service as required by the Wild and Scenic Rivers Act has been initiated and completed with regard to the proposed improvements at the two project locations along SR 197. The National Park Service provided a letter of concurrence in February 2010, prior to circulation of the DEIR/EA. The letter is included at the end of this chapter.

4.3.2 Meetings

4.3.2.1 Agency Stakeholder Meeting

An agency stakeholder meeting was conducted on July 28, 2008, to discuss the project and potential environmental issues. Department planning, environmental, and design staff and consulting environmental staff attended this meeting. The following agency stakeholder representatives also attended this meeting: Craig Martz (CDFW), Dan Free and Seth Naman (NMFS), Jeremiah Puget (North Coast Regional Water Quality Control Board [NCRWQCB]), Ray Bosch (USFWS), and Tamera Leighton (Del Norte Local Transportation Commission).

4.3.2.2 Agency Coordination Meetings

In 2008, representatives from the Department, CDFW, USFWS, NMFS, and NCRWQCB attended an agency coordination meeting. This group also attended a site visit on November 18, 2009, along with personnel from the Forest Service.

Proposed protection measures for sensitive plant species were initially discussed at a meeting with John McRae (Forest Service Botanist) and Gordon Leppig (CDFW) on August 10, 2009. The measures were further developed and subsequently approved by John McRae and Gordon Leppig via email and phone coordination in January 2010.

Representatives from the Department, USFWS, NMFS, and the US Forest Service attended an agency coordination meeting on February 17, 2011 to discuss and obtain agency input regarding the alternatives, bridge design options, and other potential structure types for Patrick Creek Narrows Location 2. CDFW was unable to attend that meeting, so representatives of the Department and CDFW met separately to discuss and obtain input on the same topics on March 30, 2011. All of the above agencies concurred, between the two meetings, that the Downstream Bridge Replacement Alternative was preferred over the other two build alternatives.

A coordination meeting between representatives of the Department, CDFW, USFWS, NMFS, and the US Forest Service was held on July 21, 2011 to discuss design refinements for Patrick Creek Narrows Location 2 that would allow proposed bridge construction work to be conducted above, and not in, the wetted channel. Other design refinements for this location were also discussed; those design refinements are reflected in Chapter 1 of the Final EIR/EA. Additionally, the group discussed the two build alternatives for Washington Curve. All of the above resource agencies concurred with, or did not object to, the Cut Slope Alternative.

A coordination meeting between representatives of the Department, CDFW, USFWS, and NMFS was held on January 26, 2012 to review the Department's proposed findings for the first draft versions of the USFWS and NMFS Biological Assessments that were originally submitted in December 2011. CDFW determined that no consistency determination was necessary since there would be no diversion in, or heavy equipment in the wetted channel of, the Middle Fork Smith River, and therefore there would be no lethal take of coho salmon at Patrick Creek Narrows Location 2. A follow-up meeting was held between representatives of the Department and NMFS on March 23, 2012 to clarify project description details.

4.4 Public Review of EIR/EA

A Notice of Completion form and Draft EIR/EA copies were submitted to the State Clearinghouse on June 29, 2010 with a request to close circulation and comment period on August 23, 2010. On July 13, 2010, the Department held a public meeting/hearing to provide the public an opportunity to review project information in the Draft EIR/EA, ask questions, and submit comments.

The Department received a total of 91 public comments in the form of comment cards, letters, form letters, emails, and verbal comments from individuals that attended the July 13, 2010 public meeting, during the circulation of the Draft EIR/EA. Some individuals and organizations submitted more than one written comment letter.

The Department released a Partial Recirculated Draft Environmental Impact Report / Supplemental Environmental Assessment on September 18, 2012, and accepted comments until November 5, 2012. The Recirculation involved only Sections 2.3.1 Natural Communities and Section 2.3.3 Plants. The Recirculation was to address additional information on potential effects to large redwoods and another special status plant species. The Department received 398 public comments in the form of letters, form letters and emails.

Volume III of the Final Environmental Impact Report/Assessment for the 197/199 Safe STAA Access Project consists of Department-prepared responses to written comments from the public regarding the proposed project. Volume I consists of the main Final EIR/EA document. Volume II consists of the Appendices.

Smith River NRA, USFS Section 4(f) Concurrence

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) 441-5730
FAX (707) 441-5775
TTY 711

Flex your power!
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March 23, 2012

Mr. Tyrone Kelley
Forest Supervisor
Six Rivers National Forest
1330 Bayshore Way
Eureka, CA 95501

Attention: George Frey, Lands and Minerals Officer

Subject: Section 4(f) Concurrence Request for the 197/199 Safe Surface Transportation Assistance Act (STAA) Access Project, Del Norte County

Dear Mr. Kelley:

The purpose of this letter is to present an evaluation of resources relative to the requirements of Section 4(f) of the U.S. Department of Transportation Act, referred to herein as Section 4(f), and to request your concurrence on the proposed findings of the evaluation. The Section 4(f) resources on the above-referenced project that are under your jurisdiction and discussed in this letter and attached summary are the Smith River National Recreation Area (NRA), Middle Fork Smith River, and designated and developed recreation sites within 0.5 mile of the proposed project. The Middle Fork Smith River is included as one of the resources evaluated because it is a designated recreation site within 0.5 mile of the proposed project, and also because Section 4(f) applies to portions of Wild and Scenic Rivers that are publicly owned and designated recreational. A separate letter will be submitted to you regarding your written determination that the proposed project will not adversely affect the Wild and Scenic River designation of the Smith River.

This letter formally initiates contact between the California Department of Transportation (Department) and Six Rivers National Forest for coordination under Section 4(f). The Department is acting as the National Environmental Policy Act (NEPA) lead agency under the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program*, which became effective on July 1, 2007. The MOU was signed pursuant to Section 6005 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) which allows the Secretary of Transportation to assign, and the State of California to assume, responsibility for the Federal Highway Administration's (FHWA's) responsibilities under other Federal environmental laws. As this project is covered by the

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Pilot Program MOU, FHWA has assigned and the Department has assumed FHWA responsibility for environmental review, consultation, and coordination on this project. Please direct all future correspondence on this project to the Department.

Please read the attached summary of resources evaluated relative to the requirements of Section 4(f). It includes a description of the project, the resources that fall under the protection of Section 4(f), and an evaluation of the project's impacts on those resources. For more information about the project, please also see the Draft Environmental Impact Report/Environmental Assessment (DEIR/EA), which is available at the following internet address http://www.dot.ca.gov/dist1/d1projects/197-199_staa/; a hard copy or CD is available upon request.

This letter has been prepared for your signature of agreement regarding the following findings under Section 4(f) for the Smith River NRA, Middle Fork Smith River, and designated and developed recreation sites within 0.5 mile of the proposed project:

- Smith River NRA: **The Department has preliminarily determined that the delay in access to the recreation areas on US 199 over a 5-year construction period and the inability to fully restore the excavated rock cut slope at Patrick Creek Narrows Location 2 would constitute a Section 4(f) use of the Smith River NRA and meet the requirements for a *de minimis* impact. This use is not considered adverse because it would not affect the protected activities, features, or attributes for which the Smith River NRA is eligible for protection under Section 4(f).** The Department preliminarily determined that the delay in access to recreation areas within the Smith River NRA would be enough of an inconvenience to visitors that it would not meet the criteria for a temporary occupancy. In addition, the inability to fully restore the 0.23-0.47 acre of excavated rock cut slope just beyond the U.S. Department of Transportation's easement at Patrick Creek Narrows Location 2 would not meet the criteria for temporary occupancy. Instead, these would constitute a Section 4(f) use and meet the requirements for a *de minimis* impact. The Department may make such a finding only if the project will have no adverse effect on the activities, features, and attributes of the Smith River NRA and only if the Forest Service concurs with the *de minimis* finding.

- Middle Fork Smith River: **The Department has preliminarily determined that proposed bridge replacement activities at Patrick Creek Narrows Location 2 could interrupt recreation activities during a portion of construction, so it is being considered a temporary occupancy of the Middle Fork Smith River at this location.** The temporary construction-related effects on the Middle Fork Smith River at this location from the proposed bridge replacement activities would not have a direct or adverse effect on the values for which the Middle Fork Smith River was designated a Wild and Scenic River.

- **Recreation sites within 0.5 mile of the proposed project: The Department has preliminarily determined that proposed improvements would not require a Section 4(f) use, on either a temporary or permanent basis, of areas designated for recreation use by the Forest Service and located within a 0.5-mile radius of the five project sites, including Sandy Beach, Patrick Creek Campground, Patrick Creek Trail, and Middle Fork Smith River Access Trails.**

We greatly appreciate the cooperation of the Six Rivers National Forest in the planning and environmental evaluation of this project and look forward to continued consultation and coordination. Your agreement with the above conclusions about the provisions of Section 4(f) does not in any way remove the Department's responsibilities to assess potential effects on cultural or natural resources, such as water quality, wildlife habitat, and redwood trees, on national forest lands pursuant to NEPA, the Endangered Species Act, the Clean Water Act, the Wild and Scenic Rivers Act, or other applicable laws and executive orders.

Please indicate your concurrence with the findings described above and in the attached Section 4(f) Evaluation by signing below and returning this letter to: Gary Berrigan, Senior Environmental Planner, California Department of Transportation District 1, P.O. Box 3700, Eureka, CA 95502-3700.

Tyrone Kelley Date: Apr. 15, 2012
Tyrone Kelley, Forest Supervisor

If you have any questions or would like to discuss this matter further, please call me at 707.441.5730.

Sincerely,

for
Gary Berrigan, Senior Environmental Planner
North Region Environmental Services Branch E-1

Attachments

cc: Kim Hayler, Environmental Coordinator

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▪ 197/199 Safe STAA Access Summary of Resources Evaluated Relative to the Requirements of Section 4(f)

1.1 Background and Regulatory Setting

The California Department of Transportation (Department) is proposing to construct improvements on State Route (SR) 197 and U.S. Highway (US) 199 in Del Norte County to reclassify these routes as part of the Surface Transportation Assistance Act (STAA) truck route network and to comply with federal and state legislation and regional programs, plans, and policies to allow STAA access.

Construction of the 197/199 Safe STAA Access Project (proposed project) would use federal funds administered by the Federal Highway Administration (FHWA). As a result, compliance with the National Environmental Policy Act (NEPA) is required. Through delegation of authority by the FHWA Delegation Pilot Program authorized under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the Department is the NEPA lead agency for preparation of the environmental document for the proposed project. In accordance with NEPA, the Department prepared an environmental assessment (EA) to assess potential environmental effects resulting from the proposed project. The Department is also the California Environmental Quality Act (CEQA) lead agency for the proposed project and prepared an environmental impact report (EIR).

As part of the NEPA process, the Department is required to prepare documentation required by Section 4(f) of the U.S. Department of Transportation Act, referred to herein as the Section 4(f) evaluation. Section 4(f), codified in federal law in the United States Code (USC), Title 14, Section 303, declares that "[i]t is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Public parks, recreation areas, cultural resources, and wildlife or waterfowl refuges within 0.5 mile of the proposed project were identified to determine whether they qualify for protection as Section 4(f) resources and whether the provisions of Section 4(f) would be triggered by construction of the proposed project. The Smith River National Recreation Area (NRA) is located on publicly owned national forest system lands within the Six Rivers National Forest and designated a national recreation area, qualifying it as eligible for protection under Section 4(f). In addition, designated and developed recreation sites within the Smith River NRA within 0.5 mile of the proposed project were evaluated relative to the requirements of Section 4(f), including Sandy Beach, Patrick Creek Campground and Patrick Creek Trail, Middle Fork Smith River, and Middle Fork Smith River Access Trails.

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1.2 Project Description

The proposed project is composed of seven project locations referred to as Ruby 1, Ruby 2, Patrick Creek Narrows (Locations 1 to 3), the Narrows, and Washington Curve (Figure 1). The Ruby 1 and 2 sites are located along SR 197 in Del Norte County. Patrick Creek Narrows Locations 1 to 3, the Narrows, and Washington Curve sites are located along US 199 on national forest lands within the Smith River NRA (Figure 2). Proposed safety-enhancing improvements include lane- and shoulder-widening and increasing curve radii, which would result in increased sight distances.

The purpose of the proposed project is to improve spot locations on SR 197 and US 199 in Del Norte County so that two STAA trucks passing in opposite directions can be accommodated. By making improvements to accommodate STAA trucks, the prohibition for STAA vehicles would be removed, the 197/199 route would be consistent with federal and state legislation and regional programs, plans, and policies (described below), and the safety and operation of US 199 and SR 197 would be enhanced. This would improve goods movement, and also enhance safety on the routes for automobiles, trucks, and other large vehicles such as motor-homes, buses, and vehicles pulling a trailer.

The need for the proposed project is compliance with federal and state legislation and regional programs, plans, and policies to allow STAA access. Additionally, the project is needed because spot locations on SR 197 and US 199 currently have sub-standard curves; absence of, or substandard, shoulders along the traveled way; and narrow lanes, which restrict STAA truck access in the SR 197/US 199 corridor. In 1982, the federal government passed the STAA, which indicates that states must allow STAA trucks reasonable access to terminals. Specifically, the Federal STAA requires that "States must allow commercial motor vehicles that do not exceed federal maximum width and minimum length limits applicable to the National Network to have reasonable access between the National Network and terminals and facilities for food, fuel, repairs, and rest. Terminals are defined as any location where freight originates, terminates, or is handled in the transportation process[1]." In 1983, California passed Assembly Bill (AB 866) to implement the STAA provisions. The 2008 Regional Transportation Improvement Program (RTIP)[2] and 2007 and 2011 Regional Transportation Plans (RTPs)[3] support and request improvement of the 197/199 corridor to allow STAA truck access. The 1999 Route Concept Reports for SR 197 and US 199 concluded that the routes should be widened and realigned to safely accommodate STAA trucks. This federal and state legislation and the regional programs, plans, and policies are discussed in further detail in the Draft EIR/EA (DEIR/EA Chapters 1 and 2; http://www.dot.ca.gov/dist1/d1projects/197-199_staa/).

Access to STAA trucks is currently restricted in California on the SR 197–US 199 corridor due to sub-standard curves; absence of, or substandard, shoulders along the traveled way; and/or

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations. 2004. Federal Size Regulations for Commercial Motor Vehicles. Access from the internet at http://ops.fhwa.dot.gov/freight/publications/size_regs_final_rpt/size_regs_final_rpt.pdf on 1/20/12.
[2] 2008 RTIP accessed at http://www.dnltc.org/planningdocs/RTIP_2008.pdf on 1/26/12
[3] 2007 RTP accessed at http://dnltc.org/planningdocs/RTP_2007.pdf on 1/26/12; 2011 RTP accessed at http://www.dnltc.org/planningdocs/RTP_2011_Final_061611.pdf accessed on 1/26/12

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narrow lanes in the seven proposed project locations. These conditions have been shown to result in STAA trucks offtracking into the oncoming traffic lane at the seven proposed locations. Safety-enhancing improvements, including wider lanes, wider shoulders, longer-radius curves, and enhanced sight distances, are needed at the seven proposed project locations to provide a roadway that is easier for STAA trucks to traverse; these improvements would benefit all users. These improvements would allow STAA trucks and other large vehicles to negotiate the SR 197–US 199 corridor while minimizing or eliminating offtracking into the oncoming traffic lane at the seven proposed locations. This would allow reclassification of the corridor as part of the STAA network of truck routes. Compliance with the Federal STAA is required of the Department. The Del Norte County Local Transportation Commission supports compliance with, and requirements within, the Federal STAA.

- **Patrick Creek Narrows Location 1:** This location is on US 199 from post mile (PM) 20.5 to PM 20.7, approximately two miles east of the Grassy Flat Campground. One build alternative was considered for this site. The existing roadway curve would be improved and the roadway would be widened to accommodate two 12-foot-wide lanes and 4-foot shoulders throughout the majority of the location, transitioning to 1- to 4-foot wide shoulders at both ends of the location. To accommodate the widening and broader roadway curves, an approximately 150-foot-long, 5-foot-tall retaining wall is proposed along the river side of the road above a portion of the existing steep rock-armored riverbank. Aesthetic treatment of the wall would be incorporated into the wall's design. reconstruction of the existing drainage ditch adjacent to the base of the cut slope, grinding existing asphalt-concrete to match the new superelevation, open-graded friction course (OGFC, a type of asphalt concrete) overlay to improve friction and traction, striping, a centerline rumble strip, shoulder backing, reconstructing the existing guardrail, and new metal-beam guardrail construction at the north end of the wall for approximately 75 feet. Existing gravel pullouts would be used as staging areas. An existing culvert at PM 20.52 would be replaced with a longer culvert to match the new roadway width at the inlet and outlet. Also, two 18-inch culverts at PM 20.57 and 20.58 would be replaced with 24-inch culverts. No additional right-of-way would need to be acquired at this location. Construction at this location is anticipated to take approximately 90-100 days over one season starting in spring 2013; alternatively, construction may occur in 2014 or 2015. Right-of-way at this location is held in permanent easement from the U.S. Department of Agriculture (USDA) Forest Service (Forest Service), including along the south side of the roadway where the retaining wall would be constructed.

  Naturally occurring asbestos (NOA) has been identified through testing at Patrick Creek Narrows Location 1, and it is possible that excavated material and material removed during pile installation would contain NOA at levels greater than 1%, which would make it unsuitable for surfacing application. Due to the presence of NOA, the construction Contractor would be required to hire an industrial hygienist to develop an Asbestos Compliance Plan and a Dust Control Plan. In addition, the Contractor would be required to take appropriate measures to contain and dispose of any material with NOA.

- **Patrick Creek Narrows Location 2:** This location is farther east on US 199, with project limits from PM 23.9 to PM 24.3. Within the project limits at this location, US 199 crosses the Middle Fork Smith River Bridge. Three alternatives were considered for Patrick Creek

Narrows Location 2: the Upstream Bridge Replacement Alternative, Downstream Bridge Replacement Alternative, and Bridge Preservation with Upslope Retaining Wall Alternative. All would realign and widen the existing 11- to 12-foot lanes to at least 12 feet and increase the shoulders to a width of 1 to 8 feet from the existing widths of 0 to 2 feet. To accommodate the widening on the westernmost extent of the project location, approximately 20,000 cubic yards of rock excavation from the rock cut slope would be required. Rock excavation would extend up to approximately 150 feet above the highway and expose approximately 1 acre of newly excavated rock slope. A hoe ram, rock splitter, and/or controlled blasting would be required to construct the rock cut slope. A cut slope of 1:1 is anticipated. Because of the fractured nature of the bedrock, rock fall may be expected after construction. Therefore, a permanent rock-fall mitigation system may be needed. This could consist of a wire-mesh drape or incorporate a rock-fall catchment area at roadway level.

One culvert within the limits within this project location would be replaced and relocated to match the new roadway width. Improvements at this location would also include grinding existing asphalt-concrete to match the new superelevation, an OGFC overlay to improve friction and traction, striping, a centerline rumble strip, and shoulder backing. Existing metal-beam guardrail along the curve would be reconstructed. Existing metal-beam guardrail along the crib wall would be removed and replaced with aesthetically treated bridge rail, which would be placed on top of the new retaining wall. Existing gravel and paved pullouts nearby would be used to stage equipment.

The U.S. Department of Transportation (USDOT) easement held by the Department at this location includes 100-foot easements on both sides of US 199. However, work beyond the existing easements would be required to construct the cut slope within the Forest Service (APN 122-170-04) in the vicinity of the Middle Fork Smith River Bridge (Figure 3). The Forest Service has preliminarily indicated that a permanent expansion of the easement would not be required. This area is an existing rock/soil face and no Forest Service recreation facilities or other developed land uses are located in this area. The steepness of the rock face makes it unsuitable for any development. The area that temporarily would be affected by cut slope excavation would be between 0.23 and 0.47 acre of land on the Smith River NRA, just beyond the existing USDOT easement. This would not require permanent acquisition of Smith River NRA property, as suggested by the Forest Service, and would be temporary. There would be removal of existing trees, vegetation, and the seed bank during excavation of the rock cut slope. The unique features of the selected preferred alternative, the Downstream Bridge Replacement Alternative, are described below. Unique features of the other two build alternatives are discussed in the DEIR/EA.

The Downstream Bridge Replacement Alternative would replace the Middle Fork Smith River Bridge on a new alignment downstream of the existing bridge location (Figure 3). A retaining wall would be constructed downstream from and southeast of the new bridge. The retaining wall would extend for approximately 150 feet and transition into the viaduct portion of the proposed new bridge. The retaining wall would be constructed down-slope from the highway level and would be supported by drilled piles within the riparian zone, approximately 15-40 feet from the ordinary high water level of the Middle Fork Smith River. The viaduct portion of the proposed bridge would cantilever the northbound traffic lane over

the bank of the Middle Fork Smith River and would be a continuous structure with the arch portion of the bridge. The total length of the viaduct and arch portions of the bridge would be approximately 345 feet. This alternative would also require a retaining wall on the northern side of the bridge that would be approximately 10 feet high and 100 feet long (Figure 3). The new bridge design would be a concrete arch bridge with aesthetic treatment. The other structures would receive aesthetic treatment as well. The existing bridge would be removed once the new bridge was in place. Construction of this alternative was formerly thought to need in-river work requiring diversion of the Middle Fork Smith River, a trestle, falsework, and a debris containment system. After circulation of the draft EIR/EA, the Department conducted more studies and concluded that bridge replacement could and would be constructed so that no heavy equipment and only minimal temporary foot traffic would occur within the wetted channel, and there would be no water diversion for bridge construction and no trestle, falsework, or debris containment system with structures in the wetted channel. Falsework/demolition platforms will be placed within 5-10 feet of the active low summer flow level (just above of the wetted channel) and would be removed prior to the rainy season (October 15- June 15). Construction at this location is anticipated to take approximately 300 days over three seasons, anticipated to begin in late summer/fall 2013 and ending in late fall/winter 2015. The slope south of the bridge would be cut during the first season, and one or both retaining walls would be constructed. In the second season, the bridge (and possibly the remaining retaining wall, if not built in the first season) would be built. In the third season, the old bridge would be demolished. Most work would be conducted above ordinary high water.

- **Patrick Creek Narrows Location 3**: Approximately 1.5 miles east of Patrick Creek Narrows Location 2 on US 199, the project limits run from PM 25.55 to PM 25.65. Only one build alternative was considered at this location. The proposed project would increase the shoulder width to at least 4 feet on both sides of the roadway and improve the "S" curve that runs through the project limit. To support the wider roadway an approximately 210-foot-long wall up to an approximate height of 15 feet is proposed on the river side; approximately 170 feet of the approximately 210-foot retaining wall would be exposed, with the rest being covered with soil. A drilled-pile foundation may be required. Aesthetic treatment of the wall would be incorporated. One culvert, at PM 25.55, would be replaced to match the new roadway width. Drainage inlets would be installed at the inlets for the culverts at PM 25.61 and 25.69. An area of approximately 8 ft by 12 ft of rock slope protection would be placed at the drainage outlet, above ordinary high water, to minimize erosion. Improvements would also include grinding existing asphalt-concrete to match the new superelevation, an OGFC overlay to improve friction and traction, paving to conform the existing private driveway to the new elevation of the highway, striping, a rumble strip, metal-beam guardrail, and shoulder backing. Existing gravel pullouts would be used to stage equipment. The right-of-way easement at this location includes a 100-foot easement along both sides of US 199. However, additional right-of-way would need to be acquired from a private parcel. Construction at this location is anticipated to take approximately 50-70 days over one season beginning in spring 2013; alternatively, construction may occur in 2014 or 2015.

- **The Narrows**: The Narrows site is situated between Patrick Creek Narrows Locations 1 and 2, with project limits ranging from PM 22.7 to PM 23.0. One build alternative was

considered for this site. Improvements would increase lane widths to 12 feet and provide 2-foot shoulders. Roadway widening would be accomplished by cutting into the existing cut slope. In slope locations composed of soft material, mechanical equipment such as an excavator would be used. Proposed cut heights range from 0 to 15 feet, with an average height of 10 feet and average depth of 4 feet, resulting in approximately 5,500 cubic yards of mostly rock excavation with some soil as well. Where extremely irregular rock slopes are vertical or overhanging, sliver cuts would be required. Proposed cut heights vary from 0 to 60 feet, with an average height of 25 feet and average depth of 4 feet. The rock excavation/cut limits would be established by controlled blasting or presplitting, which would involve drilling closely spaced holes in the rock face and creating a shear plane by setting off simultaneous charges of explosives in the holes. The results after presplitting are a clean rock face and reduction in rock-fall potential. To excavate the cut slope in these areas, drilling would be done by crane only where there is enough room for all traffic to pass through a one-way reversible traffic control. Slopes that cannot be reached by crane without blocking traffic would be drilled by other means, such as using a track-mounted drill or drilling by hand. A 1-foot-wide paved drainage ditch would be added at the shoulder of the road for a total paved width of approximately 29 feet. One new culvert and drain inlet would be constructed. Also, an existing culvert and drain inlet would be replaced to match the new edge of pavement. In addition to roadway widening, isolated outcrops of overhanging or loose rock above the excavation limits would be stabilized with rock bolting. Other work includes an overlay of new OGAC pavement to improve friction and traction, a centerline rumble strip, and new striping. Existing gravel pullouts nearby would be used to stage equipment. Construction of the improvements at the Narrows site would occur within existing right-of-way easement. Construction at this location is anticipated to take approximately 100 days over two seasons in summer/fall 2013 and summer/fall 2014 or summer/fall 2014 and 2015.

- **Washington Curve**: Located at PM 26.3 to PM 26.5, this is the easternmost US 199 site under the proposed project. The project would straighten the compound curve at this location. The improvements would increase the lane width to a minimum of 12 feet. One culvert on the Oregon side of the project limits would be replaced to match the new roadway. Work would include an OGFC overlay to improve friction and traction, replacement of the existing metal-beam guardrail, and installation of a centerline rumble strip. Construction of the improvements at this site would occur within existing right-of-way easement that extends 200 feet to the north and 150 feet to the south from the roadway centerline. Existing gravel pullouts would be used to stage equipment. Two alternatives were considered for improvements at this location: construction of a cut slope, and construction of a retaining wall. The Department has selected as the preferred alternative for this location construction of a cut slope. Proposed improvements would involve excavation of a new slope on the cut slope side of the roadway. The shoulders would be widened from 2 to 6 feet. Roadway excavation would be approximately 20,000 cubic yards, disturbing an area of approximately 1-1.3 acres along the slope. The proposed cut slope would be ¾:1, depending on geologic conditions. Naturally occurring asbestos (NOA) has been identified at Washington Curve, and it is likely that excavated material would contain NOA at levels considered hazardous. Therefore, the Contractor would be required to hire an industrial hygienist to develop a health and safety plan and test excavation material for NOA during construction. In addition,

the Contractor would be required to take appropriate measures to contain and dispose of any material that contains NOA. Construction of this alternative is anticipated to take approximately 150 days over two seasons during 2013 and 2014 or 2014 and 2015.

1.3 Resources Evaluated Relative to the Requirements of Section 4(f)

The Section 4(f) evaluation for the proposed project addresses potential impacts that may occur as a result of implementing the proposed project on publicly owned recreation facilities within or adjacent to the project sites. During preparation of the Section 4(f) evaluation, the Department determined that the proposed improvements along the US 199 alignment on national forest lands would have an effect on the Smith River NRA and there would be temporary construction-related effects on the Middle Fork Smith River, as discussed below.

The Department also evaluated areas designated for recreation use by the Forest Service and located within a 0.5-mile radius of the five project sites, including Sandy Beach, Patrick Creek Campground, Patrick Creek Trail, and Middle Fork Smith River Access Trails. The Department preliminarily determined that the proposed improvements would not require a Section 4(f) use of any of these recreation sites on either a permanent or temporary basis.

1.3.1 Evaluation of the Smith River National Recreation Area (NRA)

The Smith River NRA was evaluated for two kinds of anticipated impacts that could affect this Section 4(f) resource: traffic delays, and temporary impacts to the cut slope at Patrick Creek Narrows Location 2 in an area that is just beyond the existing USDOT easement. These two kinds of anticipated impacts are discussed below.

- **Traffic Delays**: Traffic delays could be inconvenient for visitors traveling to and from recreation facilities within the Smith River NRA on US 199. Anticipated traffic control includes one-way reversible traffic control, full roadway closure without a detour, and shoulder closure. Table 1 presents the preliminary construction schedule with the number of working days by project location.

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197/199 Safe STAA Access Project
Summary of Resources Evaluated Relative to the Requirements of Section 4(f)

Table 1. Preliminary Construction Schedule Timetable with Number of Work Days by Location

Project Locations on US 199	Construction Season[a]				
	1 2012	2 2013	3 2014	4 2015	5 2016
Patrick Creek Narrows Location 1		90-100 working days[b] with 15-minute delays for 80-100 working days in this season, and shoulder closure	90-100 working days with 15-minute delays for 80-100 working days in this season, and shoulder closure[c]	90-100 working days with 15-minute delays for 80-100 working days in this season, and shoulder closure[c]	
Patrick Creek Narrows Location 2		100 working days with 15-minute delays, and 1-hour delays for 75-100 working days in this season, and shoulder closure	100 working days with 15-minute delays, and 1-hour delays for 75-100 working days in this season, and shoulder closure	50-100 working days with 15-minute delays, and 1-hour delays for 75-100 working days in this season, and shoulder closure	
Patrick Creek Narrows Location 3		50-70 working days with 15-minute delays for 25 working days in this season, and shoulder closure[c]	50-70 working days with 15-minute delays for 25 working days in this season, and shoulder closure[c]	50-70 working days with 15-minute delays for 25 working days in this season, and shoulder closure[c]	
The Narrows		50 working days with 30-minute delays for 40 days[c]	50 working days with 30-minute delays for 40 days[c]	50 working days with 30-minute delays for 40 days[c]	
Washington Curve		50-100 working days with 30-minute delays, night closures 50–100 days[c]	50-100 working days with 30-minute delays, night closures 50–100 days[c]	50-100 working days with 30-minute delays, night closures 50-100 days[c]	

[a] A construction season typically extends from summer through fall. For the Patrick Creek Narrows locations, the season may extend into winter.

[b] Number of working days is approximate

[c] Note: Darker shading represents alternate construction year. Proposed delays are subject to approval by the Department's District 1 Lane Closure Committee, with the intent to minimize traffic delays on the route.

Under typical one-way reversible control, a maximum of 15–30 minute delays are anticipated; however, full road closures without detour could cause up to 1-hour delays during construction at Patrick Creek Narrows Location 2 in 2012, 2013, and 2014. Additionally, night closures of one to four hours at Washington Curve are anticipated for 50 to 100 days in 2013 and 2014 or 2014 and 2015. As indicated in Table 1, these delays could be inconvenient for visitors and would delay access to the recreational facilities along US 199 during the construction season over a period of 3 years. In particular, multiple delays could be encountered by visitors when construction is occurring at more than one location during the same construction season. These delays would affect visitor access to the Smith River NRA recreation sites along US 199 including day use areas, campgrounds, trailheads, and Middle Fork Smith River access points. The Department preliminarily determined that the delay in access to recreation areas within the Smith River NRA would be enough of an

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inconvenience to visitors that it would not meet the criteria for a temporary occupancy. Instead, it would constitute a Section 4(f) use and meet the requirements for a *de minimis* impact. The Department may make such a finding only if the project will have no adverse effect on the activities, features, and attributes of the Smith River NRA and only if the Forest Service concurs with the *de minimis* finding.

- **Temporary impacts to the cut slope at Patrick Creek Narrows Location 2**: Proposed construction on the rock cut slope at Patrick Creek Narrows Location 2, in an area that is just beyond the existing USDOT easement, would cause temporary impacts to the slope. Cut slope excavation at Patrick Creek Narrows Location 2 would not require permanent acquisition of Smith River NRA land, and the work within the NRA would be temporary. However, cutting the slope would require the removal of existing trees, vegetation, and the seed bank during excavation. This area is an existing rock/soil face, and no Forest Service recreation facilities are located therein. The area that would be excavated would extend outside the existing USDOT easement by approximately 0.23 acre up to 0.47 acre, as presented in the project description for this location. The Forest Service preliminarily suggested that the Department would not need to request a permanent expansion of the existing easement. No protected activities, features, or attributes for which the Smith River NRA is protected under Section 4(f), excluding the land itself, would be affected. The inability to fully restore the 0.23-0.47 acre of excavated rock cut slope just beyond the U.S. Department of Transportation's easement at Patrick Creek Narrows Location 2 would not meet the criteria for temporary occupancy. Instead, these would constitute a Section 4(f) use and meet the requirements for a *de minimis* impact. This conclusion is based on the fact that the excavation of the 0.23 to 0.47 acres of rock cut slope would not result in a permanent adverse effect on any of the recreation areas within the Smith River NRA. The DEIR/EA (i.e., discussions in the draft version of this letter in Section 4.3.2.2 and Appendix B) suggested that the Section 4(f) use would be *de minimis*, but that finding was based on the anticipated need to request an expansion of the USDOT easement to incorporate the 0.23 to 0.47 acre of rock cut slope that is currently on Forest Service land into the roadway right of way. Even though the Forest Service preliminarily suggested that the existing USDOT easement does not require expansion, the inability to fully restore the excavated rock cut slope to a condition which is at least as good as that which existed prior to the project leads the Department to the same preliminary finding that the proposed work constitutes a Section 4(f) use and meets the requirements of a *de minimis* impact. The Department may make such a finding only if the project will have no adverse effect on the activities, features, and attributes of the Smith River NRA and only if the Forest Service concurs with the *de minimis* finding.

Prior to making these findings, the Department is required to obtain written concurrence from the agency with jurisdiction over this resource. The Forest Service's concurrence with the Department's assessment is requested in the attached letter. Additional requirements for a *de minimis* impact finding include providing the public an opportunity to review and comment on the effects of the proposed project on the Section 4(f) resource. That opportunity was provided through circulation of the DEIR/EA, which included the draft version of this summary document and attached letter and Appendix B.

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Implementation of the following measures would minimize access and circulation impacts during construction:

- Access to the designated and developed recreation sites within the Smith River NRA will be maintained at all times during construction of the proposed project.
- Construction will not occur on weekends (beginning after 3 p.m. on Fridays), designated legal holidays, or the day preceding designated legal holidays; and the full width of the traveled roadway will be open for use at these times by the traveling public as well as when construction operations are not actively in progress.
- Location-specific traffic management plans will be prepared by the Department's District Traffic Operations staff and approved by the Department's District Transportation Management Plan Manager. Each plan will contain specific requirements for public noticing, traffic control implementation, property and business access, and safety during project construction.
- The Department resident engineer will provide information to residents, businesses, and adjacent landowners (e.g., Forest Service) before and during project work that may represent a negative impact surrounding the zone of construction. Funding will be included in supplemental funds for the resident engineer to print flyers.
- The Oregon Department of Transportation (ODOT) public information officer will be contacted 2 weeks before any closure on US 199 longer than 30 minutes to allow ODOT to warn public traffic of the possible delays on the US 199 corridor.
- The Department will use regional media (e.g., newspapers and radio stations) to advise the public of closures or lengthy delays at Patrick Creek Narrows Locations 1, 2, and 3, The Narrows site, and the Washington Curve site. Media advisories on full highway closures will be provided at least 1 week in advance of closures.
- Information regarding delays and scheduled closures will be made readily available to the traveling public on the internet through the Department's California Highway Information Network, and other sources. The website dedicated to the five projects covered by this environmental document will be maintained to provide additional information to the public regarding the status of the projects, planned night time full roadway closures, etc. The address of this website will be included in all media advisories.
- Coordination with sponsors of projects near the project locations will be required to avoid conflicts with other projects. This coordination would extend to other Department projects and projects that may be undertaken by Del Norte County and other agencies.

Further, the Department will follow the conditions associated with the USDOT easement for the 0.23-0.47 acre area that extends outside the existing easement at Patrick Creek Narrows Location 2. Additional avoidance, minimization, and/or mitigation measures are included in the DEIR/EA

for potential effects on the human, physical, and biological environment within the Smith River NRA.

1.3.2 Evaluation of the Middle Fork Smith River

The proposed improvement to the bridge that spans the Middle Fork Smith River at the Patrick Creek Narrows Location 2 would not involve any work in the wetted channel under the selected preferred alternative at this location. While construction is expected to occur mainly during the off season for the primary recreation activities such as rafting, kayaking, and fishing, recreationists would be subject to periodic exclusions from the construction zone within the project limits for safety reasons while bridge replacement and demolition work is occurring. The free-flowing condition of the river would not be affected upstream or downstream of the construction limits necessary for bridge replacement and demolition. There will be no temporary water diversion techniques used; the falsework and debris containment system would span the wetted channel. Recreation activities on the river would continue upstream and downstream of the construction limits, and would not be interrupted, because the river would be allowed to flow under the bridge unimpeded. The construction season could coincide with part of the fishing, kayaking, and rafting season during the fall seasons and the winter of 2015. If boaters are present at the same time that bridge construction/demolition/cut-slope removal are in place, boaters would need to portage around the construction area for safety reasons since the platform spanning the bridge may only be several feet above the wetted channel. The Department intends to conduct ample media alerts and install signage upstream and downstream of the construction area, along the river, to notify potential boaters of the need to portage around the construction area. The falsework would be removed prior to the start of the rainy season (typically October 15-June 15). Because bridge replacement could interrupt recreation activities during a portion of construction, the proposed work is being considered a temporary occupancy of the river at this location. Furthermore, all construction debris would be removed, and disturbed areas would be restored to a natural setting with re-grading, erosion control, and revegetation of disturbed areas. All materials used for temporary construction, including potential concrete pads used to support temporary falsework, will be removed after construction is complete. Removal may include chipping and/or jack-hammering concrete pads out as much as is feasible, with the debris from this work being contained with tarps or by other means. These measures would help ensure that the proposed work would be minor, there would be no permanent adverse physical impacts, and the land being used would be fully restored (i.e., the property would be returned to a condition which is at least as good as that which existed prior to the project), all of which are criteria for meeting the finding of temporary occupancy under Section 4(f). Replacement of the existing bridge with a new bridge in close proximity to the existing alignment, plus removal of the existing bridge so that there is only one bridge in the channel, is considered returning the property to a condition that is at least as good as that which existed prior to the project. Temporary and permanent best management practices would be implemented in addition to specific measures to minimize or mitigate potential adverse impacts on the river as included in the EIR/EA.

Under FHWA regulations (23 CFR 774.13[d]), temporary occupancy of a property does not constitute use of a Section 4(f) resource when the following conditions are satisfied. The

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following discussion addresses the preliminary finding of temporary occupancy of the Middle Fork Smith River.

- **The duration of the occupancy must be temporary (i.e., less than the time needed for construction of the project), and there should be no change in ownership of the land.** Construction at this site is anticipated to take approximately 250 to 300 working days over a period of three seasons, anticipated to begin in summer/fall 2013 and lasting through late fall/winter 2015. Once bridge construction work is completed each season at this site, full use of the river for recreation activities within the project construction limits (fishing, kayaking, and rafting) would resume. Recreation use of the river would not be interrupted upstream or downstream of the limited construction zone, since there would be no temporary water diversion techniques used. The construction season could coincide with part of the fishing, kayaking, and rafting season during the fall seasons and the winter of 2015. If boaters are present at the same time that bridge construction/demolition/cut-slope removal is in place, boaters would need to portage around the construction area for safety reasons. They would be notified by ample media alerts and signage installed upstream and downstream of the construction area, along the river. The falsework would be removed prior to the start of the rainy season (typically October 15-June 15). Construction activities would not require a change in ownership of the land.

- **The scope of work must be minor (i.e., both the nature and magnitude of the changes to the Section 4[f] property are minimal).** No diversion techniques would be used in the river channel; bridge construction work would span the wetted channel. Replacement of the existing bridge with a new bridge in close proximity to the existing alignment, plus removal of the existing bridge so that there is only one bridge in the channel, is considered returning the property to a condition that is at least as good as that which existed prior to the project. All construction debris would be removed and disturbed areas would be restored to a natural setting with re-grading, erosion control, and revegetation of disturbed areas. All materials used for temporary construction, including potential concrete pads used to support temporary falsework, will be removed after construction is complete.

- **There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis.** No permanent adverse physical impacts on the river are anticipated as a result of the construction activities at this location. All materials used for temporary construction, including potential concrete pads used to support temporary falsework, will be removed after construction is complete. Temporary and permanent best management practices would be implemented in addition to specific measures to minimize or mitigate potential adverse impacts on the river as included in the EIR/EA. Recreation activities on the river would continue upstream and downstream of the construction limits, and would not be interrupted, because the river would be allowed to flow under the bridge unimpeded. If boaters are present at the same time that bridge construction/demolition/cut-slope removal is in place, boaters would need to portage around the construction area for safety reasons. They would be notified by ample media alerts and signage installed upstream and downstream of the construction area, along the river.

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- **The land being used must be fully restored (i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project).** The falsework and debris containment system above the river channel would be removed before the rainy season (typically October 15-June 15). The proposed work would be conducted in already disturbed areas within the channel and banks, since there is a gabion wall, existing spread footing foundations, and grouted rock slope protection where the southern retaining wall, viaduct portion of the bridge, and bridge would be constructed. All construction debris would be removed and disturbed areas would be restored to a natural setting with re-grading, erosion control, and revegetation of disturbed areas. All materials used for temporary construction, including potential concrete pads used to support temporary falsework, will be removed after construction is complete.

- **There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.** This letter has been prepared for your signature of agreement regarding the temporary occupancy of the Middle Fork Smith River during construction.

As described above, the temporary occupancy of the Middle Fork Smith River would meet all of the criteria outlined in 23 CFR 774.13(d).

1.4 Section 4(f) Findings

The Department has made the following Section 4(f) findings for the Smith River NRA and Middle Fork Smith River.

- <u>Smith River NRA</u>: **The Department has preliminarily determined that the delay in access to the recreation areas on US 199 over a 5-year construction period and the inability to fully restore the excavated rock cut slope at Patrick Creek Narrows Location 2 would constitute a Section 4(f) use of the Smith River NRA and meet the requirements for a *de minimis* impact. This use is not considered adverse because it would not affect the protected activities, features, or attributes for which the Smith River NRA is eligible for protection under Section 4(f).** The Department preliminarily determined that the delay in access to recreation areas within the Smith River NRA would be enough of an inconvenience to visitors that it would not meet the criteria for a temporary occupancy. In addition, the inability to fully restore the 0.23-0.47 acre of excavated rock cut slope just beyond the U.S. Department of Transportation's easement at Patrick Creek Narrows Location 2 would not meet the criteria for temporary occupancy. Instead, these would constitute a Section 4(f) use and meet the requirements for a *de minimis* impact. The Department may make such a finding only if the project will have no adverse effect on the activities, features, and attributes of the Smith River NRA and only if the Forest Service concurs with the *de minimis* finding.

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- Middle Fork Smith River: **The Department has preliminarily determined that proposed bridge replacement activities at Patrick Creek Narrows Location 2 could interrupt recreation activities during a portion of construction, so it is being considered a temporary occupancy of the Middle Fork Smith River at this location.** The temporary construction-related effects on the Middle Fork Smith River at this location from the proposed bridge replacement activities would not have a direct or adverse effect on the values for which the Middle Fork Smith River was designated a Wild and Scenic River.

- Recreation sites within 0.5 mile of the proposed project: **The Department has preliminarily determined that proposed improvements would not require a Section 4(f) use, on either a temporary or permanent basis, of areas designated for recreation use by the Forest Service and located within a 0.5-mile radius of the five project sites, including Sandy Beach, Patrick Creek Campground, Patrick Creek Trail, and Middle Fork Smith River Access Trails.**

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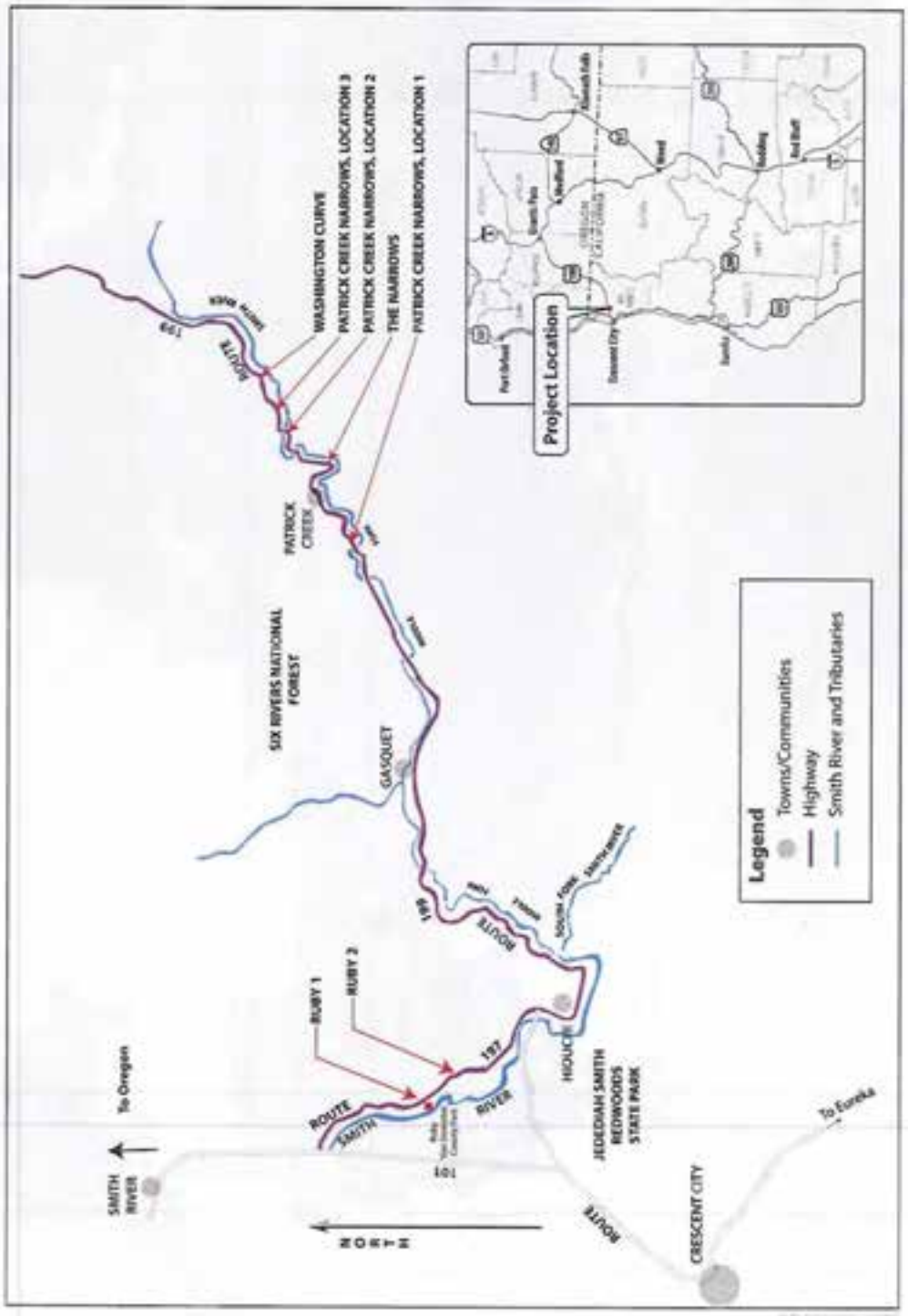
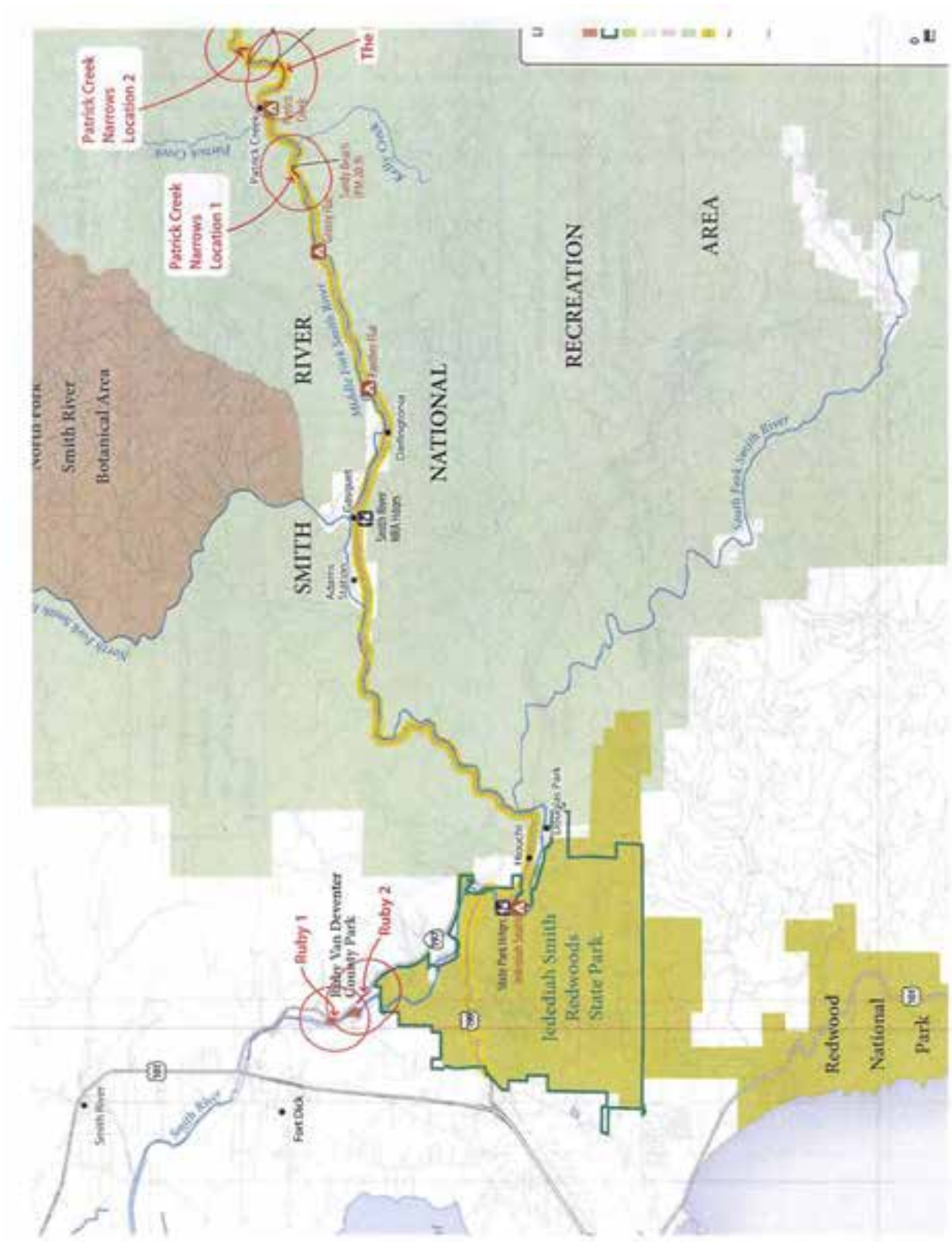
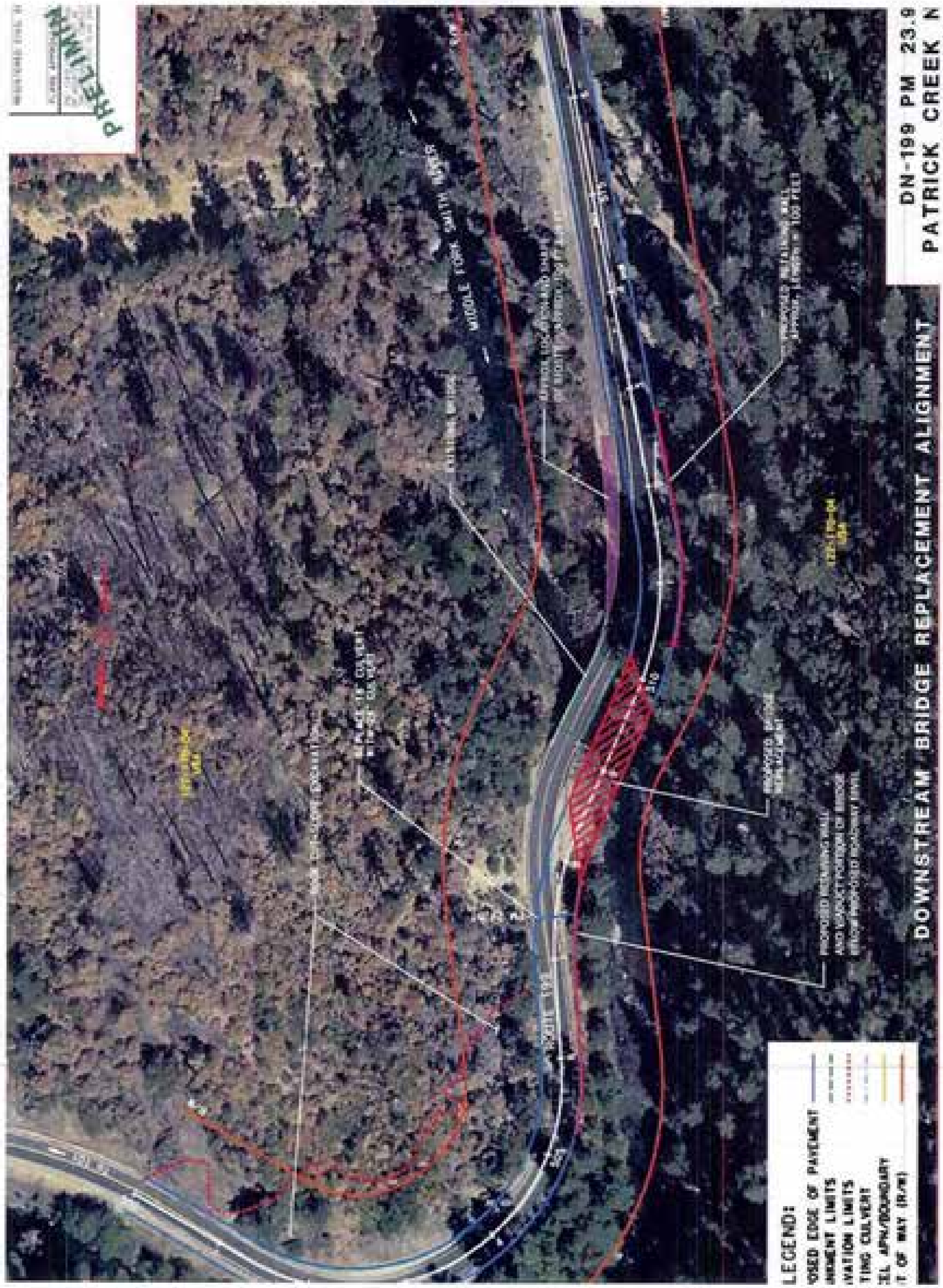


Figure 1
Project Vicinity and Location Map


Patrick Creek Narrows Location 2
Patrick Creek Narrows Location 1
Smith River Botanical Area
SMITH RIVER NATIONAL RECREATION AREA
Ruby 1
Ruby Van Deventer County Park
Ruby 2
Jedediah Smith Redwoods State Park
Redwood National Park
Smith River
Fort Dick


DN-199 PM 23.9
PATRICK CREEK N
LOCATION
DOWNSTREAM BRIDGE REPLACEMENT ALIGNMENT
LEGEND:

Smith River NRA, USFS Wild and Scenic River Act Concurrence

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) 441-5730
FAX (707) 441-5775
TTY 711

Flex your power!
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March 23, 2012

Mr. Tyrone Kelley
Forest Supervisor
Six Rivers National Forest
1330 Bayshore Way
Eureka, CA 95501

Attention: George Frey, Lands and Minerals Officer

Subject: Wild and Scenic River Act Consultation for the 197/199 Safe Surface Transportation Assistance Act (STAA) Access Project, Del Norte County

Dear Mr. Kelley:

The purpose of this letter and consultation is to establish whether or not the above-referenced proposed project would have an adverse effect on the free-flowing characteristics of the Smith River and/or the potential to alter the river segment's ability to meet the Recreational designation it now holds under the National Wild and Scenic Rivers Act. This letter also is a request for your written determination that the proposed project will not adversely affect the Wild and Scenic River designation of the Smith River. The Wild and Scenic River that is under your jurisdiction and discussed in this letter is the Middle Fork Smith River, which has a designation of Recreational. The Middle Fork Smith River is also considered in the separate letter evaluating Section 4(f) resources because it is a designated recreation site within 0.5 mile of the proposed project, and Section 4(f) also applies to portions of Wild and Scenic Rivers that are publicly owned and designated Recreational.

This letter formally initiates contact between the California Department of Transportation (Department) and Six Rivers National Forest Wild & Scenic Rivers Act coordination. The Department is acting as the National Environmental Policy Act (NEPA) lead agency under the provisions of the *Memorandum of Understanding (MOU) between the Federal Highway Administration and the California Department of Transportation Concerning the State of California's Participation in the Surface Transportation Project Delivery Pilot Program*, which became effective on July 1, 2007. The MOU was signed pursuant to Section 6005 of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) which allows the Secretary of Transportation to assign, and the State of California to assume, responsibility for the Federal Highway Administration's (FHWA's) responsibilities under other Federal environmental laws. As this project is covered by the Pilot Program MOU, FHWA has assigned and the Department has assumed FHWA

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responsibility for environmental review, consultation, and coordination on this project. Please direct all future correspondence on this project to the Department.

Please read the attached Summary of the Wild and Scenic Rivers Act Evaluation for the Middle Fork Smith River. It includes a description of the project, an assessment of potential effects on the Middle Fork Smith River, and a discussion of the proposed determination for effects on the Middle Fork Smith River. For more information about the project, please also see the Draft Environmental Impact Report/Environmental Assessment (DEIR/EA), which is available at the following internet address http://www.dot.ca.gov/dist1/d1projects/197-199_staa/; a hard copy or CD is also available upon request.

As the responsible and designated federal management agency for the Middle Fork Smith River within the Smith River NRA, we are requesting your written determination that the proposed project will not adversely affect the Wild and Scenic River designation of the Smith River, based on the following conclusions:

- Implementation of the proposed improvements at Patrick Creek Narrows Location 2 would not have a permanent adverse effect on the free-flowing characteristics of the Middle Fork Smith River.
- Project implementation would not alter the ability of the river to meet the Recreational designation it now holds.

We greatly appreciate the cooperation of the Six Rivers National Forest in the planning and environmental evaluation of this proposed project and look forward to continued consultation and coordination.

Please indicate your written determination that the proposed project is consistent with the National Wild and Scenic Rivers Act, as described above and in the attached Wild and Scenic River Evaluation, by signing below. Please send this signed written determination to: Gary Berrigan, Senior Environmental Planner, California Department of Transportation District 1, P.O. Box 3700, Eureka, CA 95502-3700.

Tyrone Kelley Date: April 5 2012
Tyrone Kelley, Forest Supervisor

Tyrone Kelley
March 23, 2012
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If you have any questions or would like to discuss this matter further, please call me at 707.441.5730.

Sincerely,

for

Gary Berrigan, Senior Environmental Planner
North Region Environmental Services Branch E-1

Attachments

cc: Kim Hayler, Environmental Coordinator

197/199 Safe STAA Access
Summary of the Wild and Scenic Rivers Act Evaluation for the Middle Fork Smith River

1.1 Background and Regulatory Setting

The California Department of Transportation (Department) is proposing to construct improvements on State Route (SR) 197 and U.S. Highway (US) 199 in Del Norte County to reclassify these routes as part of the Surface Transportation Assistance Act (STAA) truck route network and to comply with federal and state legislation and regional programs, plans, and policies to allow STAA access.

The Smith River is a component of the National Wild and Scenic Rivers System as well as the California Wild and Scenic Rivers System. The segment that borders the project area, the Middle Fork Smith River, is designated as "Recreational." Section 5(d)(1) of the Wild and Scenic Rivers Act directs all federal agencies to consider the potential for national wild, scenic, and recreational river areas in all planning for the use and development of water and related land resources. The purpose of this evaluation summary is to establish whether or not the proposed project would have an adverse effect on the free-flowing characteristics of the Smith River and/or the potential to alter the river segment's ability to meet the Recreational designation it now holds.

Construction of the 197/199 Safe STAA Access Project (proposed project) would use federal funds administered by the Federal Highway Administration (FHWA). As a result, compliance with the National Environmental Policy Act (NEPA) is required. Through delegation of authority by the FHWA Delegation Pilot Program authorized under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the Department is the NEPA lead agency for preparation of the draft environmental document for the proposed project. In accordance with NEPA, the Department prepared an environmental assessment (EA) to assess potential environmental effects resulting from the proposed project. The Department is also the California Environmental Quality Act (CEQA) lead agency for the proposed project and prepared an environmental impact report (EIR) in accordance with this act.

As part of the NEPA process, the Department is required to consult with the designated river managing agencies. Five project locations are located along US 199 on national forest lands within the Smith River National Recreation Area (NRA) near the Middle Fork Smith River (Figure 1). In addition, two project locations are located along SR 197 near the main stem of the Smith River. Coordination for the main stem of the Smith River was already conducted with the National Park Service, as noted in Section 4.3.1 of the Draft EIR/EA (DEIR/EA). Following is a description of project activities for each project location.

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1.2 Project Description

The proposed project is composed of seven project locations referred to as Ruby 1, Ruby 2, Patrick Creek Narrows (Locations 1 to 3), the Narrows, and Washington Curve (Figure 1). The Ruby 1 and 2 sites are located along SR 197 in Del Norte County. Patrick Creek Narrows Locations 1 to 3, the Narrows, and Washington Curve sites are located along US 199 on national forest lands within the Smith River NRA as shown in Figure 2. Proposed safety-enhancing improvements include lane- and shoulder-widening and increasing curve radii, which would result in increased sight distances.

The purpose of the proposed project is to improve spot locations on SR 197 and US 199 in Del Norte County so that two STAA trucks passing in opposite directions can be accommodated. By making improvements to accommodate STAA trucks, the prohibition for STAA vehicles would be removed, the 197/199 route would be consistent with federal and state legislation and regional programs, plans, and policies (described below), and the safety and operation of US 199 and SR 197 would be enhanced. This would improve goods movement, and also enhance safety on the routes for automobiles, trucks, and other large vehicles such as motor-homes, buses, and vehicles pulling a trailer.

The need for the proposed project is compliance with federal and state legislation and regional programs, plans, and policies to allow STAA access. Additionally, the project is needed because spot locations on SR 197 and US 199 currently have sub-standard curves; absence of, or substandard, shoulders along the traveled way; and narrow lanes, which restrict STAA truck access in the SR 197/US 199 corridor. In 1982, the federal government passed the STAA, which indicates that states must allow STAA trucks reasonable access to terminals. Specifically, the Federal STAA requires that "States must allow commercial motor vehicles that do not exceed federal maximum width and minimum length limits applicable to the National Network to have reasonable access between the National Network and terminals and facilities for food, fuel, repairs, and rest. Terminals are defined as any location where freight originates, terminates, or is handled in the transportation process[1]." In 1983, California passed Assembly Bill (AB 866) to implement the STAA provisions. The 2008 Regional Transportation Improvement Program (RTIP)[2] and 2007 and 2011 Regional Transportation Plans (RTPs)[3] support and request improvement of the 197/199 corridor to allow STAA truck access. The 1999 Route Concept Reports for SR 197 and US 199 concluded that the routes should be widened and realigned to safely accommodate STAA trucks. This federal and state legislation and the regional programs, plans, and policies are discussed in further detail in the Draft EIR/EA (DEIR/EA Chapters 1 and 2; http://www.dot.ca.gov/dist1/d1projects/197-199_staa/).

Access to STAA trucks is currently restricted in California on the SR 197–US 199 corridor due to sub-standard curves; absence of, or substandard, shoulders along the traveled way; and/or

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations. 2004. Federal Size Regulations for Commercial Motor Vehicles. Access from the internet at http://ops.fhwa.dot.gov/freight/publications/size_regs_final_rpt/size_regs_final_rpt.pdf on 1/20/12.
[2] 2008 RTIP accessed at http://www.dnltc.org/planningdocs/RTIP_2008.pdf on 1/26/12
[3] 2007 RTP accessed at http://dnltc.org/planningdocs/RTP_2007.pdf on 1/26/12; 2011 RTP accessed at http://www.dnltc.org/planningdocs/RTP_2011_Final_061611.pdf accessed on 1/26/12

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narrow lanes in the seven proposed project locations. These conditions have been shown to result in STAA trucks offtracking into the oncoming traffic lane at the seven proposed locations. Safety-enhancing improvements, including wider lanes, wider shoulders, longer-radius curves, and enhanced sight distances, are needed at the seven proposed project locations to provide a roadway that is easier for STAA trucks to traverse; these improvements would benefit all users. These improvements would allow STAA trucks and other large vehicles to negotiate the SR 197–US 199 corridor while minimizing or eliminating offtracking into the oncoming traffic lane at the seven proposed locations. This would allow reclassification of the corridor as part of the STAA network of truck routes. Compliance with the Federal STAA is required of the Department. The Del Norte County Local Transportation Commission supports compliance with, and requirements within, the Federal STAA.

- **Patrick Creek Narrows Location 1:** This location is on US 199 from post mile (PM) 20.5 to PM 20.7, approximately two miles east of the Grassy Flat Campground. One build alternative was considered for this site. The existing roadway curve would be improved and the roadway would be widened to accommodate two 12-foot-wide lanes and 4-foot shoulders throughout the majority of the location, transitioning to 1- to 4-foot wide shoulders at both ends of the location. To accommodate the widening and broader roadway curves, an approximately 150-foot-long, 5-foot-tall retaining wall is proposed along the river side of the road above a portion of the existing steep rock-armored riverbank. Aesthetic treatment of the wall would be incorporated into the wall's design. reconstruction of the existing drainage ditch adjacent to the base of the cut slope, grinding existing asphalt-concrete to match the new superelevation, OGFC overlay to improve friction and traction, striping, a centerline rumble strip, shoulder backing, reconstructing the existing guardrail, and new metal-beam guardrail construction at the north end of the wall for approximately 75 feet. Existing gravel pullouts would be used as staging areas. An existing culvert at PM 20.52 would be replaced with a longer culvert to match the new roadway width at the inlet and outlet. Also, two 18-inch culverts at PM 20.57 and 20.58 would be replaced with 24-inch culverts. No additional right-of-way would need to be acquired at this location. Construction at this location is anticipated to take approximately 90-100 days over one season starting in spring 2013; alternatively, construction may occur in 2014 or 2015. Right-of-way at this location is held in permanent easement from the U.S. Department of Agriculture (USDA) Forest Service (Forest Service), including along the south side of the roadway where the retaining wall would be constructed.

  Naturally occurring asbestos (NOA) has been identified through testing at Patrick Creek Narrows Location 1, and it is possible that excavated material and material removed during pile installation would contain NOA at levels greater than 1%, which would make it unsuitable for surfacing application. Due to the presence of NOA, the construction Contractor would be required to hire an industrial hygienist to develop an Asbestos Compliance Plan and a Dust Control Plan. In addition, the Contractor would be required to take appropriate measures to contain and dispose of any material with NOA.

- **Patrick Creek Narrows Location 2:** This location is farther east on US 199, with project limits from PM 23.9 to PM 24.3. Within the project limits at this location, US 199 crosses the Middle Fork Smith River Bridge. Three alternatives were considered for Patrick Creek

Narrows Location 2: the Upstream Bridge Replacement Alternative, Downstream Bridge Replacement Alternative, and Bridge Preservation with Upslope Retaining Wall Alternative. All would realign and widen the existing 11- to 12-foot lanes to at least 12 feet and increase the shoulders to a width of 1 to 8 feet from the existing widths of 0 to 2 feet. To accommodate the widening on the westernmost extent of the project location, approximately 20,000 cubic yards of rock excavation from the rock cut slope would be required. Rock excavation would extend up to approximately 150 feet above the highway and expose approximately 1 acre of newly excavated rock slope. A hoe ram, rock splitter, and/or controlled blasting would be required to construct the rock cut slope. A cut slope of 1:1 is anticipated. Because of the fractured nature of the bedrock, rock fall may be expected after construction. Therefore, a permanent rock-fall mitigation system may be needed. This could consist of a wire-mesh drape or incorporate a rock-fall catchment area at roadway level.

One culvert within the limits within this project location would be replaced and relocated to match the new roadway width. Improvements at this location would also include grinding existing asphalt-concrete to match the new superelevation, an OGFC overlay to improve friction and traction, striping, a centerline rumble strip, and shoulder backing. Existing metal-beam guardrail along the curve would be reconstructed. Existing metal-beam guardrail along the crib wall would be removed and replaced with aesthetically treated bridge rail, which would be placed on top of the new retaining wall. Existing gravel and paved pullouts nearby would be used to stage equipment.

The U.S. Department of Transportation (USDOT) easement held by the Department at this location includes 100-foot easements on both sides of US 199. However, work beyond the existing easements would be required to construct the cut slope within the Forest Service (APN 122-170-04) in the vicinity of the Middle Fork Smith River Bridge (Figure 3). The Forest Service has preliminarily indicated that a permanent expansion of the easement would not be required. This area is an existing rock/soil face and no Forest Service recreation facilities or other developed land uses are located in this area. The steepness of the rock face makes it unsuitable for any development. The area that temporarily would be affected by cut slope excavation would be between 0.23 and 0.47 acre of land on the Smith River NRA, just beyond the existing DOT easement. This would not require permanent acquisition of Smith River NRA property, as suggested by the Forest Service, and would be temporary. There would be removal of existing trees, vegetation, and the seed bank during excavation of the rock cut slope. The unique features of the selected preferred alternative, the Downstream Bridge Replacement Alternative, are described below. Unique features of the other two build alternatives are discussed in the DEIR/EA.

The Downstream Bridge Replacement Alternative would replace the Middle Fork Smith River Bridge on a new alignment downstream of the existing bridge location (Figure 3). A retaining wall would be constructed downstream from and southeast of the new bridge. The retaining wall would extend for approximately 150 feet and transition into the viaduct portion of the proposed new bridge. T he retaining wall would be constructed down-slope from the highway level and would be supported by drilled piles within the riparian zone, approximately 15-40 feet from the ordinary high water level of the Middle Fork Smith River. The viaduct portion of the proposed bridge would cantilever the northbound traffic lane over

the bank of the Middle Fork Smith River and would be a continuous structure with the arch portion of the bridge. The total length of the viaduct and arch portions of the bridge would be approximately 345 feet. This alternative would also require a retaining wall on the northern, Oregon side of the bridge that would be approximately 10 feet high and 100 feet long (Figure 3). The new bridge design would be a concrete arch bridge with aesthetic treatment. The other structures would receive aesthetic treatment as well. The existing bridge would be removed once the new bridge was in place. Construction of this alternative was formerly thought to need in-river work requiring diversion of the Middle Fork Smith River, a trestle, falsework, and a debris containment system. After circulation of the draft EIR/EA, the Department conducted more studies and concluded that bridge replacement could and would be constructed so that no heavy equipment and only minimal temporary foot traffic would occur within the wetted channel, and there would be no water diversion for bridge construction and no trestle, falsework, or debris containment system with structures in the wetted channel. Falsework/demolition platforms would be placed within 5-10 feet of the active low summer flow level (just above of the wetted channel) and would be removed prior to the rainy season (October 15 – June 15). Construction at this location is anticipated to take approximately 300 days over three seasons, anticipated to begin in late summer/fall 2013 and ending in late fall/winter 2015. The slope south of the bridge would be cut during the first season, and one or both retaining walls would be constructed. In the second season, the bridge (and possibly the remaining retaining wall, if not built in the first season) would be built. In the third season, the old bridge would be demolished. Most work would be conducted above ordinary high water.

- **Patrick Creek Narrows Location 3**: Approximately 1.5 miles east of Patrick Creek Narrows Location 2 on US 199, the project limits run from PM 25.55 to PM 25.65. Only one build alternative was considered at this location. The proposed project would increase the shoulder width to at least 4 feet on both sides of the roadway and improve the "S" curve that runs through the project limit. To support the wider roadway an approximately 210-foot-long wall up to an approximate height of 15 feet is proposed on the river side; approximately 170 feet of the approximately 210-foot retaining wall would be exposed, with the rest being covered with soil. A drilled-pile foundation may be required. Aesthetic treatment of the wall would be incorporated. One culvert, at PM 25.55, would be replaced to match the new roadway width. Drainage inlets would be installed at the inlets for the culverts at PM 25.61 and 25.69. An area of approximately 8 ft by 12 ft of rock slope protection would be placed at the drainage outlet, above ordinary high water, to minimize erosion. Improvements would also include grinding existing asphalt-concrete to match the new superelevation, an OGFC overlay to improve friction and traction, paving to conform the existing private driveway to the new elevation of the highway, striping, a rumble strip, metal-beam guardrail, and shoulder backing. Existing gravel pullouts would be used to stage equipment. The right-of-way easement at this location includes a 100-foot easement along both sides of US 199. However, additional right-of-way would need to be acquired from a private parcel. Construction at this location is anticipated to take approximately 50-70 days over one season beginning in spring 2013; alternatively, construction may occur in 2014 or 2015.

- **The Narrows**: The Narrows site is situated between Patrick Creek Narrows Locations 1 and 2, with project limits ranging from PM 22.7 to PM 23.0. One build alternative was

considered for this site. Improvements would increase lane widths to 12 feet and provide 2-foot shoulders. Roadway widening would be accomplished by cutting into the existing cut slope. In slope locations composed of soft material, mechanical equipment such as an excavator would be used. Proposed cut heights range from 0 to 15 feet, with an average height of 10 feet and average depth of 4 feet, resulting in approximately 5,500 cubic yards of mostly rock excavation with some soil as well. Where extremely irregular rock slopes are vertical or overhanging, sliver cuts would be required. Proposed cut heights vary from 0 to 60 feet, with an average height of 25 feet and average depth of 4 feet. The rock excavation/cut limits would be established by controlled blasting or presplitting, which would involve drilling closely spaced holes in the rock face and creating a shear plane by setting off simultaneous charges of explosives in the holes. The results after presplitting are a clean rock face and reduction in rock-fall potential. To excavate the cut slope in these areas, drilling would be done by crane only where there is enough room for all traffic to pass through a one-way reversible traffic control. Slopes that cannot be reached by crane without blocking traffic would be drilled by other means, such as using a track-mounted drill or drilling by hand. A 1-foot-wide paved drainage ditch would be added at the shoulder of the road for a total paved width of approximately 29 feet. One new culvert and drain inlet would be constructed. Also, an existing culvert and drain inlet would be replaced to match the new edge of pavement. In addition to roadway widening, isolated outcrops of overhanging or loose rock above the excavation limits would be stabilized with rock bolting. Other work includes an overlay of new OGAC pavement to improve friction and traction, a centerline rumble strip, and new striping. Existing gravel pullouts nearby would be used to stage equipment. Construction of the improvements at the Narrows site would occur within existing right-of-way easement. Construction at this location is anticipated to take approximately 100 days over two seasons in summer/fall 2013 and summer/fall 2014 or summer/fall 2014 and 2015.

- **Washington Curve**: Located at PM 26.3 to PM 26.5, this is the easternmost US 199 site under the proposed project. The project would straighten the compound curve at this location. The improvements would increase the lane width to a minimum of 12 feet. One culvert on the Oregon side of the project limits would be replaced to match the new roadway. Work would include an OGFC overlay to improve friction and traction, replacement of the existing metal-beam guardrail, and installation of a centerline rumble strip. Construction of the improvements at this site would occur within existing right-of-way easement that extends 200 feet to the north and 150 feet to the south from the roadway centerline. Existing gravel pullouts would be used to stage equipment. Two alternatives were considered for improvements at this location: construction of a cut slope, and construction of a retaining wall. The Department has selected as the preferred alternative for this location construction of a cut slope. P roposed improvements would involve excavation of a new slope on the cut slope side of the roadway. The shoulders would be widened from 2 to 6 feet. Roadway excavation would be approximately 20,000 cubic yards, disturbing an area of approximately 1-1.3 acres along the slope. The proposed cut slope would be ¾:1, depending on geologic conditions. Naturally occurring asbestos (NOA) has been identified at Washington Curve, and it is likely that excavated material would contain NOA at levels considered hazardous. Therefore, the Contractor would be required to hire an industrial hygienist to develop a health and safety plan and test excavation material for NOA during construction. In addition,

the Contractor would be required to take appropriate measures to contain and dispose of any material that contains NOA. Construction of this alternative is anticipated to take approximately 150 days over two seasons during 2013 and 2014 or 2014 and 2015.

1.3 Evaluation of Potential Effects to the Middle Fork Smith River

The proposed project would not involve construction below the ordinary high water mark [OHWM]) at Patrick Creek Narrows Locations 1 and 3, or the Narrows and Washington Curve sites on US 199. As such, implementation of the proposed improvements at these four project locations would not have an adverse effect on the free-flowing characteristics of the river. Additionally, project implementation would not alter the river segment's ability to meet the Recreational designation it now holds.

However, as noted above, implementation of the proposed improvements to the Middle Fork Smith River Bridge at Patrick Creek Narrows Location 2 would involve temporary work below the OHWM, but above the wetted channel, under the selected preferred alternative, Downstream Bridge Replacement. Following is a description of the anticipated effects on the free-flowing nature and Recreational designation of the Middle Fork Smith River.

- *Free-flowing nature of the Middle Fork Smith River:* The free-flowing condition of the river would not be affected upstream or downstream of the construction limits necessary for bridge replacement and demolition. The proposed improvement to the bridge that spans the Middle Fork Smith River at the Patrick Creek Narrows Location 2 would not involve any work in the wetted channel under the selected preferred alternative at this location. No heavy equipment and only minimal temporary foot traffic would occur within the wetted channel. There will be no temporary water diversion techniques used; the falsework and debris containment system would span the wetted channel. Falsework/demolition platforms would be removed prior to the rainy season (October 15- June 15). All construction debris would be removed, and disturbed areas would be restored to a natural setting with re-grading, erosion control, and revegetation of disturbed areas. All materials used for temporary construction, including potential concrete pads used to support temporary falsework, will be removed after construction is complete. Removal may include chipping and/or jack-hammering concrete pads out as much as is feasible, with the debris from this work being contained with tarps or by other means.

- *Alteration of the setting of the Middle Fork Smith River:* Improvements proposed at this location include replacing the existing arch bridge with a similar arch bridge, an element of the existing conditions for travelers on US 199 and on the river. Replacement of the bridge with another arch bridge would minimize alteration of the setting of the river. In addition, excavation of cut slopes and construction of retaining walls and potential rock fall barriers would occur. These elements also exist throughout the roadway corridor along the river, so their construction would not substantially alter the setting of the river. Aesthetic treatments would be incorporated into design of the retaining walls and bridge (including the viaduct portion) and would be consistent with other recently built structures to minimize potential

visual impacts. Temporary views of construction activities can be expected from the roadway and from the river, but construction occurs annually within the roadway corridor and is temporary, so the setting of the river would not be substantially altered by views of construction activities. Trees and vegetation would also be removed and disturbed areas would be revegetated so that the setting of the river would not be substantially altered. Measures included in the DEIR/EA would reduce and minimize potential impacts on the setting of the river.

- *Anadromous fish:* Impacts on anadromous fish (e.g., coho and Chinook salmon, coastal cutthroat trout, green sturgeon) are not anticipated to be substantial during bridge replacement, since the Department determined that bridge work can and will occur above the wetted channel. Implementation of measures included in the EIR/EA would avoid and minimize potential impacts on the salmonids and their Critical Habitat and Essential Fish Habitat during project construction. Anticipated temporary construction impacts would not alter the river segment's ability to maintain the "outstanding remarkable" value for the anadromous fishery it now holds.

- *Recreational designation of the Middle Fork Smith River:* Recreation activities on the river would continue upstream and downstream of the construction limits because the river would be allowed to flow under the bridge unimpeded. Recreation use of the river would not be interrupted upstream or downstream of the limited construction zone. The construction season could coincide with part of the fishing, kayaking, and rafting season during the fall seasons and the winter of 2015. If boaters are present at the same time that bridge construction/demolition/slope removal are in place, it is anticipated that boaters would need to portage around the construction area for safety reasons. The Department intends to conduct ample media alerts and install signage above and below the river to notify potential boaters of the need to portage around the construction area, since the platform spanning the bridge may only be several feet above the wetted channel. Access to the river for recreational activities outside the limited construction zone would be maintained at all times throughout the construction period of the proposed project. Recreational activities on the river within the construction limits would resume after each construction season ended and portage requirements are removed. Small charge blasting may be required and could affect recreational activities to a lesser degree. Traffic delays on US 199 are anticipated during construction seasons at various locations over a period of 3 years. In particular, multiple delays could be encountered when construction is occurring at more than one location during the same construction season. These delays would interfere with public access to the Smith River NRA recreation sites on or accessed from US 199, including Middle Fork Smith River access points. As noted above, construction activities at this location are anticipated to take up to three seasons. Recreation opportunities along the river would resume once construction at the Patrick Creek Narrows Location 2 has been completed and would not alter the river segment's ability to meet the Recreational designation it now holds.

1.4 Wild and Scenic River Act Findings

The Department preliminarily determined that the proposed project will not adversely affect the Wild and Scenic River designation of the Smith River, based on the following conclusions.

- Implementation of the proposed improvements at Patrick Creek Narrows Location 2 would not have a permanent adverse effect on the free-flowing characteristics of the Middle Fork Smith River.

- Project implementation would not alter the ability of the river to meet the Recreational designation it now holds under the Wild and Scenic River Act.

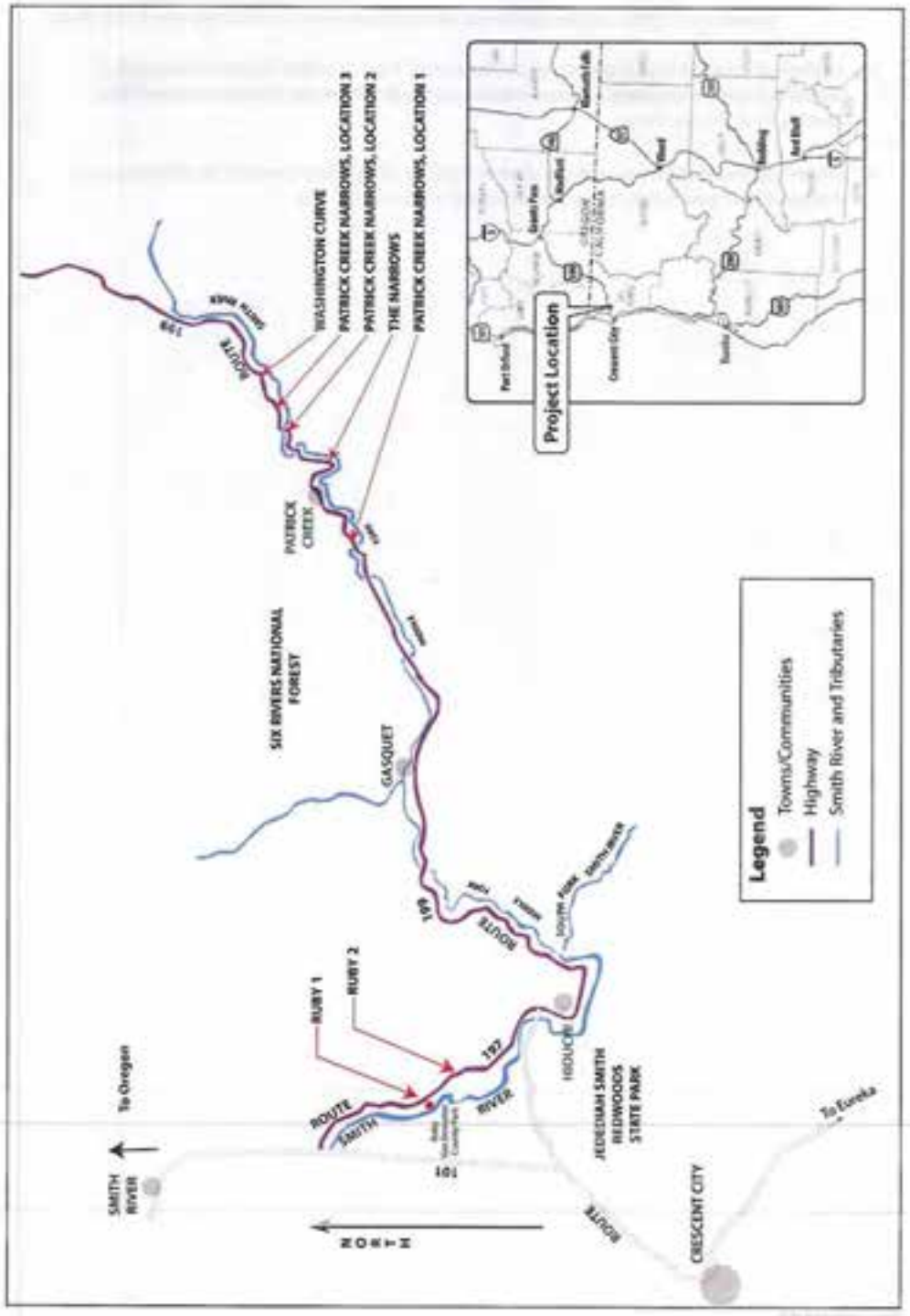
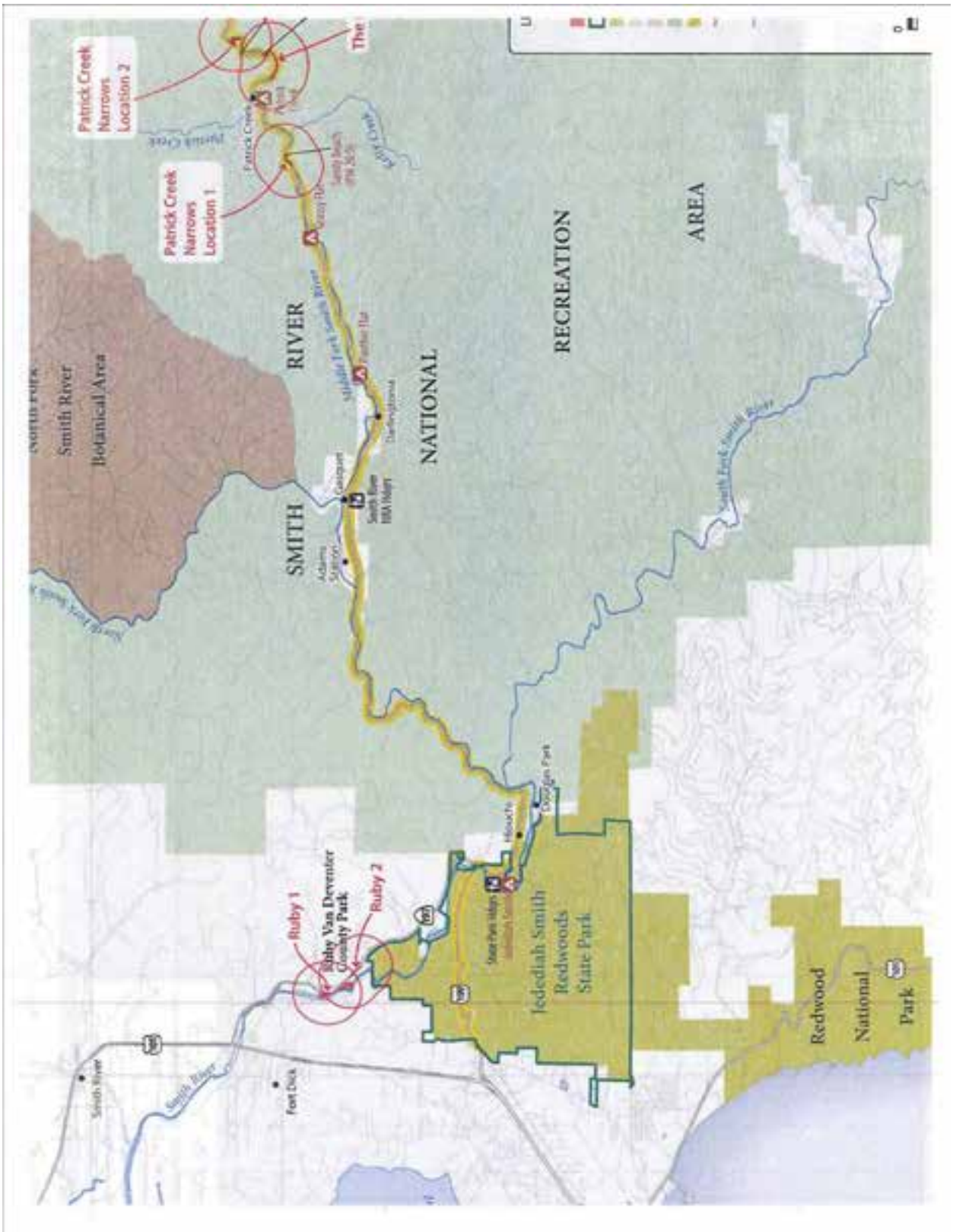
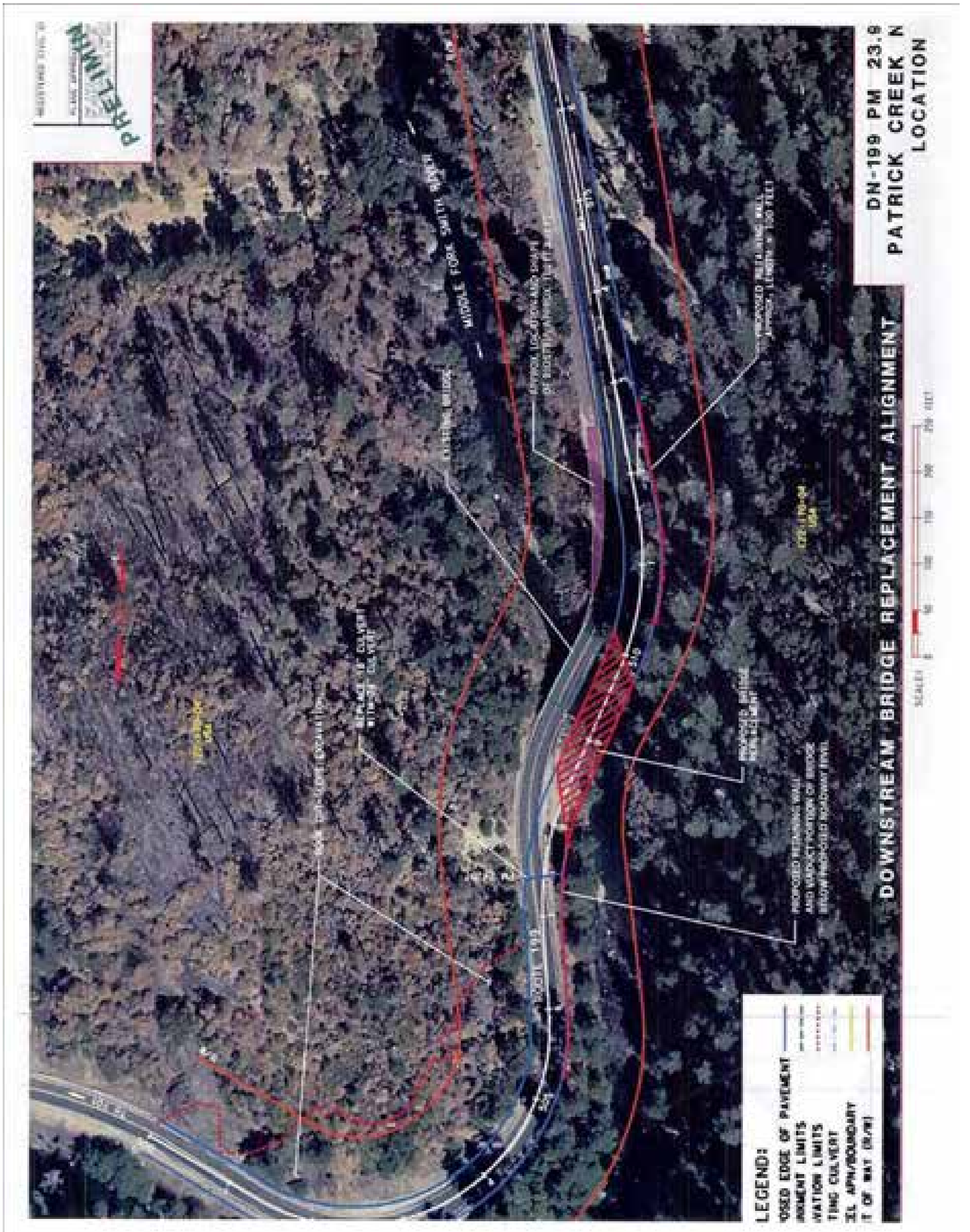


Figure 1
Project Vicinity and Location Map


Patrick Creek Narrows Location 2
Patrick Creek Narrows Location 1
Smith River Botanical Area
SMITH RIVER NATIONAL RECREATION AREA
Ruby 1
Ruby 2
Ruby Van Deventer Geodetic Park
Jedediah Smith Redwoods State Park
Redwood National Park
Fort Dick
Smith River


DN-199 PM 23.8
PATRICK CREEK N
LOCATION
DOWNSTREAM BRIDGE REPLACEMENT ALIGNMENT
MIDDLE FORK SMITH RIVER
LEGEND:

Native American Heritage Commission; Coordination with Local Native American Tribes

11/10/2008 12:50 FAX 916 657 5390 NAHC ☑001

STATE OF CALIFORNIA — Arnold Schwarzenegger, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

November 4, 2008

Tina Pitsenberger
ICF Jones & Stokes
630 K Street, Suite 400
Sacramento, CA 95814

RE: Proposed Caltrans 199/197 STAA Highway Projects; Del Norte County.

Sent By Fax: (916) 737-3030
Pages Sent: 2

Dear Ms. Pitsenberger:

A record search of the Sacred Lands File indicates the presence of Native American cultural resources in the vicinity of your project that may be impacted (Mun-sro-me, Hiouchi USGS Quadrangle, a known archaeological site, CA-DNO-36 in Del Norte County and Walker Flat, also Houchi USGS Quadrangle). Please contact Loren Brommelyn 180 China Creek Ct., Crescent City, Ca 95531, telephone number (707) 464-1665 to determine if your project will impact these sites. Also attached is the Native American Contact list for Del Norte County.

The presence or absence of specific site information in the Sacred Lands File does not indicate the absence of other cultural resources in any project area. Other sources of information regarding cultural resources in your project area should also be contacted for information regarding known and recorded sites. I suggest you consult with all of those on the accompanying Native American Contacts list, if they cannot supply information, they might recommend others with specific knowledge about cultural resources in your project area. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

11/10/2008 12:51 FAX 916 657 5390 NAHC 002

Native American Contacts
Del Norte County
November 3, 2008

Elk Valley Rancheria of Smith River Tolowa
Dale Miller, Chairperson
2332 Howland Hill Road Tolowa
Crescent City , CA 95531
dmiller@elk-valley.com
(707) 464-4680
(707) 464-4519

Elk Valley Rancheria of Smith River Tolowa
Glen Gary, Tribal Administrator
2332 Howland Hill Road Tolowa
Crescent City , CA 95531
tgoodman@elk-valley.com
(707) 464-4680
(707) 464-4519 Fax

Smith River Rancheria of California
Kara Brundin-Miller, Chairperson
140 Rowdy Creek Road Tolowa
Smith River , CA 95567
kara.miller@tolowa-nsn.gov
(707) 487-9255
(707) 487-0930 Fax

Elk Valley Rancheria of Smith River Tolowa
John Green, Cultural & Natural Resources Committee
2332 Howland Hill Road Tolowa
Crescent City , CA 95531
(707) 464-4680
(707) 464-4519 Fax

Melochundum Band of Tolowa Indians
P.O. Box 388 Tolowa
Fort Dick , CA 95538

Elk Valley Rancheria of Smith River Tolowa
Shannon Tushingham, THPO
2332 Howland Hill Road Tolowa
Crescent City , CA 95531
(707) 464-4680
(707) 464-4519 Fax

Smith River Rancheria of California
Russ Crabtree, Tribal Administrator
140 Rowdy Creek Road Tolowa
Smith River , CA 95567
srindian@gte.net
(707) 487-9255
(707) 487-0930 FAX

Smith River Rancheria of California THPO
Suntayea Steinruck
140 Rowdy Creek Road Tolowa
Smith River , CA 95567
(707) 487-9255
(707) 487-0930 Fax

Loren Brommelyn
180 China Creek Ct.
Crescent City, CA 95531
(707) 464-1665

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Caltrans 199/197 STAA highway Projects; Del Norte County.

ICF Jones & Stokes
an ICF International Company

November 10, 2008

Loren Brommelyn
180 China Creek Court
Crescent City, CA 95531

Subject: SR 197/US 199 STAA Project

Dear Ms.Brommelyn:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The NAHC suggested you as a contact person regarding whether or not the project will impact site CA-DNO-36.

The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

Thank you for your cooperation in this matter. Please do not hesitate to call me if you have any questions or concerns.

Sincerely,

Tina Pitsenberger
Project Coordinator

Project Area Map enclosed

630 K Street, Suite 400 — Sacramento, CA 95814 — 916.737.3000 — 916.737.3030 fax — icfi.com — jonesandstokes.com

ICF Jones & Stokes
an ICF International Company

November 10, 2008

Smith River Rancheria of California
Russ Crabtree, Tribal Administrator
140 Rowdy Creek Road
Smith River, CA 95567

Subject: SR 197/US 199 STAA Project

Dear Mr. Crabtree:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

We are seeking information from Native American representatives in the area regarding the existence of sites within the project area. Thank you for your cooperation in this matter. Please do not hesitate to call me if you have any questions or concerns.

Sincerely,

Tina Pitsenberger
Project Coordinator

Project Area Map enclosed

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ICF Jones & Stokes
an ICF International Company

November 10, 2008

Melochundum Band of Tolowa
P.O. Box 388
Fort Dick, CA 95538

Subject: SR 197/US 199 STAA Project

Dear Sir or Madam:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

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Project Coordinator

Project Area Map enclosed

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ICF Jones & Stokes
an ICF International Company

November 10, 2008

Shannon Tushingham, THPO
Elk Valley Rancheria of Smith River Tolowa
2332 Howland Hill Road
Crescent City, CA 95531

Subject: SR 197/US 199 STAA Project

Dear Shannon Tushingham:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

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Sincerely,

Tina Pitsenberger
Project Coordinator

Project Area Map enclosed

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ICF Jones & Stokes
an ICF International Company

November 10, 2008

Smith River Rancheria of California
Kara Brundin-Miller, Chairperson
140 Rowdy Creek Road
Smith River, CA 95567

Subject: SR 197/US 199 STAA Project

Dear Ms. Brundin-Miller:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

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Sincerely,

T Pitsenberger

Tina Pitsenberger
Project Coordinator

Project Area Map enclosed

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ICF Jones & Stokes
an ICF International Company

November 10, 2008

Smith River Rancheria of California THPO
Suntayea Steinruck
140 Rowdy Creek Road
Smith River, CA 95567

Subject: SR 197/US 199 STAA Project

Dear Ms. Steinruck:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

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Sincerely,

Tina Pitsenberger
Project Coordinator

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ICF Jones & Stokes
an ICF International Company

November 10, 2008

Dale Miller, Chairperson
Elk Valley Rancheria of Smith River Tolowa
2332 Howland Hill Road
Crescent City, CA 95531

Subject: SR 197/US 199 STAA Project

Dear Mr. Miller:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

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Sincerely,

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Project Coordinator

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ICF Jones & Stokes
an ICF International Company

November 10, 2008

Glen Gary, Tribal Administrator
Elk Valley Rancheria of Smith River Tolowa
2332 Howland Hill Road
Crescent City, CA 95531

Subject: SR 197/US 199 STAA Project

Dear Mr. Gary:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

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Tina Pitsenberger
Project Coordinator

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ICF Jones & Stokes
an ICF International Company

November 10, 2008

John Green, Cultural & Natural Resources Committee
Elk Valley Rancheria of Smith River Tolowa
2332 Howland Hill Road
Crescent City, CA 95531

Subject: SR 197/US 199 STAA Project

Dear Mr. Green:

I obtained your name from the Native American Heritage Commission in order to inform you of the Caltrans State Route 197/U.S. Highway 199 STAA Improvements Project. The project includes improvements on Routes 197 and 199 in Del Norte County to allow classification of the routes as part of the California STAA truck route network. These projects are located in five locations along Routes 197 and 199: Ruby 1, Ruby 2, Patrick Creek, The Narrows and Washington Curve. The enclosed map indicates the project locations.

We are seeking information from Native American representatives in the area regarding the existence of sites within the project area. Thank you for your cooperation in this matter. Please do not hesitate to call me if you have any questions or concerns.

Sincerely,

Tina Pitsenberger
Project Coordinator

Project Area Map enclosed

630 K Street, Suite 400 — Sacramento, CA 95814 — 916.737.3000 — 916.737.3030 fax — icfi.com — jonesandstokes.com

Ruby Van Deventer County Park Section 4(f) Concurrence

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) 441-5730
FAX (707) 441-5775
TTY 711

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February 27, 2012

Ed Fulton
Building/Parks Maintenance Superintendent
Del Norte County Parks Department
840 9th Street, Suite 11
Crescent City, CA 95531

Subject: Section 4(f) Concurrence Request for the 197/199 Safe Surface Transportation Assistance Act Access Project, Del Norte County

Dear Mr. Fulton:

The purpose of this letter is to present an evaluation of resources relative to the requirements of Section 4(f) of the U.S. Department of Transportation Act, referred to herein as Section 4(f), and to request your concurrence on the proposed findings of the evaluation. The Section 4(f) resource that is under your jurisdiction and discussed in this letter is Ruby Van Deventer County Park.

Regulatory Setting

The California Department of Transportation (Department) is proposing to construct improvements on State Route (SR) 197 and U.S. Highway (US) 199 in Del Norte County to reclassify these routes as part of the Surface Transportation Assistance Act (STAA) truck route network and to comply with federal and state legislation and regional programs, plans, and policies to allow STAA access.

Construction of the 197/199 Safe STAA Access Project (proposed project) would use federal funds administered by the Federal Highway Administration (FHWA). As a result, compliance with the National Environmental Policy Act (NEPA) is required. Through delegation of authority by the FHWA Delegation Pilot Program authorized under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the Department is the NEPA lead agency for preparation of the environmental document for the proposed project. In accordance with NEPA, the Department prepared an environmental assessment (EA) to assess potential environmental effects resulting from the proposed project. The Department is also the California Environmental Quality Act (CEQA) lead agency for the proposed project and prepared an environmental impact report (EIR).

As part of the NEPA process, the Department is required to prepare documentation required by Section 4(f) of the U.S. Department of Transportation Act, referred to herein as the Section 4(f) evaluation. Section 4(f), codified in federal law in the United States Code (USC), Title 14, Section 303, declares that "[i]t is the policy of the United States Government that special effort should be

"Caltrans improves mobility across California"

made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

Public parks, recreation areas, and facilities within 0.5 mile of the proposed project were identified to determine whether they qualify for protection as Section 4(f) resources and whether the provisions of Section 4(f) would be triggered by construction of the proposed project. The public parks and recreation areas considered in this evaluation include all neighborhood, city, regional, state, and federal recreation resources in the project area.

Project Description

The proposed project is composed of five separate projects. These five projects are referred to as Ruby 1, Ruby 2, Patrick Creek Narrows (Locations 1, 2, and 3), the Narrows, and Washington Curve and include a total of seven locations (Figure 1). All seven project locations have roadway geometries that can result in STAA trucks and other long-wheelbase vehicles offtracking across the double yellow line and entering the oncoming traffic lane. The Ruby 1 and 2 sites are located along SR 197 and are closest to Ruby Van Deventer County Park. Patrick Creek Narrows Locations 1 to 3, the Narrows site, and the Washington Curve site are located along US 199. Proposed safety-enhancing improvements include lane- and shoulder-widening and increasing curve radii, which would result in increased sight distances.

The purpose of the proposed project is to improve spot locations on SR 197 and US 199 in Del Norte County so that two STAA trucks passing in opposite directions can be accommodated. By making improvements to accommodate STAA trucks, the prohibition for STAA vehicles would be removed, the 197/199 route would be consistent with the federal and state legislation and regional programs, plans, and policies, and the safety and operation of US 199 and SR 197 would be enhanced. This would improve goods movement, and also enhance safety on the routes for automobiles, trucks, and other large vehicles such as motor-homes, buses, and vehicles pulling a trailer.

The need for the proposed project is compliance with federal and state legislation and regional programs, plans, and policies to allow STAA access. In 1982, the Federal government passed the STAA, requiring that states allow STAA trucks reasonable access to terminals. In 1983, California passed Assembly Bill (AB 866 to implement the STAA provisions. The 2008 Regional Transportation Improvement Program (RTIP)[1] and 2007 and 2011 Regional Transportation Plans (RTPs)[2] support and request improvement of the 197/199 corridor to allow STAA truck access. The 1999 Route Concept Reports for SR 197 and US 199 concluded that the routes should be widened and realigned to safely accommodate STAA trucks. This federal and state legislation and the regional programs, plans, and policies are discussed in further detail in the Draft EIR/EA (Chapters 1 and 2).

[1] 2008 RTIP accessed at http://www.dnltc.org/planningdocs/RTIP_2008.pdf on 1/26/12
[2] 2007 RTP accessed at http://dnltc.org/planningdocs/RTP_2007.pdf on 1/26/12; 2011 RTP accessed at http://www.dnltc.org/planningdocs/RTP_2011_Final_061611.pdf accessed on 1/26/12

Specifically, the federal STAA requires that "States must allow commercial motor vehicles that do not exceed Federal maximum width and minimum length limits applicable to the National Network to have reasonable access between the National Network and terminals and facilities for food, fuel, repairs, and rest. Terminals are defined as any location where freight originates, terminates, or is handled in the transportation process[3]." "States must also allow access between the National Network and points of loading and unloading to household goods carriers, motor carriers of passengers, and any truck tractor-semitrailer combination in which the trailer or semitrailer has a length equal to or less than 28 feet, or 28.5 feet for appropriately grandfathered equipment, and which generally operates as part of a truck tractor-semitrailer-trailer combination." In summary, if there is a highway that connects two interstate routes, states are requested by the federal STAA to provide STAA trucks with reasonable access to terminals. US Route 101 and Interstate Route 5 are interstate routes that allow STAA trucks and that are connected by SR 197 and US 199. SR 197 and the California portion of US 199 do not allow STAA access (while the Oregon portion of US 199 does). The federal STAA contributes to the need for the proposed project.

Access to STAA trucks is currently limited on the SR 197–US 199 corridor due to sub-standard curves; absence of, or substandard, shoulders along the traveled way; and narrow lanes in the seven proposed project locations. These conditions have been shown to result in offtracking into the oncoming traffic lane at the seven proposed locations. Safety-enhancing improvements, including wider lanes, wider shoulders, longer-radius curves, and improved sight distances, are needed at the seven proposed project locations to provide a roadway that is easier for STAA trucks to traverse; these improvements would benefit all users. These improvements would allow STAA trucks and other large vehicles to negotiate curves on the SR 197–US 199 corridor without offtracking into the oncoming traffic lane at the seven proposed locations; this would allow reclassification of the corridor as part of the STAA network of truck routes. Please refer to the DEIR/EA for further details and information[4].

Below is a summary of the proposed project alternatives at the Ruby 1 and 2 sites, the two project sites located nearest to Ruby Van Deventer County Park along SR 197 (Figure 2):

- **Ruby 1:** The Ruby 1 site is located on SR 197 at post mile (PM) 4.5, near the entrance to Ruby Van Deventer County Park. To improve the roadway, the curve of the road would be lengthened, and shoulders would be increased from their existing 0- to 1-foot widths to new varying widths. On the southbound side, the new shoulders would vary from 0 to 7 feet, transitioning from each end of the project limits. Four-foot shoulders are proposed on the northbound side. Asphalt concrete would be applied to the curve of the roadbed to improve the existing super elevation.[5] In addition, the asphalt surface would be an open graded friction course (OGFC; a type of asphalt concrete) overlay. One existing culvert would be extended,

[3] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations. 2004. Federal Size Regulations for Commercial Motor Vehicles. Access from the internet at http://ops.fhwa.dot.gov/freight/publications/size_regs_final_rpt/size_regs_final_rpt.pdf on 1/20/12.
[4] http://www.dot.ca.gov/dist1/d1projects/197-199_staa/
[5] The *super elevation* is the rise in the roadway surface elevation as one moves from the inside edge of the road to the outside edge along a curve.

one would be replaced with corrugated steel pipe, and new drainage inlets installed. The old drainage inlets would be removed and new ones inserted in their place. No trees would be removed along the right-of-way adjacent to Ruby Van Deventer County Park. The six trees that would be removed to construct the proposed project are on the northbound side of the highway, which is on the side of the highway that is opposite the park (see attached tree removal map).

- **Ruby 2:** The Ruby 2 site is located on SR 197 and extends from PM 3.2 to PM 4.0. This site is situated just under 0.5 mile south of the Ruby 1 site. Three build alternatives were considered for the Ruby 2 site. The Two-Foot Shoulders Alternative would increase the shoulder widths to a minimum of 2 feet on both sides of the roadway. The shoulder widths currently vary from 0 to 4 feet. The Four-Foot Shoulders Alternative would increase the shoulder widths to 4 feet on both sides of the roadway. The Two-Foot Widening in Spot Locations Alternative would increase the shoulder widths to 2 feet at spot locations. After review of public comments on the DEIR/EA and coordinating with resource agencies, and in order to avoid the significant impact of cutting old growth redwood trees that would have occurred under the Two-Foot Shoulders and Four-Foot Shoulders Alternatives, the Department selected the Two-Foot Widening in Spot Locations Alternative as the preferred alternative for this location.

Proposed Temporary Impacts to Ruby Van Deventer County Park

The Section 4(f) evaluation for the proposed project addresses the potential impacts on recreation facilities within or adjacent to the project sites that may occur as a result of implementing the proposed project. During preparation of the Section 4(f) evaluation, the Department determined that there may be temporary construction-related effects on Ruby Van Deventer County Park as a result of the proposed improvements at the Ruby 1 site. The Department also determined that construction of the proposed project at the Ruby 2 site would not result in any permanent or temporary construction-related effects on Ruby Van Deventer County Park, because of the distance of the proposed project improvements from the park boundaries. Consequently, only potential temporary effects due to construction at the Ruby 1 site are discussed below.

The Department owns 40 feet of right of way along the proposed project area, adjacent to Ruby Van Deventer County Park. Improvements at this site would place fill and/or shoulder backing along the southbound side shoulder for a distance of approximately 0.12 mile within the Department's existing right of way. Implementation of the build alternative would not require acquisition of permanent right-of-way from the park. A temporary construction easement would be located on park property within the parking lot (Figure 3). The temporary construction easement would be necessary to allow for modification of the park parking lot entrance to match the improved roadway surface elevation. To accomplish this work, parking on three to four parking spaces would not be available during the time it takes to modify the entrance to the park. The temporary construction easement would include a total area of approximately 5600 square feet (0.13 acre). Construction at the entrance is anticipated to occur over a period of three days. Access to the park, including the campground and picnic area, would be maintained at all times during construction at the park entrance and during the construction season at this location. Establishment of the construction zone

would be done in a manner that would minimize the amount of area unavailable for parking and that would not temporarily or permanently displace any campsites or picnic sites.

The duration of construction at the Ruby 1 site is anticipated to be 50 days (approximately 10 weeks). Construction would not occur on weekends (beginning after 3 p.m. on Fridays), designated legal holidays, or the day preceding designated legal holidays. No night work is anticipated at this site, and the maximum traffic delays on SR 197 are anticipated to be limited to 15 minutes or less. The construction period at the Ruby 1 project site is anticipated to be summer through fall.

Access to the river at the undeveloped boat launch by boaters with trailers could be reduced or limited during the period required for the temporary construction easement because there would be less room to maneuver boat trailers in the parking lot. However, this access would not be blocked and would be maintained at all times, and access to the river by other recreationists at this location would not be affected. Additionally, construction activities at the entrance could intermittently delay access to the campsites and day-use area at times when equipment or material is moving in or out of the entrance. However, access to the campsites and day-use area of the park would be maintained at all times during construction activities.

Proposed Findings

The Department has determined that the potential effects of the temporary construction easement at the park entrance meet the criteria for a temporary occupancy that is not adverse, as defined in FHWA regulations (Code of Federal Regulations [CFR], title 23, section 774.13[d]). Specifically, the Department proposes the following measures be taken to ensure the criteria are met, and is requesting Del Norte County's written concurrence with the following assertions.

- **The duration of the occupancy must be temporary (i.e., less than the time needed for construction of the project), and there should be no change in ownership of the land.** The temporary construction easement proposed at Ruby Van Deventer County Park would be temporary for an anticipated period of 3 days of the 50-day construction period for this location. Once construction has been completed at this site, full use of the entrance and parking lot for visitors would resume. The construction easement would be temporary, compared with the overall construction period of the proposed improvements at this location, and construction activities would not require a change in ownership of the park lands.

- **The scope of work must be minor (i.e., both the nature and magnitude of the changes to the Section 4[f] property are minimal).** Construction activities in the area would allow for modification of the park's parking lot entrance to transition into the elevation of the improved roadway. A temporary construction zone would be established around the area in the parking lot with limited access for equipment and workers to pave the area. No other physical changes to the parking lot or other park property are anticipated. Removal of trees or vegetation would not be required within park property.

- **There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features or attributes of the property, on either a temporary or permanent basis.** No permanent adverse physical impacts on the park property are anticipated as a result of the modifications to the park entrance. The Department will coordinate with the Del Norte County Parks Department to ensure that, to the extent feasible, construction would avoid impacts on as many park visitors as possible. This coordination also would ensure that access to the park, river access, and visitor use of the campsites and day-use areas continue uninterrupted during the construction period at the Ruby 1 site. Potential intermittent delays on SR 197 near the park are not expected to interfere with the protected activities, features, or attributes of the park. Once construction is complete, use of the entrance and parking lot would resume.

  Access to the river at the undeveloped boat launch by boaters with trailers could be less convenient during the estimated three days it would take to modify the entrance because there would be less room to maneuver boat trailers in the parking lot. However, this access would not be blocked and would be maintained at all times, and access to the river by other recreationists at this location would not be affected. Launching boats from the informal, undeveloped boat launch is difficult because of the large gravel sandbar; therefore, use of the undeveloped boat launch is infrequent or occasional. Because of the short-term nature of this temporary impact, the difficulty of launching boats from this location, and the availability of other boat launch facilities nearby, the temporarily reduced or limited area that boaters with trailers would have to maneuver in the parking area is not expected to interfere with the protected activities, features, or attributes of the park. Construction at the park entrance would not result in a permanent interference with the use of the river access for boaters with trailers.

- **The land being used must be fully restored (i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project).** Construction activities would take place at the entrance to the park, and there would not be any physical changes to other park property. Removal of trees or vegetation would not be required on park property for the construction activities. The entrance would be paved and fully restored to a condition as good as that which existed before the proposed project. The entrance would be restriped. However, should any inadvertent damage occur to the parking lot or other park property, the property would be restored, at a minimum, to the condition that existed before construction activities.

- **There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.** This letter of concurrence has been prepared for your signature of agreement regarding the temporary occupancy of Ruby Van Deventer County Park during construction.

The temporary construction-related impacts on Ruby Van Deventer County Park would not substantially or permanently impair recreation activities at the park or any physical features of the park. As described above, the temporary occupancy of the entrance to Ruby Van Deventer County Park would meet all of the criteria outlined in 23 CFR 774.13(d).

Request for Concurrence

Please indicate your concurrence with the findings described above regarding the temporary occupancy of Ruby Van Deventer County Park by signing below and returning this letter to: Gary Berrigan, Senior Environmental Planner, California Department of Transportation District 1, P.O. Box 3700, Eureka, CA 95502-3700.

Jay Sarina Date: 4/26/12

~~Ed Fulton, Building/Parks Maintenance Superintendent~~
Del Norte County Parks Department
County Administrative Officer

If you have any questions or would like to discuss this further, please call me at 707.441.5730.

Sincerely,

for

Gary Berrigan, Senior Environmental Planner
North Region Environmental Services Branch E-1

Enclosures: Figures 1 to 3

cc: Kim Hayler, Environmental Coordinator

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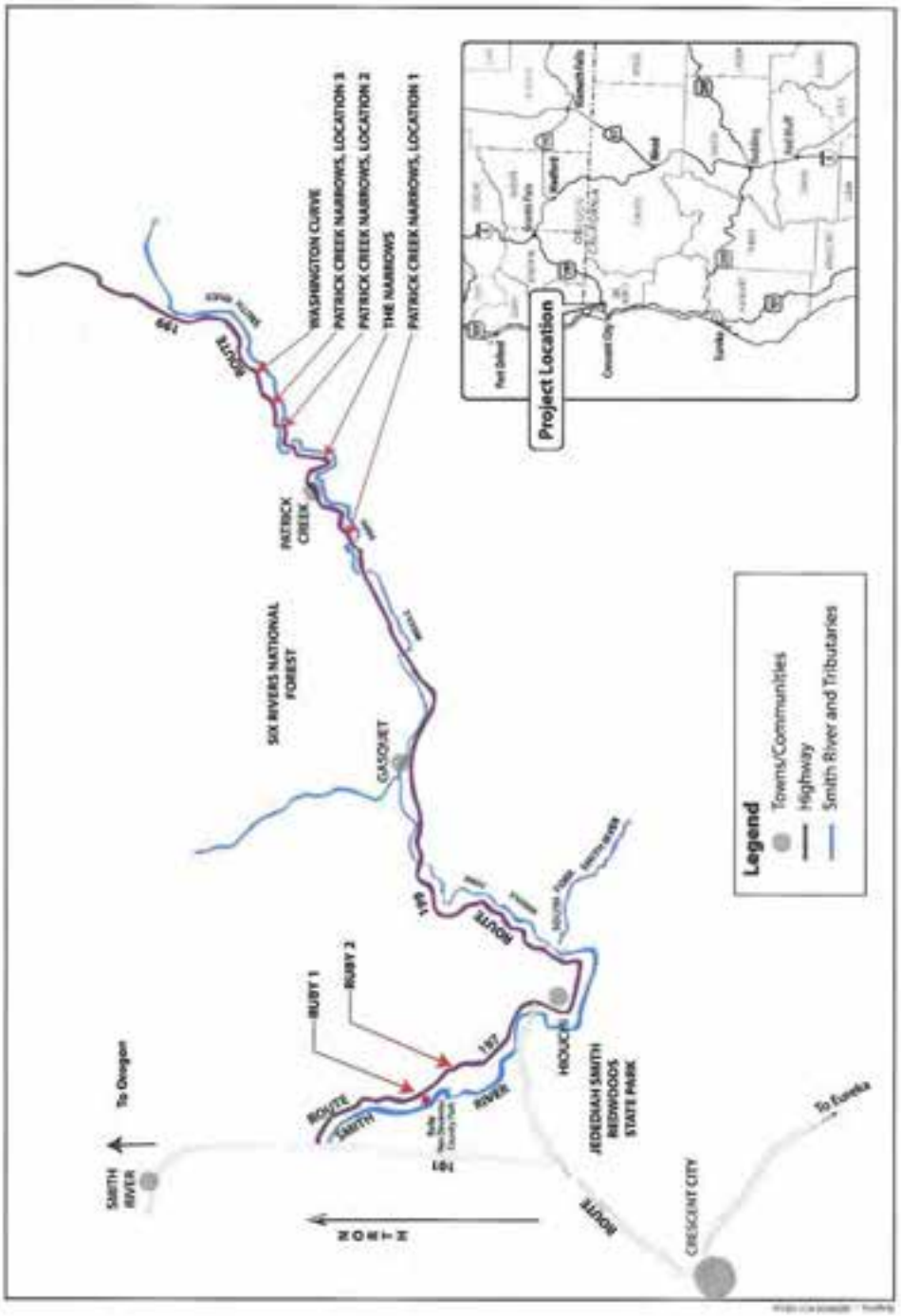

Figure 1
Project Vicinity and Location Map

Figure 2
Half-Mile Buffer around Proposed Ruby 1 and Ruby 2 Work Areas

Figure 3
Ruby 1 Project Location and Temporary Construction Easement

National Park Service Wild and Scenic River Act Concurrence

United States Department of the Interior
NATIONAL PARK SERVICE
Pacific West Region
1111 Jackson Street
Oakland, CA 94607

February 16, 2010

Kim Hayler
California Department of Transportation
North Region Environmental, Unit E1
P.O. Box 3700
Eureka, CA 95502

Subject: State Route 197 improvements for STAA trucks

Dear Ms Hayler:

This letter is in response to your request of impacts to Wild & Scenic Rivers that may be caused by the improvements for STAA trucks along State Route 197 know as Ruby 1 and Ruby 2.

Section 7 of the Wild and Scenic Rivers Act prohibits federal agencies from "assist[ing] by loan grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established."

Based on the information provided I feel that the proposed project will not have a direct and adverse effect on the values for which the river was designated. However if the project scope should change, further consultation with the National Park Service would be required.

If you have any further questions, please contact me at (510) 817-1451.

Sincerely,

Stephen Bowes

Stephen Bowes
CA Wild and Scenic Rivers Coordinator
National Park Service
1111 Jackson Street, suite 700
Oakland, CA 94607

Chapter 5 List of Preparers

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Roger Trott, Consulting Economist.

5.5 Jeanne McFarland

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Chapter 7 References Cited

Summary

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