

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

This chapter discusses the impacts that the project would have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project; potential impacts from each of the alternatives; and proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow.

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 is located in a mountainous area with rugged terrain. There are no farmlands located within the project area.
- Utilities – There are no utilities located within the project area.
- Paleontology – There are no known paleontological resources in the area.

2.1 Human Environment

Social and economic impacts of the project were studied within the context of a three-county area. The study area includes communities and facilities in Humboldt, Trinity, and Shasta Counties. The largest community in Humboldt County is Eureka. This city also has access to the Port of Eureka, and is the center of economic activity for this area. In Trinity County, Weaverville is the largest population and economic center. In Shasta County, Redding is the largest population and employment center. A Community Impacts Analysis was conducted for the project. The analysis was concerned primarily with indirect impacts of the project. Indirect impacts are reasonably foreseeable results of an action that occur later in time or at another location.

2.1.1 Land Use

2.1.1.1 Existing and Future Land Use

Affected Environment

All of the project alternatives being considered would impact publicly and privately owned land in eastern Trinity and western Shasta Counties. The area affected by the project has restricted use because much of it is mountainous and poorly suited to development. It is used primarily for the production of natural resources (timber) and as wildlife habitat.

Humboldt County Land Use

The project does not include any roadway modifications or other improvements within Humboldt County. However, the project proposes improvements that would facilitate product distribution in this region. Humboldt County is included in the project area for the purposes of this study because of the potential for indirect economic impacts.

Nearly half of Humboldt County's acreage is dedicated to timberland production through the Timber Production Zone designation. Timber Production Zone lands are established in order to discourage the premature conversion of timberland to other uses. Timber Production Zones are rolling ten-year contracts providing preferential tax assessments to qualified timberlands. Because timber harvests are of substantial economic importance to Humboldt County, the land use plan emphasizes the importance of continued timberland preservation. In addition to the nearly 1 million acres of land under the Timber Production Zone designation, there are 485,000 acres (21 percent of the County's acreage) under the jurisdiction of federal agencies.

Trinity County Land Use

Land use designations in Trinity County are based on the need to balance several different and potentially conflicting community goals. These goals are listed in the Trinity County *General Plan Land Use Element* (last revised in 1988), and include the following:

- Retain the rural character of Trinity County.
- Encourage adequate housing and residential space to keep pace with a moderate population growth.
- Maintain and enhance a viable economic base for Trinity County.
- Strive to conserve those resources of the County that are important to its character and economic well-being.

Trinity County's physical characteristics do not lend themselves to the community goals oriented toward further development because developable land is not plentiful in this area. Together, the U.S. Forest Service and the Bureau of Land Management own approximately 72 percent of the land in Trinity County. Much of the privately owned land in Trinity County is dedicated to timber production and is not available for other uses. Additionally, the terrain in Trinity County is mountainous and soils are erosive in many places. As a result, land use designations in the County represent a composite of constraints on and opportunities for development. Most of the development in Trinity County is concentrated in Weaverville, Lewiston and Douglas City. Weaverville is the most urban community in Trinity County.

Shasta County Land Use

The proposed project extends 7.6 miles east of the Shasta-Trinity County line, into Shasta County. The project area is located approximately 15 miles west of Redding, the largest city in the County. Three major transportation routes pass through Shasta County and Redding: Interstate 5, State Route 299, and State Route 44. Interstate 5 runs north to south from San Diego to Seattle. State Route 299 connects the coastal communities in Humboldt County and the mountainous areas of Trinity County with Interstate 5, and runs northeast into Nevada. State Route 44 runs east from Redding, throughout southern Shasta County, into Lassen County, and provides a connection with U.S. Highway 395.

Development in Shasta County is concentrated in Redding and Anderson in the south central portion of the County where these transportation routes intersect. The Sacramento River and its river valley dominate the topography of this area. To the north along Interstate 5 is the incorporated city of Shasta Lake.

The Shasta County General Plan describes development within several miles of the Interstate 5 corridor as characterized by rural communities. Additionally, the plan states that development in upland locations takes the form of agriculture, grazing, and timber operations, with small rural community centers and individual homesites dispersed throughout the area.

Land use in Shasta County is organized around the development capacity in or adjacent to existing communities. Approximately 40 percent of the land in Shasta County is publicly owned. Only two percent of the land in the County is within an incorporated city. A large portion (55 percent) of the privately owned unincorporated land in Shasta County is within either an agricultural or timber preserve.

Environmental Consequences

The proposed project would require acquisition of new right-of-way in western Shasta County, including privately owned land and federally owned land managed by the Bureau of Land Management. It is unlikely that Caltrans would acquire entire parcels for the proposed alignments to pass through, given the size of the parcels in question. Some parcels in this area currently straddle State Route 299 and are accessed using unimproved roadways. In the case of federally owned lands, Caltrans typically obtains easements across these properties, rather than purchasing whole parcels from the federal government.

The project is consistent with local and regional land use and transportation planning and would not alter the pattern of land use in the study area. Additionally, use of public lands for this transportation project would have no adverse impact on land use patterns in this area.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation would be required.

2.1.1.2 Consistency with State, Regional and Local Plans

Affected Environment

The project is compatible with the Land Use Element of the Trinity County General Plan (1988) and with the Circulation Element of the Shasta County General Plan (Amended September 2004). Additionally, the Weaverville Community Plan (1990) and the Lewiston Community Plan (1986) are also compatible with the proposed project. The project is included in the Federal Statewide Transportation Improvement Program.

Environmental Consequences

The project is consistent with state, regional, and local plans.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation would be required.

2.1.1.3 Parks and Recreation

Affected Environment

Several parks are located in the vicinity of the project and comprise the Whiskeytown-Shasta-Trinity National Recreation area. This recreation area consists of 246,087 acres, and is divided into three units: Whiskeytown, Shasta, and Trinity. Each of these areas

encompasses large manmade lakes and their surrounding terrain. The U.S. Forest Service manages Shasta, Trinity and Lewiston Lakes. The National Park Service manages Whiskeytown Lake. These sites, with their large reservoirs and mountainous terrain, support a large variety of recreation opportunities. The Whiskeytown National Recreation Area is located on the eastern boundary of the project.

Environmental Consequences

There would be no impact to these facilities.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation would not be required.

2.1.2 Growth

Regulatory Setting

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act of 1969, requires 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 Council on Environmental Quality regulations, 40 Code Federal Regulations 1508.8, refers to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

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

Affected Environment

According to the 2000 U.S. Census, there were 126,500 people in Humboldt County; 13,000 people in Trinity County; and 163,200 people in Shasta County. Employment Development Department data estimates 2008 populations of 132,821 in Humboldt County, 13,966 in Trinity County, and 182,236 in Shasta County.

The California Department of Finance also provides population projections for California and its counties. Frequently, these are used as the basis for local planning efforts. Between 2000 and 2040, Shasta County is expected to continue its rapid rate of

expansion, reaching a projected size of almost 300,000 by 2040. Trinity County is expected to have a 2040 population of 26,030. Humboldt County is projected to reach a population of 150,121 by 2040.

Environmental Consequences

The proposed project is not likely to result in unplanned growth or to remove obstacles to growth within the project area. It is unlikely that it would result in a change in development patterns in Humboldt or Shasta Counties. No new residential or business development is expected to occur in Shasta County as a result of the proposed project. The project would not improve accessibility between any residential area in Shasta County and Redding, the County's employment center. Numerous factors continue to limit development in Trinity County and, while planning documents for the County currently encourage growth, this proposed project will not accelerate growth rates more rapidly than currently anticipated.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation would be required.

2.1.3 Timberlands

Regulatory Setting

Impacts to timberland are analyzed pursuant to the California Timberland Productivity Act of 1982 (Government Code Sections 51100 et seq.), which was enacted to preserve forest resources. Similar to the Williamson Act, this program gives landowners tax incentives to keep their land in timber production. Contracts involving Timber Production Zones are on 10-year cycles. Although state highways are exempt from provisions of the act, the California Secretary of Resources and the local governing body are notified in writing in the event that new or additional right-of-way from Timber Production Zone lands would be required for a transportation project.

Affected Environment

In 1996, over half of the acreage in Trinity County was committed to timber production, with the vast majority of this timberland (31 percent) being in the Shasta-Trinity National Forest. An additional 361,000 acres (18 percent of the Trinity County's area) was privately owned timberland. The majority of privately owned timberland (253,000 acres) is within designated Timber Production Zones.

One of Shasta County’s most valuable resources is its timberland. Of Shasta County’s total acreage, 1,231,000 acres (51 percent) are dedicated to commercial forest uses. In 2002, 613,495 acres of non-federally owned timberlands were designated in Timber Production Zones. These timber preserve lands represent nearly half of all Shasta County timberlands and approximately 87 percent of privately owned timberlands.

Environmental Consequences

Two parcels of land within the project area are classified as Timber Production Zones. The two parcels total approximately 581 acres, and of this area, between 29 and 34 acres would be acquired as new right-of-way for the project. Right-of-way acquisition for each alternative is shown in Table 2.1.

Table 2.1 Acquisition of Timber Production Zone Land

Parcel	Acquisition by Alternative (acres)				Parcel Size (acres)
	BH4	BH5	BH6	BH12	
1	6.0	2.0	3.0	7.3	469
2	27.0	27.0	27.0	27.0	112
Total	33.0	29.0	30.0	34.3	581

Avoidance, Minimization, and/or Mitigation Measures

The California Secretary of Resources and Shasta County will be notified in writing if right-of-way will be acquired from properties with contracts involving Timber Production Zones.

2.1.4 Community Impacts

2.1.4.1 Community Character and Cohesion

Regulatory Setting

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

Race/Ethnicity

The racial and ethnic composition of Humboldt, Trinity, and Shasta Counties is markedly different from that of California as a whole, as shown in Table 2.2. The proportions of white residents in these areas are higher than in California as a whole by more than 30 percent in every case. Hispanic, African American, and Asian residents comprise a much smaller part of the population of the project area than of California’s population. Native Americans, on the other hand, make up a large part of the population of Humboldt and Trinity Counties, relative to their proportions in the rest of California.

Table 2.2 Project Area Population by Race/Ethnicity

	Total Population	White	Hispanic	African	American Indian	Asian	Pacific Islander	Other	Two or More Races
Humboldt County	126,518	82%	6%	1%	5%	2%	0%	0%	4%
Eureka	26,128	79%	8%	2%	4%	3%	0%	0%	4%
Shasta County	163,256	86%	6%	1%	2%	2%	0%	0%	3%
Redding	80,865	86%	5%	1%	2%	3%	0%	0%	3%
Trinity County	13,022	87%	4%	0%	4%	0%	0%	0%	4%
California	33,871,648	47%	32%	6%	1%	11%	0%	0%	3%

Source: 2000 US Census Data

Housing

Humboldt, Trinity, and Shasta Counties all had higher proportions of single- family detached housing units in 2000, than did California as a whole (see Table 2.3). In these

three counties, single-family detached units made up between 65 and 68 percent of the total housing stock. In California as a whole, 56 percent of all housing was in single-family detached units.

In Humboldt and Trinity Counties, approximately 20 percent of the housing stock is concentrated in the largest communities (Eureka and Weaverville, respectively). Shasta County’s housing stock is concentrated in Redding. Nearly half of the 72,000 units in Shasta County were located in Redding in 2000.

Humboldt and Shasta Counties had more employment opportunities than housing units in 1998, indicating that these counties probably draw some labor in from nearby counties. Trinity County, located between these two counties, has a low job to housing ratio, indicating that it is probably a source of labor for the two counties nearby.

Table 2.3 Department of Finance Housing Statistics by Area, 2000

Area	Housing Units	Single Family Units		Multiple Family Units		Mobile Homes	Total Occupied	Vacancy Rate
		Detached	Attached	2 to 4 Units	5 or More			
Humboldt	56,963	38,561	1,352	5,591	4,858	6,601	51,646	9.33
Eureka	12,253	7,728	360	2,374	1,597	194	11,581	5.48
Shasta	71,874	47,065	1,289	5,562	5,629	12,329	66,530	7.44
Redding	34,193	21,743	787	4,519	4,564	2,580	32,771	4.16
Trinity	8,122	5,280	61	152	259	2,370	5,553	31.63
Lewiston*	654	-	-	-	-	-	542	17.1
Weaverville*	1,653	-	-	-	-	-	1,513	8.5
California	12,242,576	6,853,693	840,801	1,012,613	2,950,373	585,096	11,335,419	7.41

Source: State of California Department of Finance; *Lewiston and Weaverville data from 2000 US Census – this data does not include housing type.

Employment

Trends in the total labor force available within California and Humboldt, Trinity, and Shasta Counties, as well as the resulting unemployment rate, are shown in Table 2.4. Residents of Shasta County and Redding had the highest incomes in the project area, both in 1990 and 2000. In 1990, the median household income in Redding was nearly \$26,000, and it was slightly lower in Shasta County as a whole. Humboldt County as a whole had a higher median income than Trinity County in 1990: \$24,000 in Humboldt, compared to \$20,500 in Trinity. But residents of the Lewiston community had a higher median income (\$25,600) than residents of either Eureka (\$21,800) or Weaverville (\$21,100).

Between 1990 and 2000, median income increased 33 percent statewide to \$48,000. Countywide, income levels kept pace with this increase, as did levels in most of the communities near the project area. In Weaverville, median household income increased by 43 percent to \$30,000. In Lewiston and Eureka, income increased by 19 percent; Eureka’s median household income in 2000 was comparable to Redding’s median income in 1990. All income indicators for counties and communities in the project vicinity were well below those in California as a whole in 1990 and 2000.

Table 2.4 Employment and Unemployment Rates

	1999 Labor Force	1999 Unemployment	2008 Labor Force	2008 Unemployment	Change
Humboldt County	59,100	6.4%	60,800	7.3%	+0.9%
Shasta County	71,600	7.1%	86,200	9.9%	+2.8%
Trinity County	4,890	11.6%	5,400	11.1%	-0.5%
California Total	16,534,300	5.2%	18,555,800	7.6%	+2.4%

Environmental Consequences

The proposed project would improve access for all residents. Shasta County businesses and residents are likely to derive the least benefit from the proposed project, since the area already has access to Interstate 5. Communities in Humboldt and Trinity Counties located on or adjacent to State Route 299 are unlikely to be adversely impacted and are likely to benefit economically from improved access to Interstate 5.

The proposed project would not directly impact communities in Humboldt, Trinity, or Shasta Counties. One residence would be displaced as a result of the proposed project. The project would not create a physical barrier between communities.

The proposed project would not alter land use patterns or growth rates sufficiently to adversely affect the availability of community services, such as schools, parks, or fire protection in the project area.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation would be required.

2.1.4.2 Relocations

Regulatory Setting

Caltrans' Relocation Assistance Program 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, Part 24. The purpose of the Relocation Assistance Program 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 C for a summary of the Relocation Assistance Program.

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 U.S. Code 2000d, et seq.). Please see Appendix B for a copy of Caltrans' Title VI Policy Statement.

Affected Environment

The project is located in a mountainous area, which is unsuitable for development. The area is sparsely populated and there are no residential or commercial centers in the project area.

Environmental Consequences

One residential property will be purchased and the occupants will be relocated as a result of the project. It is anticipated that adequate housing will be available to allow for this relocation.

Approximately 154 acres of right-of-way would be acquired for the project and would include both private and public land. Of this acreage, approximately 54 acres would be acquired from the Bureau of Land Management and the remainder would be purchased from private landowners. In the case of publicly owned lands, Caltrans typically seeks easements across these properties, rather than purchasing whole parcels.

Avoidance, Minimization, and/or Mitigation Measures

Property owners will be compensated the fair market value of any land or improvements acquired by Caltrans. Relocation assistance will be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

2.1.4.3 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President Bill Clinton on February 11, 1994. This Executive Order 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 2007, this was \$20,650 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. Caltrans' 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 B of this document.

Affected Environment

The project is located in a mountainous area, which is unsuitable for development. There are no residential or commercial centers in the project area.

Environmental Consequences

Since there are no population or commercial centers in the project area, there is no possibility for direct, adverse impacts to low-income or minority populations as a result of the proposed project.

The unreliability of the current roadway as a means of travel through the project area adversely impacts all income levels and ethnic groups similarly. The proposed project would improve access for all residents.

Avoidance, Minimization, and/or Mitigation Measures

No minority or low-income populations have been identified that would be adversely affected by the proposed project; therefore, the project is not subject to the provisions of Executive Order 12898.

2.1.5 Emergency Services

Affected Environment

Emergency services are located near the project area in the communities of Whiskeytown, French Gulch, Lewiston, Douglas City, and Weaverville. Emergency response companies located in Redding provide ambulance service to the project area. Emergency helicopter response is available from Redding to locations throughout the general area, including the project area, and to points in Trinity County.

Ambulance service based in Weaverville provides emergency response to 80 percent of the residents in Trinity County. This service frequently carries patients to hospitals in Redding, Eureka, and Arcata, as well as to Trinity Hospital in Weaverville. However, because Trinity Hospital does not have a trauma center, most patients from eastern and central Trinity County are taken to hospitals in Shasta County.

Environmental Consequences

The project improvements would result in improved response times and access for fire protection, law enforcement, and other emergency response services along State Route 299. Emergency services would not be adversely impacted by construction of the project. During construction, Caltrans will coordinate with appropriate emergency response agencies to ensure adequate response times.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation would be required.

2.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

Affected Environment

Surface Transportation Assistance Act

The Federal Surface Transportation Assistance Act of 1982 prohibited state governments from setting limits on the overall length of single- and twin-trailer combination vehicles on Interstates and other designated primary highways. Since the passage of this Act, a “Surface Transportation Assistance Act Truck” is considered to be any tractor-semi trailer combination or set of doubles with a length configuration such that the truck may legally operate only on National Network Highways and Terminal Access Highways. On routes that have not been designated for Surface Transportation Assistance Act trucks, the maximum truck length 65 feet.

In order to comply with the overall length limitation of 65 feet, California Legal tractor-semi trailer combinations use semi trailers 48 feet long or less, rather than the Surface Transportation Assistance Act maximum of 53 feet. As a result, California Legal truck combinations have less volume available for shipping. In the interest of maximizing shipping capacity, most trucking companies and businesses with their own fleets of trucks use the largest possible semi trailers.

State Route 299 and U.S. Highway 101 are the only major roadways providing connections between Humboldt County and the remainder of the State Highway System and both are limited to California Legal truck combinations for portions of these routes. The proposed Buckhorn Grade Improvement Project would not, by itself, allow Surface Transportation Assistance Act trucks to use State Route 299 between Redding and Eureka. There are six remaining locations requiring widening, which will allow Surface Transportation Assistance Act truck access on State Route 299. Two projects are currently programmed for construction that will improve two of these locations. A third location is currently being studied for programming purposes. It is anticipated that the remaining three locations will be improved to allow Surface Transportation Assistance Act truck access prior to construction of the Buckhorn Grade Improvement Project.

Caltrans has recently proposed a project on U.S. Highway 101 near Richardson Grove State Park that would allow Surface Transportation Assistance Act truck access from the south to Humboldt County. In addition, improvements are being proposed on State Route 197 and U.S. Highway 199 in Del Norte County to allow Surface Transportation Assistance Act truck access from the northeast to Humboldt County.

Safety

The accident rate on this portion of State Route 299 was 4.19 accidents per million vehicle miles in the five-year period from October 2001 to September 2006. This was two and a half times higher than the statewide accident rate of 1.66 accidents/million vehicle miles for similar roadways. The accident rate on the twelve-mile portion of State Route 299 west of the Shasta/Trinity County line was the same as the statewide rate for similar roadways.

Bicycle/Pedestrian Facilities

There are no facilities or developments within or near the project area that would lead to regular use of this segment of roadway by pedestrians or bicyclists.

Construction

Construction of the project would require temporary lane closures and one-way traffic controls. Construction would overlap with the peak of the recreational travel season, which extends from the end of May and to the beginning of September. For some industries – specifically the timber industry – the summer months represent a period of increased activity and the number of trucks traveling through the project area increases dramatically.

Environmental Consequences

Surface Transportation Assistance Act

The proposed project is expected to attract larger commercial trucks on State Route 299. However, the overall number of vehicles utilizing this roadway for commercial purposes would continue to be limited by regional and national economic conditions. The removal of Surface Transportation Assistance Act restrictions within the project area will not directly cause economic growth or population increases greater than what is currently anticipated by the relevant local agencies. Economic activity and subsequent growth face challenges such as distance to markets, with or without the proposed project. There are numerous existing environmental, geographical, and political limitations to growth in Trinity and Humboldt Counties.

While the absence of Surface Transportation Assistance Act truck access on Buckhorn Grade is not the only factor limiting economic development in the area, removing the restrictions would likely have a positive effect on businesses. However, the removal of these restrictions is not expected to result in an increase in truck traffic but rather an increase in efficiency. The reduction in the number of trips due to increased efficiency would likely offset any increase in the amount of truck traffic. Proposed improvements on U.S. Highway 101 in Humboldt County and State Route 197 and U.S. Highway 199 in Del Norte County would also provide access for Surface Transportation Assistance Act trucks.

The proposed project would reduce transportation costs and improve safety for both commercial and local traffic. However, the proposed project is not expected to result in substantial increases in overall economic productivity in the region nor substantial changes to truck traffic volumes on State Route 299.

Safety

The proposed improvements should reduce the number of accidents in the project area, as well as road closures due to accidents, weather, and maintenance activities. Access will also be improved for emergency services.

Bicycle/Pedestrian Facilities

Impacts to pedestrian and bicyclists will not be substantial due to the remote location of the project. All proposed alternatives will address bicycle usage and construction of standard shoulders will be an improvement over the minimal or non-existent shoulders of the current roadway.

Construction

Traffic backups during construction of the project would delay motorists including tourists, commuters, and daily commercial truck traffic. Lengthy delays could affect commercial drivers who frequently travel through the project area. However, the long-term benefits in timesavings and increased reliability of this portion of State Route 299 will result in a beneficial impact.

Avoidance, Minimization, and/or Mitigation Measures

A Traffic Management Plan will be prepared for the project. The plan will identify methods to reduce impacts from construction activities, minimize delays for motorists, and provide a safe work zone.

2.1.7 Visual/Aesthetics

Regulatory Setting

The National Environmental Policy Act of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 U.S. Code 4331(b)(2)]. To further emphasize this point, the Federal Highway Administration in its implementation of the National Environmental Policy Act [23 U.S. Code 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, the California Environmental Quality Act 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” [CA Public Resources Code Section 21001(b)].

Affected Environment

The project is located within the Shasta Cascade region of California, known for being low in population but rated high for recreation opportunities. Shasta Cascade is a large geographic region dominated by several mountains of significance including Mount Shasta, Mount Lassen, and the Trinity Alps. Large bodies of water within the region include Lake Shasta, Trinity Lake, Whiskeytown Lake and the Sacramento and Trinity Rivers.

Development within the region is concentrated within the larger communities of Redding and Eureka. Small rural communities are also located along the route. In some areas, the highway is the only development, while tourist oriented businesses and rural home sites are a part of the scattered regional development.

State Route 299 from Eureka to Redding, is also named the Trinity Scenic Byway and is the main west/east corridor for northern California travelers. Visual features include Buckhorn Mountain, Oregon Mountain, Berry Summit, Lord Ellis Summit, Whiskeytown Lake, and the Trinity River.

Due to the topography throughout much of the corridor, cut slopes associated with the highway facility and other development can often be seen from the roadway. Several bridges, rock retaining walls and rock guardrails can be seen either from the highway or from vantage points adjacent to the highway. Erosion is evident within the project corridor and requires maintenance activities that include the use of material storage and disposal sites, which are located along the roadway.

The lower portion of the project is located within foothill woodland vegetation, which includes manzanita, ceanothus, Douglas fir, poison oak, and blue oak. The upper portion of the project contains mixed evergreen forest vegetation including Douglas fir, black oak, Pacific madrone, ponderosa pine, poison oak, red bud and dogwood. The visual character of the vicinity includes steep, rugged slopes with segments of well-vegetated draws and drainage corridors. The majority of the highway alignment is cut into the existing hillsides or placed on fill slopes.

The alignment of the existing road limits views by the traveler due to the narrow roadway, which requires constant attention by the driver through cut sections and mature vegetation which blocks views. Within the limits of the project, there are several

residential structures and no commercial buildings. Whiskeytown National Recreation Area is adjacent to the eastern boundary of the project.

State Route 299 is eligible for designation as a California Scenic Highway from SR 3 near Weaverville to Interstate 5 in Redding. In 1990, the U.S. Forest Service adopted a National Scenic Byway system to showcase outstanding National Forest scenery. While the program applies only to National Forest lands, in 1992 the California State Legislature passed Assembly Bill 126, renaming State Route 299 the “Trinity Scenic Byway”. The route extends from the westerly limits of Redding to Eureka, a distance of approximately 140 miles.

Three landscape units have been identified within the project area. A landscape unit is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character.



Upper Unit, TRI-299, PM 70.2 to 72.2; SHA-299, PM 0.0 to 3.0 (see Photo 1) – This unit is the more forested, steep portion of the project with intermittent views of distant canyon slopes. The road alignment is tightly affixed to the terrain, passing through cut slopes and over fill with vegetation in various stages of growth.



Middle Unit, SHA-299, PM 3.0 to 5.0, see Photo 2) – In this unit, canyon slopes open up slightly but still limit views. The road is tightly affixed to the terrain, leaving Willow Creek below the driver's view, while transitioning to the Upper Unit. Within this unit, the driver becomes focused on the next curve in the road and loses the ability to look at the surroundings.



Lower Unit, SHA-299, PM 5.0 to 8.2 (see Photo 3) – Canyon slopes limit views in this unit. The road is tightly affixed to the canyon terrain adjacent to Willow Creek.

Visual Character and Visual Quality

Existing visual conditions and potential impacts of the proposed project are described in terms of the visual character and quality of each landscape unit. Visual character is based on four pattern elements (form, line, color and texture) and four pattern characteristics (dominance, scale, diversity and continuity). Visual quality is evaluated for the following attributes:

- **Vividness** – the visual power or memorability of landscape components as they combine in distinctive visual patterns. Four components are considered: manmade development, vegetation, water, and landform.
- **Intactness** – the visual integrity of the natural and man-built landscape and its freedom from encroaching elements. It can be present in well-maintained urban and rural landscapes, as well as in natural settings.
- **Unity** – the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual manmade components in the landscape.

The landscape units discussed above have been further divided into three general viewsheds, which motorists experience in sequence when traveling State Route 299.

Upper Unit, Typical Viewshed Views



The visual quality of this viewshed has been evaluated as moderate. The landform creates the vividness of this viewshed with steep canyon slopes in the foreground and across the canyon in the background. Intactness of the area is low moderate due to cut slopes that are in various stages of revegetation or erosion (see Photo 4).



Some of these slopes create ongoing maintenance problems during winter storms (see Photo 5). The existing highway facility is visible in quick glimpses at various points traversing the roadway. Unity of the vegetated hillside slopes throughout the viewshed is consistent. The area has been subject to both helicopter and dragline logging in several areas, which is evident by scars on the hillsides and areas cleared of vegetation for log landing areas.



Impacts of highway construction are more evident in the viewshed, lowering the intactness (see Photo 6). There are few opportunities for the driver to view the viewshed due to the current alignment, which leaves a lasting impression on the driver. An experimental reforestation area can be seen across the canyon, disrupting the forest harmony.

Middle Unit, Typical Viewshed Views



Photo 7

The visual quality of this viewshed has been evaluated as moderate to moderate low. Moderate low vividness is present within this viewshed. The landscape is neither extremely powerful nor extremely memorable. Manmade elements contribute to the lack of vividness and memorability. The Greenhorn Mine across the canyon interferes with the integrity of the background (see Photo 7). A disposal site used for highway maintenance activities is located below the traveled way and encroaches into the foreground.



Photo 8

The existing highway is present in random views as the driver moves through the various units of the project (see Photo 8). Unity of the viewshed is moderate low. Manmade activities interfere with the harmony of the viewshed.



Photo 9

This viewshed provides the major transition between the upper and lower units of the project (see Photo 9). Landform is changing from the steeper canyon slopes to the lower reaches of the canyon, with its riparian corridor adjacent to the creeks located below the highway. Intactness is moderate low due to sharp bends in the alignment with views of the roadway and cut slopes. A large turnout used for temporary storage of materials is located in this area. Unity of views within this unit is wide reaching as a portion of the lower unit was recently burned in wildland fire, while the rest of the area is lower elevation blue pine/oak woodland. Harmony of the viewshed is mixed, with the components changing constantly throughout the unit.

Lower Unit, Typical Viewshed Views



Photo 10



Photo 11

Visual quality of this viewshed has been evaluated as moderate low. Vividness within the viewshed is moderate low, due to the condition of the vegetation above the existing highway (see Photo 10). A portion of the lower project area was recently burned in a wildland fire and has not recovered from the vegetation damage that occurred (see Photo 11). Large electrical transmission lines and towers are located above the highway and are visible to drivers. Willow Creek is located below the highway and supports a riparian corridor (see Photo 12). Intactness is lower due to fire trails on the hillside that were built for fire suppression activities, a large paved pullout for snow chain installation and a wide paved shoulder for truck brake inspection. Unity of the site is low to moderate due to lack of harmony within the viewshed (see Photo 13).



Photo 12



Photo 13

Environmental Consequences

The visual impacts of a project are determined by assessing the visual resource change caused by the project and predicting viewer response to that change. Visual resource

change is the sum of the change in visual character and change in visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the visual character of the existing landscape. The second step is to compare the visual quality of the existing resources with projected visual quality after the project is constructed.

The viewer response to project changes is the sum of viewer exposure and viewer sensitivity to the project as determined in the preceding section. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to oppose the change.

Visual impact levels are defined as follows:

Low - Minor adverse change to the existing visual resource, with low viewer response to change in the visual environment. May or may not require mitigation.

Moderate - Moderate adverse change to the visual resource with moderate viewer response. Impact can be mitigated within five years using conventional practices.

Moderate High - Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required will generally take longer than five years to mitigate.

High - A high level of adverse change to the resource or a high level of viewer response to visual change such that architectural design and landscape treatment cannot mitigate the impacts. Viewer response level is high. An alternative project design may be required to avoid highly adverse impacts.

Because it is not feasible to analyze all the views in which the proposed project would be seen, it is necessary to select a number of observer viewpoints that would most clearly display the visual effects of the project. Observer viewpoints also represent the primary viewer groups that would potentially be affected by the project. Observer viewpoint locations are shown in Table 2.5.

Table 2.5 Observer Viewpoints within Landscape Units

Landscape Unit	Location
Upper	From the air looking at PM 0.3 to PM 1.2 and from across the canyon looking at PM 1.12
Middle	From across the canyon at Greenhorn Mine looking at PM 4.25 and from the air looking west near Trail & Water Gulches, PM 4.95
Lower	From Trail Gulch looking east to the chain control area at PM 4.95 and looking west at Toll House Road at PM 7.10

The existing visual quality of State Route 299 in the project area is moderate, due primarily to the natural vegetation, topography, highway facility and other built elements. The major visual detractors within the project vicinity are ongoing erosion, unvegetated highway and abandoned mining slopes, continuing maintenance activities required to keep the road open for travelers, metal guardrail and highway signage.

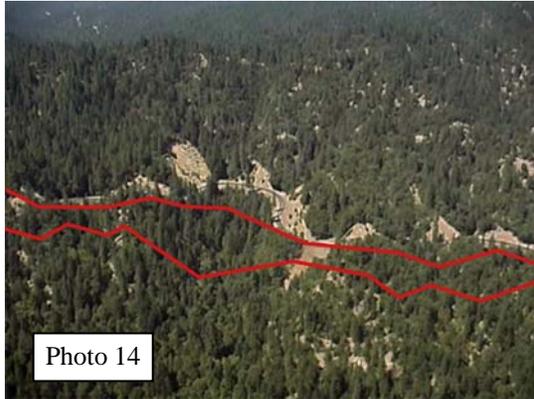
Within all viewsheds of the project, the new alignment will incorporate the following roadway features: new asphalt pavement for the highway, pullouts, paved ditches, retaining walls, guardrails and drainage systems. In addition, a chain control/installation area will be constructed adjacent to the highway in the lower unit.

With installation of these features, the individual elements may contribute to new glare and/or reflection within the project area. Placement of retaining walls may look out of character due to their unnatural appearance if constructed with materials such as smooth concrete, rock gabion or steel.

Vegetation removal and grading for the project will be required for developing roadway cuts, creating fill sections, chain control areas, snow storage and construction of access roads. Portions of the existing highway will be obliterated and replanted with native vegetation. Existing rock guardrails will be left in place along the abandoned roadbed.

The visual impacts of the project at the observer viewpoints described in Table 2.5 are evaluated in the following discussion. For each alternative, the impacts are expected to be similar.

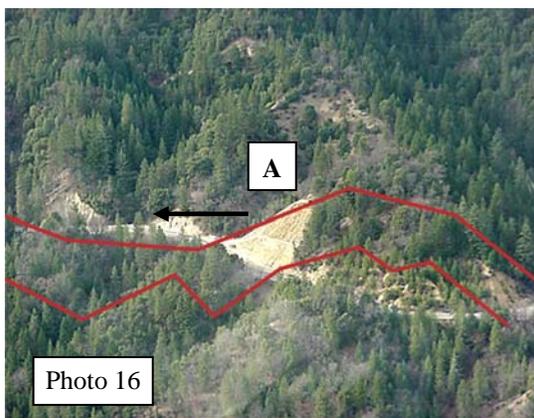
Upper Unit, Viewpoint – An aerial view of the existing highway. The red line represents the project footprint (see Photos 14 and 16).



Visual quality of this viewshed has been evaluated as moderate. Overall, the proposed new alignment will reduce visual quality of this viewshed. Construction of the highway will increase the vividness of the roadway, while reducing the intactness of the landscape. Vegetation within the foreground and midground will be either removed for construction or absent within the abandoned alignment corridor. Unity with other slopes within the viewshed will be changed greatly, due to new cut slopes having potentially larger disturbed areas than existing slopes. Old cut slopes may receive treatment to reduce their visual impact from the new highway. New cut slopes are typically lighter in color and bare of vegetation, which tends to draw the attention of the viewer.



The view in Photo 15, taken from the westbound shoulder is located within the project area as shown in Photo 16. Within this viewshed, the impacts will be very similar to those in the Upper Unit with the primary difference being the location of the new highway above and below the existing facility. Therefore, the impact with new construction will be a slightly less net visual change due to the ability to reuse the existing cut slope, rather than creating a new cut slope. New slopes will be more visible than existing and older slopes will be restored to the extent possible during and after construction.

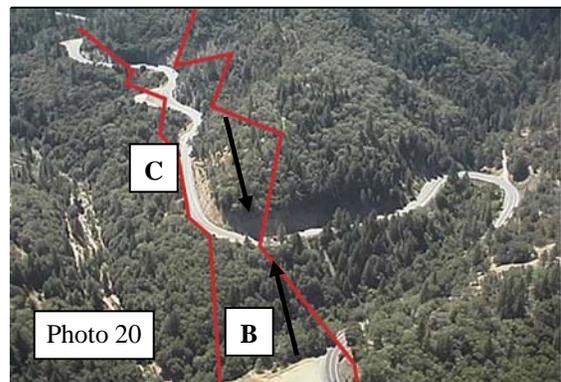


Middle Unit, Viewpoint - Transition between Upper and Lower Landscape Units from across Willow Creek canyon. The red line represents the project footprint.

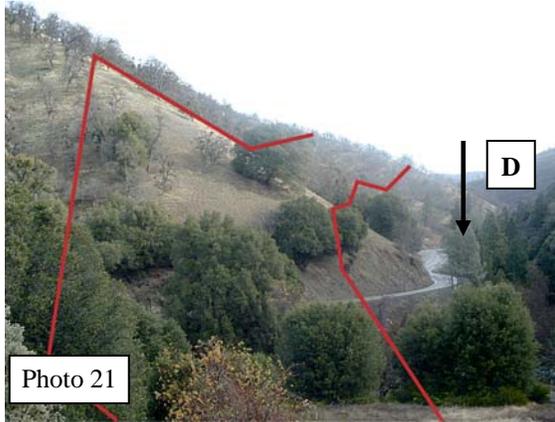


Visual quality of this viewshed has been evaluated as moderate low. Modifications within this viewshed may create more positive opportunities for the driver to observe scenery from the roadway, as there is less need to concentrate on the curve ahead. Views within the background include the eroded Greenhorn Mine slopes across Willow Creek canyon, hillside slopes of the lower canyon below and more lush vegetation up canyon near Buckhorn Summit. Visual quality is reduced because of overall impacts to adjacent cut slopes.

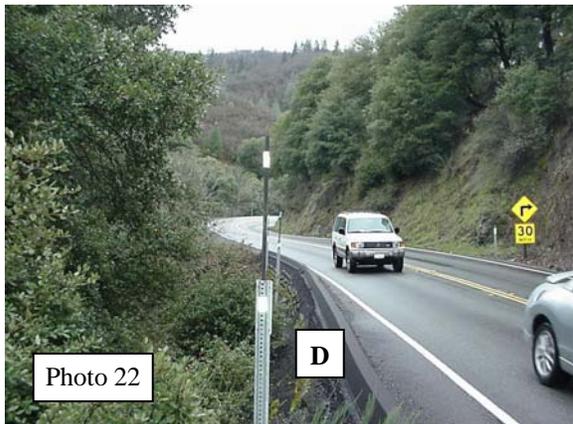
Foreground views up slope will reduce the vividness of the viewshed; while the intactness of the whole area will be disrupted with large fill slopes across the canyon (see Photo 17). The views in Photos 18 and 19 are located within the project area, as shown in Photo 20. Long distance views within the corridor will include abandoned mine site, recently burnt slopes, riparian corridors of Trail Gulch, Water Gulch and Willow Creek, and the abandoned highway. Unity of the viewshed is moderate low because of the composition of elements (both existing and proposed) within the area.



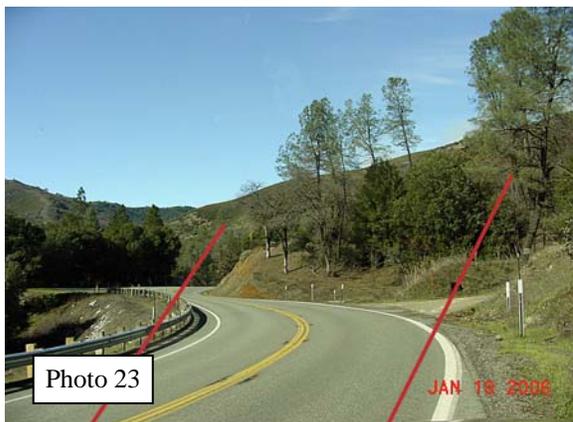
Lower Unit, Viewpoint - Northeast hillside within the lower unit at PM 4.95. The red line represents the project footprint.



The corridor in this area has been rated moderate low due to marginal quality of vividness of the new alignment and the low intactness due to old highway, chain installation area, historic roadbed and fire-damaged hillside. New cut slopes within this section will be large, steep, and unvegetated, therefore interfering with the unity of the area (see Photo 21). The riparian corridor may be visible from the new alignment.



The view in Photo 22 is located within the project area, as shown in Photo 21. In this area, opportunities to view the corridor are limited. There is a steep drop to the canyon floor with no shoulder area on either side of the highway.



Within this segment of the project, the new facility will match the existing alignment (see Photo 23). The roadway in this portion of the project will climb away from the riparian corridor of Willow Creek, but will retain views from a distance when driving westerly. Electric transmission towers and lines will stand out on the proposed alignment in contrast to the more remote views they hold in the existing alignment. Additionally, the area is recovering from a recent wildland fire.

Construction of the project will result in a substantial alteration to the visual environment. Methods of construction in this area are, to a large extent, dictated by terrain and geologic conditions. The prevalence of decomposed granitic soils is just one of the elements that limit feasible construction options. Construction will result in large, bare cut and fill slopes, which will conflict with the intent of the Trinity Scenic Byway designation. Although visual impacts will be reduced through the implementation of minimization and mitigation measures, the project will nevertheless result in a significant impact to visual resources. Measures to minimize and mitigate adverse impacts are discussed in the following section.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation for adverse visual impacts will consist of the following:

- Re-contour disturbed areas and construction access roads to a natural appearance.
- Minimize vegetation removal within the project corridor.
- Prepare abandoned highway for revegetation by removing asphalt and base materials where feasible, ripping the original ground and incorporating soil and/or amendments to facilitate plant growth.
- Use an open style rail on any guardrail placed within the project limits when feasible.
- Vegetate stabilized soil areas with native plants, either by hydroseeding or planting containerized plants.
- Use color (stain and/or paint) and textures that minimize reflectivity, glare and unnatural appearances on walls that are constructed for the project.

2.1.8 Cultural Resources

Regulatory Setting

“Cultural resources” as used in this document refers to historic and archaeological resources, regardless of significance. Laws and regulations dealing with historic and archaeological resources include the following:

The National Historic Preservation Act of 1966, as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included on or eligible for the National Register of Historic Places.

Section 106 of the National Historic Preservation Act 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 800). On January 1, 2004, a Section 106 Programmatic Agreement among the Advisory Council, the Federal Highway Administration, the State Historic Preservation Officer, and Caltrans went into effect for Caltrans projects, both state and local, with Federal Highway Administration involvement. The Programmatic Agreement implements the Advisory Council's regulations, 36 Code of Federal Regulations 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The Federal Highway Administration's responsibilities under the agreement have been assigned to Caltrans as part of the Surface Transportation Delivery Pilot Program (23 Code of Federal Regulations 773) (July 1, 2007).

The Archaeological Resources Protection Act applies when a project may involve archaeological resources located on federal or tribal land. This act requires that a permit be obtained before excavation of an archaeological resource on such land can take place.

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. Historical resources are considered under the California Environmental Quality Act, as well as California Public Resources Code Section 5024.1, which established the California Register of Historical Resources. Section 5024 of the Public Resources Code requires state agencies to identify and protect state-owned resources that meet listing criteria for the National Register of Historic Places. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion on the National Register or are registered or eligible for registration as California Historical Landmarks.

Affected Environment

An "area of potential effects" was established for the proposed project, which encompasses the maximum limits of potential ground disturbing construction activities as currently proposed, including, but not limited to, all existing and proposed new rights-of-way, temporary construction easements, utility relocations, and any mandatory borrow, disposal, and/or equipment staging areas. The area of potential effects also includes

parcels with standing buildings, structures, or objects that have the potential to be either directly or indirectly (e.g., visual, audible, vibratory) affected by the proposed project. After surveys and identification efforts were completed, the area of potential effects was revised to include entire archaeological sites when/if the boundaries of such sites were found to extend beyond the initial area of potential effects. In such cases, the term “area of direct impact” is used to refer to the portion of the site that lies within the direct project impact limits.

Efforts to identify cultural resources within the project’s area of potential effects included: conducting a records and literature search at the Northeast Information Center of the California Historic Resources Information System at the California State University at Chico; consultation with the Native American Heritage Commission, as well as local Native American tribes and individuals; consultation with local historic preservation interest groups and individuals, historical societies, and museums; conducting pedestrian field surveys of the project study limits; and performing excavations to evaluate sites and to assess potential project effects.

Five archaeological sites have been identified within the area of potential effects that are either eligible for, or assumed eligible for, listing in the National Register of Historic Places. The State Historic Preservation Officer concurred with Caltrans’ findings in letters dated August 28, 2008 and February 3, 2009..

One of the sites (CA-SHA-4169/H) has elements within the area of direct impact that contribute to the eligibility of the site and would be affected by the proposed project. CA-SHA-4169/H is a multiple component archaeological site determined eligible for listing in the National Register of Historic Places for their ability to address important questions about history and prehistory.

Four additional sites (CA-SHA-881, CA-SHA-4170H, CA-SHA-4171H, and CA-SHA-4172H) are assumed eligible for the purposes of this project and will be protected as Environmentally Sensitive Areas. Two of the sites assumed eligible (CA-SHA-4171H) extend into the area of direct impact for the proposed project; however, additional testing and evaluation of the portion of the site within the area of direct impact resulted in the conclusion that they do not contain important information and do not contribute to the eligibility of the site. The remainder of CA-SHA-4171H and CA-SHA-4172H will be protected as Environmentally Sensitive Areas.

Environmental Consequences

Caltrans has determined that all four build alternatives of the proposed project would adversely affect one historic property:

- CA-SHA-4169/H - lies entirely within the area of direct impact for the proposed project and would be destroyed by construction.

Caltrans prepared a Finding of Effects to assess the effects of the proposed on the eligible property, which was submitted concurrently with the determinations of eligibility. The State Historic Preservation Officer concurred with the finding of adverse effect in a letter dated August 28, 2008.

CA-SHA-4169/H is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place; therefore, Section 4(f) of the National Transportation Act does not apply to this resource.

Avoidance, Minimization, and/or Mitigation Measures

The State Historic Preservation Officer and Caltrans have negotiated a Memorandum of Agreement, which includes stipulations to take into account the proposed project's effects on historic properties. The Memorandum of Agreement ensures that the adverse effects of the undertaking are resolved by implementing Data Recovery and Environmentally Sensitive Area Action Plans.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area would be halted until a qualified archaeologist can assess the nature and significance of the find.

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 Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner would notify the Native American Heritage Commission, which would then notify the Most Likely Descendent. At this time, the person who discovered the remains would contact the District 3 Environmental Branch, so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

Regulatory Setting

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

To comply, the following must be analyzed:

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

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

Affected Environment

The project is located in an area in which the Federal Emergency Management Agency has not conducted detailed floodplain studies. The predominant hydrologic feature within the project area is Willow Creek, which is a perennial stream. Willow Creek and its tributaries are within the Sacramento River drainage. Willow Creek forms the southern boundary line for the majority of the project area.

The majority of the drainage systems within the project limits are located in steep terrain and include cross culverts and down drains that discharge well above Willow Creek. These systems will either be extended through the new roadway embankment or replaced with a new system consisting of the same or similar elements. Rock slope protection dissipaters and channel lining will be used where needed.

Four creek crossings will be affected by the project: Water Gulch, Trail Gulch, Sawpit Gulch, and Yankee Gulch. At Sawpit Gulch and Yankee Gulch, the existing concrete box

culverts will be extended to the north, away from Willow Creek. No work is planned at the outlet of these culverts, as there is no evidence of erosion. The planned outlets are located in areas of existing vegetation and rocky substrate. At Water Gulch and Trail Gulch, large embankments will be constructed over the existing drainage channels. These embankments will range from approximately 108 to 114 feet in height. Culverts will be installed to convey water through the fills. The outlet of these new culverts will be outside of the 100-year floodplain of Willow Creek, which receives the runoff from both culverts. Rock slope protection dissipaters will be placed at the outlet of these new culverts to prevent scour and erosion.

Environmental Consequences

According to current Federal Emergency Management Agency Flood Insurance Rate Maps, the project is located within an area in which no floodway has been delineated. The Floodplain Evaluation Report Summary determined the following:

- The proposed action would not result in a longitudinal encroachment of the base floodplain.
- There are no significant risks associated with implementation of the proposed action.
- The proposed action does not constitute a significant floodplain encroachment as defined in 23 Code of Federal Regulations, Section 650.105(q).

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.2.2 Water Quality and Storm Water Runoff

Regulatory Setting

Section 401 of the Clean Water Act requires water quality certification from the State Water Resource Control Board or a Regional Water Quality Control Board when the project requires a Federal permit. Typically this means a Clean Water Act Section 404 permit to discharge dredge or fill into a water of the United States, or a permit from the Coast Guard to construct a bridge or causeway over a navigable water of the United States under the Rivers and Harbors Act.

Along with Clean Water Act Section 401, Section 402 establishes the National Pollutant Discharge Elimination System for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the National Pollutant Discharge Elimination System program to the State Water Resource

Control Board and the nine Regional Water Quality Control Boards. To ensure compliance with Section 402, the State Water Resource Control Board has developed and issued the Department an National Pollutant Discharge Elimination System Statewide Storm Water Permit to regulate storm water and non-storm water discharges from Department' right-of-way, properties and facilities. This same permit also allows storm water and non-storm water discharges into waters of the State pursuant to the Porter-Cologne Water Quality Act.

Storm water discharges from the Department's construction activities disturbing one acre or more of soil are permitted under the Department's Statewide Storm Water National Pollutant Discharge Elimination System permit. These discharges must also comply with the substantive provisions of the State Water Resource Control Board's Statewide General Construction Permit. Non-Departmental construction projects (encroachments) are permitted and regulated by the State Water Resource Control Board's Statewide General Construction Permit. All construction projects exceeding one acre or more of disturbed soil require a Storm Water Pollution Prevention Plan to be prepared and implemented during construction. The Storm Water Pollution Prevention Plan, which identifies construction activities that may cause discharges of pollutants or waste into waters of the United States or waters of the State, as well as measures to control these pollutants, is prepared by the construction contractor and is subject to Department review and approval.

Finally, the State Water Resource Control Board and the Regional Water Quality Control Boards have jurisdiction to enforce the Porter-Cologne Act to protect groundwater quality. Groundwater is not regulated by Federal law, but is regulated under the state's Porter-Cologne Act. Some projects may involve placement or replacement of on-site treatment systems such as leach fields or septic systems or propose implementation of infiltration or detention treatment systems, which may pose a threat to groundwater quality. Currently the on-site treatment systems program is without State Water Resource Control Board regulation but you should be aware of threats to groundwater quality on the project site and evaluate and address accordingly in the environmental document. Design standards for installation and operation of infiltration and detention treatment systems should protect groundwater quality and those protections should also be addressed in the environmental document.

Affected Environment

The Buckhorn Grade Improvement Project traverses the east side of the Trinity Mountains in the Willow Creek and Upper Clear Creek watershed. The project site is

within the jurisdiction of the Central Valley Regional Water Quality Control Board. The project limits extend into Trinity County, which is within the jurisdiction of the North Coast Regional Water Quality Control Board, but activities in this area will be limited to placement of construction signs and traffic control.

The receiving surface water bodies at the project site are Willow Creek, Upper Clear Creek, Whiskey Town Reservoir, Lower Clear Creek, Sacramento River and Delta, and ultimately the San Francisco Bay and Pacific Ocean. The annual average precipitation is approximately 57 inches. Willow Creek would be the principal receiving water body in the project area. Willow Creek is listed on the State Water Resources Control Board 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments from below Greenhorn Mine to Clear Creek as impaired for copper, zinc, and acid mine drainage from resource extraction of the abandoned Greenhorn Mine

Groundwaters throughout the project area are used for domestic, agricultural, and industrial supply. The predominant terrain in the project area creates a deep flowline of Willow Creek to which everything flows. Groundwater resources in the area do not represent a sole source aquifer, and there are no groundwater wells in the project vicinity.

Environmental Consequences

The project would alter existing drainage flow paths. Large segments of each alternative are located in mountainous terrain in their natural state. To create the desired highway profile, all of the proposed alternatives would require substantial earthwork operations (cut and fill slopes) and would impact natural drainage patterns.

The potential for erosion of slopes and siltation in downstream waterways is substantial. Long-term or permanent impacts would potentially result from the following sources: sediment carried by storm water from project-related erosion, traction sand, and toxic vehicle-related pollutants carried in storm water runoff.

Storm water from the project would drain into Willow Creek, Water Gulch, Trail Gulch, and Bear Gulch. This storm water would ultimately discharge to Whiskeytown Reservoir, a drinking water source. Most existing drainage systems would be reconstructed at the location of the new highway alignment.

The project may result in localized impacts to the flow of groundwater at the locations of new cuts or fills. The effects would be less than significant due to the existing hilly terrain and the highly variable nature of the existing groundwater flow paths. Existing groundwater recharge areas would be unaffected due to the limited new impervious areas

proposed by the project. No groundwater wells are known to exist in the area that would be impacted by the project.

The project is not expected to result in significant changes to temperature, pH, and nutrient levels entering the receiving waters. Increased concentrations of biological oxygen demand and consequently reduced concentrations of dissolved oxygen could potentially result from construction activities.

The project would result in potentially adverse impacts related to construction activities. Soil erosion would, especially during heavy rainfall, increase suspended solids, dissolved solids, and organic pollutants in Willow Creek, Water Gulch, Trail Gulch, and Bear Gulch. These conditions would likely persist until completion of construction activities and long-term erosion control measures have been implemented.

Fueling or maintenance of construction vehicles would occur in the project area during construction and there could be a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release of these substances could adversely impact surface water quality, vegetation, and wildlife habitat.

Avoidance, Minimization, and/or Mitigation Measures

The primary potential for water quality impacts is from soil erosion or suspended solids being introduced into the waterways. The following mitigation measures for temporary construction impacts and long-term impacts would focus on the control of sediment and suspended solids from entering the waterways.

- The disturbed soil area for this project is expected to exceed 1 acre. This project will adhere to the conditions of the National Pollutant Discharge Elimination System Permit for Construction Activities (Order No. 99-08-DWQ, National Pollutant Discharge Elimination System No. CAS000002), which is incorporated by reference to the Caltrans National Pollutant Discharge Elimination System Permit, Storm Water Discharges from the State of California, Department of Transportation (Caltrans) Properties, Facilities, and Activities (Order No. 99-06-DWQ, National Pollutant Discharge Elimination System No. CAS000003). To comply with the conditions of the Caltrans National Pollutant Discharge Elimination System Permit, and to address the temporary water quality impacts resulting from the construction activities of this project, Standard Special Provisions would be included in the Plans, Specifications, and Estimates. These Standard Special Provisions would address water pollution control work and the implementation of a Storm Water Pollution Prevention Plan during construction.

- The Storm Water Pollution Prevention Plan will outline construction Best Management Practices to be used to minimize adverse effects on receiving waters. In addition to measures involving sediment detention basins, materials handling and storage, spill prevention and erosion blankets, specific pollution control measures will be included in the project design specifications to limit and minimize erosion, sedimentation and release of chemicals to the water bodies to prevent impacts to water quality during construction.
- Several approved treatment Best Management Practices are available for use on improvement projects. In addition, non-approved treatment Best Management Practices could be proposed for a project if warranted by the type of project and the potential for impacts to water quality. For this project, the use of currently approved treatment Best Management Practices is sufficient to minimize impacts to water quality. Because of the large cut and fill slopes on the project, the likely cause of potential water quality impacts is soil erosion. Soil erosion would be controlled through the proper design of landscaping and the application of final ground treatment. Additionally, treatment Best Management Practices such as biofiltration (swales and strips), reduce sediment and organic constituents, as well as metals that adhere to sediment. Traction sand traps reduce sediment transport.
- Construction within active waterways would be avoided. Construction activities near waterways or within stream banks would provide all necessary erosion control and water quality control practices, such as clear water diversions, to minimize the potential for direct or indirect impacts to water quality.
- It is anticipated that groundwater would be encountered during project construction. If groundwater were to be discharged into any jurisdictional waters, appropriate Best Management Practices would be required to reduce or eliminate any potential discharge of pollutants to the maximum extent feasible. Project-specific Waste Discharge Requirements (National Pollutant Discharge Elimination System Permit) may be required by the Regional Water Quality Control Board if substantial dewatering is to be done.
- Accidental fuel, lubricant and/or coolant leaks or spills that may occur from heavy equipment during construction would be cleaned up to prevent impacts to receiving waters. A spill on the roadway would trigger immediate response actions to report, contain, and mitigate the incident. The California Office of Emergency Services has developed a Hazardous Materials Incident Contingency Plan, which provides a program for response to spills involving hazardous materials. The plan designates a

chain of command for notification, evacuation, response, and cleanup of spills resulting from the transport of hazardous material.

- Embankments constructed out of decomposed granite will be reinforced with engineering fabric to reduce the potential for surface erosion. Overlapping flaps of engineering fabric will cover the fill slope so that no decomposed granite is exposed to runoff and wind. This is accomplished by embedding a portion of fabric into the fill at specified intervals; the remaining exposed fabric creates the overlapping flaps. As fundable and constructable projects are developed on Buckhorn Grade, additional measures will be identified to minimize impacts that could degrade water quality and damage habitat for species of special concern.

2.2.3 Geology/Soils/Seismic/Topography

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. Caltrans’ Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. The current policy is to use the anticipated Maximum Credible Earthquake, from young faults in and near California. The Maximum Credible Earthquake is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

Affected Environment

Soils within the environmental study limit are generally well-drained and are volcanic in origin. The project is located within areas mapped as Devonian and pre-Devonian age meta-volcanics, pre-Cretaceous age meta-sedimentary and Mesozoic granitic rocks. Bedrock within the metasedimentary and metavolcanic areas is generally at or near the surface (less than 10 feet), unless it is located within or adjacent to channels or drainages where it may be buried beneath alluvial deposits. Overlying deposits are most likely comprised of a mix of soil and decomposed bedrock. Depth to bedrock within the granitic material is highly variable depending on location, terrain and exposure. A seismic study, conducted in 1991 by Caltrans, between post miles 0.0 and 8.5 in Shasta

County indicated depths of decomposed granite in excess of 100 feet. Generally, the metamorphic rock in the area is highly to moderately weathered, moderately fractured and moderately hard. Granitic rock in the area is generally completely to highly weathered, moderately fracture and soft to moderately hard.

Due to the anticipated shallow depth of bedrock and the free draining nature of decomposed granite, groundwater depth is anticipated to be relatively deep, with the exception of some localized areas of perched groundwater and areas adjacent to streams, drainages and springs.

Shasta County has a low level of historic seismic activity. Over the past 120 years there has been no significant property damage or loss of life due to earthquakes occurring within or near Shasta County. Most seismic activity has occurred in the eastern half of the County around Lassen Peak. According to the Caltrans 1996 California Seismic Hazard Map, the Battle Creek Fault is located approximately 66 miles south-southwest of the project area. Although the Battle Creek Fault is an extensive fault zone, with a composite length of more than 20 miles, it is considered to be inactive.

Environmental Consequences

The top third of the proposed project is located in erosive, decomposed granite. However, exposures of more competent granite exist and may require blasting to create some of the proposed cuts. In addition extensive erosion control measures will likely be required within this rock unit. The middle and lower portions of the project are within the meta-sedimentary and meta-volcanic rock units. Blasting will be required to complete most of the cuts within these rock units. Rock fall will be a primary concern for all cuts located in rock.

Avoidance, Minimization, and/or Mitigation Measures

Erosion control measures will be implemented to maintain slope stability. Cut slopes in areas of decomposed granite may need to be flattened to help control rock fall. Other measures that may be used include catchment at the base of proposed cuts, fences, rock bolting and cable drapery or wire mesh drapery.

2.2.4 Hazardous Waste or Materials

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 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The purpose of the Comprehensive Environmental Response, Compensation and Liability Act, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. The Resource Conservation and Recovery Act provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety & Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, 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 federal Resource Conservation and Recovery Act of 1976, 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.

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.

Affected Environment

The project would require that one residential structure located adjacent to State Route 299 be demolished.

Lead-containing traffic markings including yellow thermoplastic and painted traffic striping have been identified within the project limits.

There is no potential for naturally occurring asbestos within the entire project limits, based on a field review and geologic mapping of the project.

The abandoned Greenhorn Mine is located on the southern side of Willow Creek outside of the project study limits. The mine operated from 1884 through 1941 and produced primarily copper, zinc and iron, derived from sulfide ore, as well as lesser amounts of silver and gold. The Central Valley Regional Water Quality Control Board and the California Department of Water Resources conducted a study in 1985, which identified the Greenhorn Mine as source of acid mine drainage into Willow Creek.

Environmental Consequences

Structures impacted by construction of the project could contain lead paint and asbestos.

Traffic markings containing heavy metals such as lead and chromium, may exceed hazardous waste thresholds and could produce toxic fumes when heated.

The project will not impact the Greenhorn Mine.

Avoidance, Minimization, and/or Mitigation Measures

Structures will be inspected to determine whether asbestos and lead-based paint are present. If any structures to be demolished or disturbed during construction contain asbestos, a qualified asbestos abatement contractor will handle debris removal and disposal. If it is determined that lead-based paint is present at levels above the regulatory threshold, it will be disposed of at an appropriate hazardous waste facility.

Waste material generated by the removal of yellow thermoplastic and painted traffic striping will be addressed during construction by incorporation of standard special provisions.

2.2.5 Air Quality

Regulatory Setting

The Clean Air Act, as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the concentration of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards. Standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), lead (Pb), and sulfur dioxide (SO₂).

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 the 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 is concerned with how well the region is meeting the standards set for carbon monoxide, nitrogen dioxide, ozone, and particulate matter. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the Regional Transportation Plan, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Trinity County Transportation Commission and Shasta County Regional Transportation Planning Agency and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the Regional Transportation Plan is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the Regional Transportation Plan must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the Regional Transportation Plan, then the proposed project is deemed to meet regional conformity requirements for purposes of the project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is in “nonattainment” or “maintenance” for carbon monoxide (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. Areas that were previously designated as non-attainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as carbon monoxide or particulate matter analysis performed for National Environmental Policy Act and California Environmental Quality Act purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the carbon monoxide 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 carbon monoxide 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.

Affected Environment

The proposed project is located within the North Coast Air Basin in Trinity County and the Sacramento Valley Air Basin in Shasta County. The North Coast Air Basin is comprised of Del Norte, Humboldt, Mendocino, Northern Sonoma, and Trinity Counties. The North Coast Air Quality Management District, which includes Del Norte, Humboldt and Trinity Counties, regulates air quality in Trinity County. The Sacramento Valley Air Basin includes Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba Counties. Air quality is regulated in Shasta County by the Shasta County Air Quality Management District.

Environmental Consequences

Regional Air Quality Conformity

This project is exempt from regional conformity requirements based on 40 Code of Federal Regulations 93.127. Separate listing of the project in the Regional Transportation Plan and Transportation Improvement Program, and their regional conformity analyses, is not necessary. The project would not interfere with timely implementation of Transportation Control Measures identified in the applicable State Implementation Plan and regional conformity analysis.

Project Level Conformity

The federal and state attainment status for criteria pollutants is summarized in Table 2.6. Under federal standards, both counties are designated as in attainment for all transportation-related criteria pollutants including carbon monoxide (CO), ozone (O₃) and particulate matter (PM₁₀). Under state standards, Trinity County is designated as

unclassified for CO, attainment for O₃, nonattainment for PM₁₀, and Shasta County is designated as in attainment for CO, and nonattainment for O₃ and PM₁₀.

Table 2.6 Attainment Status for Air Quality Standards

Pollutant	Federal Attainment Status		State Attainment Status	
	Trinity County	Shasta County	Trinity County	Shasta County
Ozone (O ₃)	Attainment	Attainment	Attainment	Non-Attainment
Particulate Matter (PM ₁₀)	Attainment	Attainment	Non-Attainment	Non-Attainment
Carbon Monoxide (CO)	Attainment	Attainment	Unclassified	Attainment

The procedures and guidelines provided in the Transportation Project-Level Carbon Monoxide Protocol, University of California Davis, December 1997, were used to evaluate the potential local level carbon monoxide impacts of the project. The analysis determined that project-level carbon monoxide impacts are not expected as the project: does not significantly increase the number of vehicles operating in cold start mode; does not significantly increase traffic flows; and does not worsen traffic flow.

Naturally Occurring Asbestos

Within California, naturally occurring asbestos is known to exist in serpentine, a greenish greasy-looking rock, found within ultramafic rock. Serpentine is common in the coast range, Klamath mountains and Sierra foothills. Asbestos is a potent carcinogen, particularly when inhaled. It is, therefore, regulated as an airborne toxic material and strict limits are placed on its use and handling in working environments. Based on the California Geologic Survey and National Resource Conservation Service soils maps, ultramafic rock is found in some areas of Trinity and Shasta Counties; however, naturally occurring asbestos is not expected to be encountered within the project area.

Construction Impacts

The proposed project may result in the generation of short-term construction-related air emissions, including fugitive dust and exhaust emissions from construction equipment. Fugitive dust, sometimes referred to as windblown dust or PM₁₀, would be the primary short-term construction impact, which may be generated during excavation, grading, and hauling activities. Both fugitive dust and construction equipment exhaust emissions would be temporary and transitory in nature.

Mobile Source Air Toxics

The purpose of this project is to improve safety by constructing a modified alignment with shoulders and passing/climbing lanes. This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts compared to the no-build alternative. As such, Caltrans has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxics concerns. Consequently, this project is exempt from analysis for mobile source air toxics.

Moreover, the Environmental Protection Agency's regulations for vehicle engines and fuels will cause overall mobile source air toxics to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in vehicle miles traveled, Federal Highway Administration predicts mobile source air toxics will decline in the range of 57 percent to 87 percent, from 2000 to 2020, based on regulations now in effect. This will both reduce the background level of mobile source air toxics as well as the possibility of even minor mobile source air toxic emissions from this project.

Climate Change

Climate change is analyzed in Chapter 3. Neither EPA nor FHWA has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on the Federal Highway Administration'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 will 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 additional requirements regarding climate change have been set forth in California legislation and executive orders, the issue is addressed in the CEQA chapter 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 reduction in the rate of increase in vehicle hours traveled.

Avoidance, Minimization, and/or Mitigation Measures

Construction

Most of the temporary construction-related impacts to air quality are short-term in duration and, therefore, would not result in adverse or long-term conditions.

Implementation of the following measures would reduce any air quality impacts occurring during construction activities:

- The construction contractor would comply with Caltrans' Standard Specifications Section 7-1.01F and Section 10 of Caltrans' Standard Specifications (1999). Section 7, "Legal Relations and Responsibility," addresses the contractor's responsibilities regarding issues of concern, such as air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; convenience of the public; and damage or injury to any person or property as a result of any construction operation. Section 10 addresses dust control.
- Apply water or dust palliative to the site and equipment as frequently as needed to control fugitive dust emissions.
- Spread soil binder on any unpaved roads used for construction purposes and on all project construction parking areas.
- Wash trucks as they leave the right of way as needed to control fugitive dust emissions.
- Properly tune and maintain construction equipment and vehicles. Use low sulfur fuel in all construction equipment as required by the California Code of Regulations Title 17, Section 93114.
- Develop a special dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- Locate equipment and materials storage sites as far away from residential and park uses as practicable. Keep construction areas clean and orderly.
- Use track-out reduction measures such as gravel pads at construction area access points to minimize dust and mud deposits on roads used by construction traffic.

- Cover all transported loads of soils and wet materials prior to transport, or provide adequate space between the top of the material and the top of the truck to reduce the deposition of particulates during transportation.
- Remove dust and mud that are deposited on paved, public roads by construction activity to decrease particulate matter.
- To the extent feasible, route and schedule construction traffic to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Install mulch or plant vegetation as soon as practicable after grading to reduce the potential for windblown particulates in the area.

2.2.6 Noise and Vibration

Regulatory Setting

The National Environmental Policy Act of 1969 and the California Environmental Quality Act provide the broad basis for analyzing and abating the effects of highway traffic noise. 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 the National Environmental Policy Act and the California Environmental Quality Act.

California Environmental Quality Act

The California Environmental Quality Act 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 the California Environmental Quality Act, then the act 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 National Environmental Policy Act-23 Code of Federal Regulations 772 noise analysis; please see Chapter 3 for further information on noise analysis under the California Environmental Quality Act.

National Environmental Policy Act and 23 Code of Federal Regulations 772

For highway transportation projects with Federal Highway Administration (and Caltrans, as delegated) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 Code of Federal Regulations 772) govern the analysis and

abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria that are used to determine when a noise impact would occur. The noise abatement criteria differ depending on the type of land use under analysis. For example, the criterion for residences (67 decibels) is lower than the criterion for commercial areas (72 decibels). Table 2.7 lists the noise abatement criteria for use in the National Environmental Policy Act and 23 Code of Federal Regulations 772 analysis and Table 2.8 shows the noise levels of typical activities.

Table 2.7 Activity Categories and Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, A-weighted Noise Level (dBA), Leq(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	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: Caltrans Traffic Noise Analysis Manual, 1998

A-weighted decibels (dBA) are adjusted to approximate the way humans perceive sound. Leq(h) is the steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual time-varying levels over one hour.

Table 2.8 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	30	Library
Quiet Rural Nighttime	20	Bedroom at Night, Concert Hall (Background)
	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

In accordance with the Caltrans *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects*, August 2006, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12-decibel or more increase) or when the future noise level with the project approaches or exceeds the noise abatement criteria. Approaching the noise abatement criteria is defined as coming within 1 decibel of the noise abatement criteria.

If it is determined that the project would have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be

reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated into the project.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining whether an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5-decibel 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.

Affected Environment

This project is considered to meet the definition of a Type 1 Project. A Type 1 project is defined, in part, by 23 Code of Federal Regulations 772/Caltrans Noise Protocol (October 2006) as follows: "...*A proposed Federal or Federal-aid highway project for the construction of a highway in a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increases the number of thru-traffic lanes...*".

The proposed alignment traverses rugged terrain and the primary land use in the area as defined in 23 Code of Federal Regulations 772 Noise Abatement Criteria (see Table 2.7) is Category D, undeveloped land, for which there is no noise criteria. There is one residence located within the project limits that would be considered sensitive land-use areas as defined in 23 Code of Federal Regulations 772, Noise Abatement Criteria as Category B which includes residential neighborhoods, schools, parks, or churches. Caltrans will acquire this residence for the construction of the project; therefore, the project will not result in noise impacts and no further analysis is required.

Environmental Consequences Under the National Environmental Policy Act

Construction activities for the proposed project would include clearing and grubbing, excavation and movement of cut and fill, rock drilling and blasting, grading, paving, and other road building operations. During construction, noise from these activities would dominate the noise environment in the immediate area. Since there are no receptors within the area, no adverse impacts from construction noise are anticipated.

Avoidance, Minimization, and/or Noise Abatement Under the National Environmental Policy Act

There are no operational noise impacts associated with the proposed realigned highway facility and abatement is not required.

Construction noise is regulated by Caltrans Standard Specifications, Section 7-1.01I, “Sound Control Requirements”. These requirements state that noise levels generated during construction shall comply with applicable local, state and federal regulations, and that all equipment shall be fitted with adequate mufflers according to the manufacturers’ specifications.

2.2.7 Energy

Regulatory Setting

The California Environmental Quality Act Guidelines, Appendix F, Energy Conservation, state that Environmental Impact Reports 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.

The National Environmental Policy Act (42 U.S. Code Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

Affected Environment

Construction activities related to the proposed project would result in the consumption of non-renewable energy resources, primarily in the form of fossil fuels, natural gas, and gasoline for vehicles and construction equipment.

Environmental Consequences

When balancing energy used during construction and operation of the project with energy saved through improved transportation efficiencies, the project would not result in substantial net energy impacts.

Avoidance, Minimization, and/or Noise Abatement

No avoidance, minimization, or mitigation measures are required.

2.3 Biological Environment

2.3.1 Natural Communities

Regulatory Setting

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Affected Environment

Alkali Seep Habitat

Alkali seep habitat is present within the environmental study limits. The total seep area is approximately 1.2 acres and is located adjacent to State Route 299 near the eastern boundary of the project on property owned by the National Park Service. The area has been subjected to disturbances and degradation from trash dumping, vehicle parking, accidents, and road maintenance activities. A highway realignment project in the mid-1990's resulted in the loss of 1,200 square feet of habitat from one spring. To offset this habitat loss, Caltrans restored a section of another spring that had been disturbed by bridge construction and covered with fill in the 1950's.

Efforts to introduce Howell's alkali grass (*Puccinellia howellii*), a dominant native species associated with alkali seep habitat, into the restored area were initially successful but competition from saltgrass (*Distichlis spicata*) is threatening the success of the restoration. These alkali seep springs are an important source of salts for local wildlife, black-tailed deer, and the band-tailed pigeon.

Riparian Habitat

Riparian habitat provides foraging, roosting, and nesting opportunities for migrating birds. Tree and shrub cover associated with this wetland type provide habitat for resident and migratory bird species, and can also function as migratory corridors for wildlife. Riparian habitat occurs along Willow Creek and tributaries such as Water Gulch, Trail Gulch, and Yankee Gulch. Water Gulch is approximately 8 to 10 feet wide in the project area. Common species here included Big-leaf maple (*Acer macrophyllum*), White Alder (*Alnus rhombifolia*), Arroyo Willow (*Salix lasiolepis*) and California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus discolor*), California grape (*Vitis californica*), and

Sword fern (*Polystichum munitum*). Trail Gulch is also approximately 8 to 10 feet wide in the project area, with dense Arroyo Willow cover with California Blackberry, California grape, and Skunkbrush sumac (*Rhus trilobata*). Yankee Gulch near the eastern end of the project is approximately 5 feet wide. Common species here include Arroyo Willow, White alder, California grape, and Tree of Heaven (*Ailanthus altissima*), a non-native invasive tree.

Oak Woodlands

Oak trees are an integral component of California's natural communities and provide important food, foraging habitat, nesting habitat and cover for numerous wildlife species including insects, amphibians, reptiles, mammals and birds. Removal of oak trees impacts migratory bird nesting and foraging habitat and may affect populations of various songbirds. Oak woodlands, in general, are declining statewide (although the degree of threat varies with oak woodland type) because of agriculture, urban development, fuel wood harvesting, and range management. In response to past losses and future threats, the California Department of Forestry, California Native Plant Society, The Nature Conservancy, and the California State Senate (Senate Concurrent Resolution No. 17, January 18, 1989) have recognized the conservation and management of oak woodlands as important issues in California.

A total of 1,663 acres of oak dominated stands were delineated from aerial photos and ground surveys from State Route 299. Of this total, approximately 443 acres occur within the environmental study limits. Three species of oaks are common in these stands. Scrub oak (*Quercus berberidifolia*) is the most common, with black oak (*Quercus kelloggii*) and canyon oak (*Quercus chrysolepis*) occurring in most stands associated with conifers.

Migration Corridors

Various terrestrial wildlife species are likely to use the creeks and tributaries in the area, as important movement corridors. Some portions of the creeks in the environmental study limits provide dense cover to many species, as well as an unexposed travel route, suitable food and water sources, and a relatively mild microhabitat.

Many aquatic organisms require riparian trees and shrubs for cover, foraging, and breeding habitat. Riparian vegetation in the study area provides high quality habitat for species such as fish and amphibians. Tree and shrub cover associated with this habitat type is suitable for resident and migratory bird species, including special status birds that are potentially present in the study area. Riparian habitat is also an important migratory

corridor for wildlife in the study area and may provide foraging and roosting habitat for special status bats.

Environmental Consequences

Alkali Seep Habitat

The alkali seep habitat is located at the eastern end of the environmental study limits where flagging and signs, but no construction, will occur. Impacts to this habitat can be avoided with implementation of avoidance and minimization measures.

Riparian Habitat

The project will result in disturbance to riparian vegetation at Water Gulch, Trail Gulch, and Yankee Gulch. The amount of habitat that would be affected by each alternative is indicated in Table 2.9.

Table 2.9 Riparian Impact (acres)

Alternatives				
	BH4	BH5	BH6	BH12
Yankee Gulch	0.02	0.02	0.02	0.02
Trail Gulch	0.16	0.20	0.19	0.16
Water Gulch	0.20	0.23	0.23	0.20
TOTAL	0.38	0.45	0.44	0.38

Oak Woodlands

The project would result in up to 95.1 acres of direct impacts to oak-dominated woodland, depending on the alternative selected, and up to 443 acres of indirect impacts. All impacts to oak tree woodlands within the project cut/fill boundaries would be considered permanent impacts, since the areas acquired for right-of-way would be permanently managed by Caltrans after the completion of the project and would no longer function as undisturbed oak woodlands. The impacts to oak woodlands within cut-and-fill boundaries that would be directly affected by each alternative are shown in Table 2.10.

Table 2.10 Oak Woodlands Impact

Alternatives				
Acres	BH4	BH5	BH6	BH12
	69.1	82.5	95.1	69.3

Migration Corridors

Existing and potential wildlife crossing locations on State Route 299, particularly bridges, large culverts, and other facilities that offer an alternative to entering the highway, are important to the maintenance or enhancement of existing migration corridors and to driver safety.

Construction activities could temporarily restrict wildlife movement through the project area. In addition, construction noise could temporarily alter the foraging patterns of resident wildlife species. Increased travel speed on the roadway could pose an increased risk of habitat fragmentation.

Avoidance, Minimization, and/or Mitigation Measures

Alkali Seep Habitat

With the implementation of the following avoidance and minimization efforts, there should be no impacts to alkali seep habitat:

- Best Management Practices for controlling water quality impacts.
- Design elements that will minimize hydrologic alteration of the area around the seep.
- The mineral springs and Howell's alkali grass located to the east of the project will be protected with Environmental Sensitive Area fencing during construction. Construction staging will not be allowed in the pullout adjacent to State Route 299 at post mile 7.8. Caltrans will consult with the National Park Service to determine avoidance and minimization measures to protect these resources.

Riparian Habitat

With the implementation of the following avoidance and minimization efforts, there should be no impacts to riparian habitat:

- Minimize amount of vegetation removed, especially from intact, contiguous riparian areas.
- Minimize habitat removal/project footprint by minimizing fill and using bridge crossings where feasible.
- Mitigate riparian habitat losses through a combination of replacement and enhancement of existing riparian habitat. Replacement of any losses would be at a ratio of 1:1 and enhancement would be at a ratio of 2:1. During final project design, a revegetation and restoration plan will be developed that will provide detailed plans for replacement and enhancement, preferably within the project area.

Oak Woodlands

With the implementation of the following avoidance and minimization efforts, impacts to oak woodlands would be reduced:

- Removal of oak trees would be limited to the minimum number necessary to allow for efficient project construction.
- Environmentally Sensitive Area fencing would be installed around oak woodlands adjacent to the work areas. Any encroachment beyond the Environmentally Sensitive Area fencing during construction (including driving, material or equipment storage and vehicle parking) would be prohibited. The Environmentally Sensitive Area fencing would be clearly delineated onto the final contract plans.
- During final design, the number of oaks within the proposed alignment would be estimated and measured. Caltrans would compensate for the impacts of the project to oak woodlands by in-kind creation/restoration and preservation of oak woodlands on abandoned sections of the existing roadway alignment, as well as on newly acquired parcels as needed. New parcels would be purchased as needed in fee or by a conservation easement and preserved in perpetuity. Oak trees would be initially planted in these areas at the ratio of five new saplings for each oak lost, with the goal of at least of three trees surviving after a ten-year monitoring period. Other compensation options, which are listed in the Oak Woodlands Conservation Act (Senate Bill 1334), may include (1) a monetary contribution to the California Oak Woodlands Conservation Fund administered by the state Wildlife Conservation Board for the purpose of purchasing oak woodland conservation easements or (2) use of a California Department of Fish and Game-established oak woodland mitigation bank to fulfill the off-site compensation requirements.

Migration Corridors

With the implementation of the following avoidance and minimization efforts, impacts to wildlife migration corridors would be reduced:

- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

2.3.2 Wetlands and Other Waters

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S. Code 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates 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 Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers with oversight by the Environmental Protection Agency.

The Executive Order for the Protection of Wetlands (11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, and Caltrans as delegated, 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 by the California Department of Fish and Game and the Regional Water Quality Control Boards. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the California Department of Fish and Game before beginning construction. If the California Department of Fish and Game determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. California Department of Fish and Game 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 Army Corps of Engineers may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the Department of Fish and Game.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The Regional Water Quality Control Boards also issue water quality certifications in compliance with Section 401 of the Clean Water Act.

Affected Environment

A total of 14.25 acres of potential jurisdictional waters are present within the project area. A summary of the potential jurisdictional waters within the environmental study limits is shown in Table 2.11. Details of the wetland delineation are available in a separate Wetland Delineation Report.

Table 2.11 Jurisdictional Wetlands and Other Waters of the U.S.

Jurisdictional Waters	Total Acreage
Wetlands	
Seeps/Springs	0.59
In-stream Wetlands	0.42
Total for Wetlands	1.01
Other Waters of the U.S.	
Perennial/Intermittent/Ephemeral Creeks	13.24
Total Other Waters of the U.S.	13.24
Total Potential Jurisdictional Area	14.25

Jurisdictional wetlands and waters of the U.S. occur within the environmental study limits in the form of seeps/springs located in upslope areas that were cut during road construction, in-stream wetland areas that occur within the creek channels, and non-wetland waters of the U.S. that occur as perennial and intermittent creeks.

Environmental Consequences

All potential wetlands and other waters of the U.S. falling within the cut-and-fill boundaries of the project will be directly and permanently affected by the proposed project alternatives. The proposed project alternatives would permanently affect seep/spring wetlands ranging from 0.40 acre to 0.42 acre; in-stream wetlands ranging from 0 acre to approximately 0.01 acre; and other waters of the U.S. ranging from 0.76 acre and 1.00 acre. Between 1.18 acres and 1.40 acres of jurisdictional wetlands and other waters of the U.S. will be permanently affected by the project, with Alternative BH6 affecting the greatest area and Alternative BH12 affecting the least (Table 2.12).

Table 2.12 Impacts to Jurisdictional Wetlands and Other Waters of the U.S.

Jurisdictional Waters	Direct/Permanent Impact Area by Alternative (acres)			
	BH4	BH5	BH6	BH12
Alternative				
Wetlands				
Seeps/Springs	0.42	0.39	0.40	0.41
In-stream Wetlands	0.00	0.01	0.00	0.01
Total for Wetlands	0.42	0.40	0.40	0.42
Other Waters of the U.S.				
Perennial/Intermittent/Ephemeral Creeks	0.81	0.91	1.00	0.76
Total Other Waters of the U.S.	0.81	0.91	1.00	0.76
Total Potential Jurisdictional Area	1.23	1.31	1.40	1.18

Wetlands Only Practicable Finding

Executive Order 11990, “Protection of Wetlands” directs federal agencies and responsible entities to avoid undertakings for new construction located in wetlands unless 1) there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

The four alternatives developed for the project generally follow the existing alignment. They consist of design speed variations and all four alternatives share a common alignment at both the beginning and end of the project. Impacts to wetlands and waters of the U.S. are similar for all four alternatives, ranging from 1.18 to 1.40 acres. Alternative BH12, which has been identified as the preferred alternative, has the least amount of impact to wetlands.

Caltrans will obtain Section 404 permits from the U.S. Army Corps of Engineers for work in jurisdictional waters and wetlands as individual sections of the project are programmed and funded for construction. Measures to minimize harm to wetlands will be developed in consultation with the U.S. Army Corps of Engineers.

Avoidance, Minimization, and/or Mitigation Measures

With the implementation of avoidance and/or minimization measures, temporary impacts to jurisdictional wetlands and other waters of the U.S. would be avoided. Compensatory mitigation is necessary to offset permanent wetland losses. Compensation for potential impacts to federally jurisdictional wetlands would be mitigated at a ratio to be determined in consultation with the U.S. Army Corps of Engineers. While the U.S. Army Corps of Engineers does not typically require mitigation for waters under the jurisdiction of the State, the Regional Water Quality Control Board frequently does. Compensation for potential impacts to State jurisdictional waters would be mitigated at a ratio to be determined in consultation with the Regional Water Quality Control Board.

The following measures will be implemented to protect wetlands from impacts during construction:

- Minimize amount of vegetation removed, especially intact, contiguous riparian areas and seeps.
- Minimize habitat removal/project footprint.
- All staging areas will be located in upland areas to ensure no wetlands or other waters of the U.S. are impacted during construction.
- Use erosion control and slope stabilization Best Management Practices, as defined in the project's Storm Water Pollution Prevention Plan.
- All water and concrete washed out of concrete trucks will be contained until cured.
- Project-related activities, such as equipment parking, project access, and equipment maintenance would occur only at designated locations that would be pre-approved by a Caltrans biologist.
- Replant disturbed areas and monitor plant re-establishment.
- Remove invasive plants, and replace with native species, and stabilize slopes.

2.3.3 Plant Species

Regulatory Setting

The U.S. Fish and Wildlife Service and California Department of Fish and Game share 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 and/or the California Endangered Species Act. Please see Threatened and Endangered Species, Section 2.3.5, in this document for more information regarding these species.

This section of the document discusses all the other special-status plant species, including California Department of Fish and Game fully protected species and species of special concern, U.S. Fish and Wildlife Service candidate species, and non-listed California Native Plant Society rare and endangered plants.

The regulatory requirements for the Federal Endangered Species Act can be found in U.S. Code 16, Section 1531, et seq. See also 50 Code of Federal Regulations Part 402. The regulatory requirements for the California Endangered Species Act can be found in California Fish and Game Code, Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found in Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Affected Environment

No special status plant species or habitats were observed during botanical surveys in the project area.

2.3.4 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration Fisheries Service, and the California Department of Fish and Game 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 Act.

Species listed or proposed for listing as threatened or endangered are discussed in Section 2.3.5. All other special-status animal species are discussed here, including California Department of Fish and Game fully protected species and species of special concern, and U.S. Fish and Wildlife Service or National Oceanic and Atmospheric Administration Fisheries Service candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- Marine Mammal Protection Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1601 – 1603 of the Fish and Game Code
- Sections 4150 and 4152 of the Fish and Game Code

In addition to state and federal laws regulating impacts to wildlife, there are often local regulations (example: county or city) that need to be considered when developing projects. If work is being done on federal land (Bureau of Land Management or Forest Service land, for example), those agencies' regulations, policies, and Habitat Conservation Plans apply.

Affected Environment

Bats

The following species of special status bats have at least a moderate potential to occur within the environmental study limits.

- Pallid bat (*Antrozous pallidus*), California Species of Special Concern, Bureau of Land Management Sensitive Animal
- Townsend's big-eared bat (*Corynorhinus townsendii*), California Species of Special Concern, Bureau of Land Management Sensitive Animal
- Spotted bat (*Euderma maculatum*), California Species of Special Concern, Bureau of Land Management Sensitive Animal
- Western red bat (*Lasiurus blossevillei*), Forest Service Sensitive, Western Bat Working Group-High Priority Species

- Small-footed myotis (*Myotis ciliolabrum*), Bureau of Land Management Sensitive Animal
- Long-eared myotis (*Myotis evotis*), Bureau of Land Management Sensitive Animal
- Fringed myotis (*Myotis thysanodes*), Bureau of Land Management Sensitive Animal, Western Bat Working Group-High Priority Species
- Long-legged myotis (*Myotis volans*), California Species of Special Concern, Western Bat Working Group-High Priority Species
- Yuma myotis (*Myotis yumanensis*), Bureau of Land Management Sensitive Animal

Since there is suitable roosting, nesting, and foraging habitat for many bat species in and around the environmental study limits, it is likely that the site supports some special status bat species.

Ringtail

The ringtail (*Bassariscus astutus*) is a fully protected species, a protection enforced by California Department of Fish and Game that prohibits take. The species ranges throughout California with the majority of distribution in the Coast Range and the western Sierra Nevada. Ringtails den in rock crevices, boulder piles, and in tree cavities. Suitable habitat includes chaparral, rocky hillsides, and riparian areas.

American Pine Marten

The American marten (*Martes americana*) is a U.S. Forest Service sensitive species. The American marten requires mixed evergreen forests with more than 40% crown closure, and a variety of different-aged stands, particularly old-growth conifers and snags that provide cavities for dens. Martens occupy cavities in large trees, snags, stumps, logs, or in burrows, caves, and crevices in rocky areas. They may also use woodpiles, cabins, and other human artifacts. Martens do not migrate, although they may move to lower elevations in winter.

Pacific Fisher

The Pacific fisher (*Martes pennati pacifica*) is a California state species of special concern, and a Bureau of Land Management sensitive species. The Pacific fisher has a restricted distribution and is an uncommon, permanent resident of the Sierra Nevada, Cascades, Klamath Mountains, and a few locations in the North Coast Ranges. Fishers use dense mature stands of trees for cover and den in protected cavities in large trees, snags, logs, rock areas, or brush piles. Pacific fishers are assumed to be present in and around the environmental study limits.

American Badger

American badger (*Taxidea taxus*) is a state species of concern. They are most abundant in drier, open stages of most shrub, forest, and herbaceous habitats, with friable soils.

American badgers have the potential to occur in the project area, given their habitat affinities and tolerance for human activities.

Migratory Birds

Over 62 species of migratory birds were observed in the environmental study limits.

Potential nesting habitat for migratory birds includes riparian vegetation and oak woodland communities.

Northern Goshawk

Northern goshawks (*Accipiter gentiles*) are a state species of special concern. Goshawks normally nest in mature to old-growth forests composed primarily of large trees with high (60 to 90%) canopy closure. Sites selected are often near the bottom of moderately sloped hills, with sparse understory. Mature forests are preferred, although in California, goshawks have used young forests with sparsely distributed mature and old growth trees with high canopy coverage. The project area offers marginal habitat for this species, since the canopy closure is low. Goshawks have the potential, but are not likely, to forage in the environmental study limits.

Yellow Warbler

Yellow warblers (*Dendroica petechia*) are state species of special concern. They can be found in California at elevations from 330 to 8,900 ft, and at higher elevations along watercourses with riparian growth. These warblers prefer wet areas with abundant shrubs or small trees. They are found in hedgerows, thickets, marshes, swamp edges, aspen groves, willows, swamps, and residential areas.

Yellow-Breasted Chat

Yellow-breasted chat (*Ictera virens*) is a California species of special concern. They prefer dense thickets and brush, being largely confined to riparian and shrubby habitats with low, dense cover. Chats forage in low, dense shrubs and thickets, gleaning prey from foliage. They also forage on the ground. Yellow-breasted chats have been observed at two locations within the project area.

Osprey

The osprey (*Pandion haliaetus*) is categorized as a species of special concern of the California Department of Fish and Game. Ospreys inhabit temperate coastal and lake

habitats in California. In California, the species breeding grounds are found along the coast and are associated with lakes and large streams. Their habitat must provide an adequate supply of fish within 6.2 to 12.4 miles of their nest, elevated nest sites free from predators, and an ice-free season long enough to allow fledging of young. Although neither osprey nor their nests have been observed within the environmental study limits, both Lewiston Lake and Whiskeytown Lake are within about five miles of the project area, so there is suitable foraging habitat near enough for nesting to potentially occur within the environmental study limits.

Purple Martin

The purple martin (*Progne subis*) is a state species of special concern. Purple martins build nests inside cavities in birdhouses, gourds, dead trees, or crevices of buildings or rocky cliffs. They have not been observed in the project area but could potentially be present during the nesting season.

Northwestern Pond Turtle

A subspecies of the western pond turtle, the northwestern pond turtle (*Emys (=Clemmys) marmorata marmorata*) is listed as a species of special concern by the California Department of Fish and Game. They require slow-moving water with basking sites. Pond turtles can overwinter in terrestrial areas up to 1,640 feet from the closest watercourse and can change sites over the season.

California Horned Lizard

The California horned lizard (*Phrynosoma coronatum frontale*), a subspecies of the coast horned lizard, is a California Department of Fish and Game species of special concern, and a Bureau of Land Management sensitive animal. Suitable habitat is present within the environmental study limits in exposed gravelly-sandy substrate containing scattered shrubs, in clearings in riparian woodlands, and in dry uniform chamise chaparral (*Adenostoma fasciculatum*). California horned lizards are most abundant in sandy loamy areas and on alkali flats that are frequently dominated by iodine bush (*Allenrolfea occidentalis*).

Saint Helena Mountain Kingsnake

The St. Helena mountain kingsnake (*Lampropeltis zonata zonata*), a subspecies of the California mountain kingsnake, is listed as a sensitive animal by the Bureau of Land Management. The subspecies is a mid-sized and secretive snake that is not rare in suitable habitat within its range. Suitable habitat includes coniferous forest, oak-pine and riparian woodland, chaparral, manzanita, and coastal sage scrub from 60 – 4000 ft in

elevation. The environmental study limit is within an area that provides suitable habitat for the kingsnakes.

Western Tailed Frog

Western tailed frog (*Ascaphus truei*) is a state species of special concern. These frogs prefer redwood, maple, and alder habitat. Grassland, chaparral, or shrub growth may be interspersed in those habitats. In dry weather, western tailed frogs can be found in moist stream banks or under stones at the bottom of streams. This species usually stays close to water but may venture into damp woods after rains. Habitat for the western tailed frog is present within the project limits.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog (*Rana boylei*) is a California Department of Fish and Game species of special concern. It inhabits streams and rivers in woodland, chaparral, and forest habitats. During surveys in the project area, foothill yellow-legged frogs were found in Willow Creek, Bear Gulch, and Sawpit Gulch.

Survey and Manage Species

Landowners in the project area include the Bureau of Land Management. The Bureau of Land Management Redding Office is a participant in the Northwest Forest Plan and is concerned with a number of species when making management decisions. These species are referred to in this document as Bureau of Land Management Survey and Manage sensitive species. Bureau of Land Management Survey and Manage sensitive plant, mammal, reptile, amphibian, or bird species are addressed in the previous sections of this document. Bureau of Land Management Survey and Manage mollusk, bryophyte, lichen, and fungi species that could potentially occur within the project area include the following:

Terrestrial Mollusks – One mollusk species, Church's sideband (*Monadenia churchi*), was observed during surveys for Survey and Manage terrestrial mollusks. This species was discovered within the project limits. No other Survey and Manage terrestrial mollusk species were observed. Mollusk species that could potentially be found in the project area include *Ancotrema voyanum*; *Fluminicola* n. sp. 14, 18, 19, and 20; *Fluminicola seminalis*; *Helminthoglypta talmadgei*; *Lyogyrus* n. sp. 3; *Vespericola pressleyi*; *Vorticifix* n. sp. 1; *Helminthoglypta hertleini*; *Monadenia chaceana*; and *Trilobopsis tehamana*.

Bryophytes, Lichen, and Fungi – Several species could potentially be found in the project area including *Bryoria toruosa* and *Calcium viride*.

Environmental Consequences

Bats

Potential impacts to bats are as follows:

- Decreased quantity and quality of habitat, lost roost sites, increased predation, decreased populations.
- Non-native invasive vegetation increases.
- Roost, foraging disturbance.

Ringtail

Potential impacts to ringtails from the proposed project include:

- As a fully protected species, take of ringtails is prohibited. Take could occur if ringtails were using tree cavities or rock dens in areas that will be cleared and/or recontoured.
- Increased travel speed on the roadway may cause increased road mortality, decreased mobility, and subsequent habitat fragmentation due to road avoidance.

American Pine Marten

Since this species is likely to occur only in a transient manner within the project area, no impacts are expected.

Pacific Fisher

Pacific fisher may travel through the environmental study limits. Increased travel speed on the roadway may impact Pacific fisher by increasing road mortality and/or increasing road avoidance.

American Badger

American badger may travel through the environmental study limits, and the increased driver speed may increase road mortality and road avoidance.

Migratory Birds

With the implementation of avoidance and minimization measures, these species would not be impacted by the project.

Northern Goshawk

Since the area in environmental study limit offers only marginal habitat, this species is not likely to occur in the project area.

Yellow Warbler

Since this species would likely only travel through the environmental study limit in a transitory fashion, no project impacts are expected.

Yellow-Breasted Chat

Potential impacts to yellow-breasted chat from the proposed project include:

- Decreased quantity and quality of habitat, lost nest sites, increased nest predation, decreased populations.
- Increase of non-native invasive vegetation.
- Suitable habitat for yellow-breasted chat will be removed from the cut-and-fill boundaries of the environmental study limit. For those areas outside the cut-and-fill boundaries, a restoration plan to replace lost vegetation with similar, native vegetation would help remedy the temporary loss of this habitat over the long term. Return of the habitat to a state approaching pre-construction conditions could take decades, depending upon how intact the area had been.
- Increased travel speed on the roadway may cause increased road mortality, decreased mobility, and subsequent habitat fragmentation due to road avoidance.

Osprey

Potential impacts to osprey from the proposed project include:

- Decreased quantity and quality of habitat, lost nest and roost sites, increased nest predation, and decreased populations.
- Increase of non-native invasive vegetation.
- Nesting and foraging disturbance.
- Increased travel speed on the roadway could pose an increased risk of road mortality to osprey moving through the area.

Purple Martin

This species is particularly vulnerable to reductions in snags, since martins are cavity nesters. Other potential impacts from the proposed project include:

- Decreased quantity and quality of habitat, lost nest and roost sites, increased nest predation, and decreased populations.

- Increase of non-native invasive vegetation.
- Nesting and foraging disturbance.
- Indirect take (adult leaving nest).

Northwestern Pond Turtle

The northwestern pond turtle is sensitive to disturbance, which can affect both its birth and death rates. Potential impacts to this species include:

- Decreased quality and quantity of habitat, and decreased populations.
- Reduction in local population.
- Increased non-native invasive vegetation.
- Increased mortality.
- Decreased movement across road and increased habitat fragmentation.

California Horned Lizard

California horned lizards may be present within the environmental study limit. Potential project impacts to horned lizards include:

- Decreased quality and quantity of habitat, and decreased populations.
- Increase of non-native, invasive vegetation.
- Decreased movement across road and increased habitat fragmentation.

Saint Helena Mountain Kingsnake

California horned lizards may be present within the environmental study limits. Potential project impacts to horned lizards include:

- Decreased quality and quantity of habitat, and decreased populations.
- Increase of non-native, invasive vegetation.
- Increased wildlife mortality.
- Decreased movement across road and increased habitat fragmentation.

Western Tailed Frog

Potential impacts to western tailed frogs include:

- Increased exposure to predators, increased mortality, and decreased populations.
- Decreased quality and quantity of habitat, lost breeding habitat, and increased egg mass predation.
- Increase in non-native invasive vegetation.

- Degraded breeding habitat.
- Increased travel speed on the roadway may cause increased road mortality, decreased mobility, and subsequent habitat fragmentation due to road avoidance.

Foothill Yellow-legged Frog

Potential impacts to western tailed frogs include:

- Increased exposure to predators, increased mortality, and decreased populations.
- Decreased quality and quantity of habitat, lost breeding habitat, and increased egg mass predation.
- Increase in non-native invasive vegetation.
- Degraded breeding habitat.
- Increased travel speed on the roadway may cause increased road mortality, decreased mobility, and subsequent habitat fragmentation due to road avoidance.

Survey and Manage Species

Potential impacts could occur to Bureau of Land Management Survey and Manage mollusk, bryophyte, lichen, and fungi species including the following: *Ancotrema voyanum*, *Fluminicola n. sp. 14, 18, 19, and 20*, *Fluminicola seminalis*, *Helminthoglypta talmadgei*, *Lyogyrus n. sp. 3*, *Vespericola pressleyi*, *Vorticifix n. sp. 1*, *Helminthoglypta hertleini*, *Monadenia chaceana*, *Trilobopsis tehamana*, *Bryoria toruosa* and *Calcium viride*. These impacts include:

- Increased mortality.
- Decreased quality and quantity of habitat and decreased populations.
- Increase in non-native invasive vegetation.
- Degraded breeding habitat.

Avoidance, Minimization, and/or Mitigation Measures

Bats

For all bats considered in this section, the following avoidance and minimization measures would be implemented:

- Minimize the amount of vegetation removed, especially intact, contiguous riparian areas and springs.
- Minimize habitat removal and the project footprint.
- Pre-construction surveys for bats and potential roosting habitat (human made) should be completed at least 10 days before construction begins. If evidence of any special

status bats is discovered, California Department of Fish and Game would be contacted, no later than 10 days before planned changes in land cover.

- Avoid and/or minimize removal of trees, logs and snags, and other activities that impact cliff faces or rock outcrops.
- Shield new light sources before, during, and after construction of the project when possible.
- Revegetate disturbed areas where possible and monitor plant re-establishment.
- Remove invasive plant species and replace with natives.

Ringtail

Impacts to ringtails will be avoided or minimized with implementation of the following measures:

- Vegetation removal should occur outside of the period when young are unable to leave the denning site (approximately April through June).
- Avoid and/or minimize removal of trees, logs and snags, activities that impact cliff faces or rock outcrops.
- Shield new light sources before, during, and after construction of the project when possible.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

American Pine Marten

Impacts to American pine marten will be avoided or minimized with implementation of the following measures:

- Minimize habitat removal and the project footprint.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

Pacific Fisher

Impacts to Pacific fishers will be avoided or minimized with implementation of the following measures:

- Avoid and/or minimize removal of trees, logs and snags, particularly areas in or near dense, mature forests.

- Shield new light sources before, during, and after the construction of the project when possible.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

American Badger

Impacts to American badgers will be avoided or minimized with implementation of the following measures:

- Minimize habitat removal and the project footprint.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

Migratory Birds

Impacts to migratory birds will be reduced or avoided with implementation of the following measures:

- Tree removal should be completed between August 31 and February 15 to avoid impacts to nesting birds. If this is not possible, a pre-construction survey of the adjacent work area should be conducted by a qualified biologist, approximately one week before construction is scheduled to begin.

Northern Goshawk

Avoidance and minimization measures are not necessary.

Yellow Warbler

Avoidance and minimization measures are not necessary.

Yellow-Breasted Chat

Impacts to yellow-breasted chat will be reduced or avoided with implementation of the following measures:

- A qualified biologist should conduct pre-construction surveys of the area to determine if nests are present within the environmental study limits. If yellow-breasted chat is located, California Department of Fish and Game will be contacted to determine a course of action.
- Minimize vegetation removal and riparian habitat disturbance.

- Habitat should be restored to its pre-construction condition after completion of the project.

Osprey

Impacts to osprey will be reduced or avoided with implementation of the following measures:

- Minimize vegetation removal and riparian habitat disturbance.
- Habitat should be restored to its pre-construction condition after completion of the project.
- Pre-construction surveys for migratory birds would include looking for osprey's conspicuous nests within the environmental study limit. If any osprey nests are found, California Department of Fish and Game will be contacted to determine a course of action.

Purple Martin

Impacts to purple martin will be reduced or avoided with implementation of the following measures:

- A qualified biologist would conduct pre-construction surveys of the area to determine if nests are present within the environmental study limit. If purple martin are located, California Department of Fish and Game will be contacted to determine a course of action.
- Minimize vegetation removal and riparian habitat disturbance.
- Habitat should be restored to its pre-construction condition after completion of the project.

Northwestern Pond Turtle

Impacts to northwestern pond turtles will be reduced or avoided with implementation of the following measures:

- Minimize amount of vegetation removed, especially in intact, contiguous riparian areas and springs.
- Minimize habitat removal and the project footprint.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.
- A qualified herpetologist would perform pre-construction surveys no more than two weeks prior to each year's construction activities. Surveys will focus on locating

northwestern pond turtles in the environmental study limit. If the animals are found within the environmental study limits, the California Department of Fish and Game would be contacted at least 10 days prior to the beginning of construction activities to determine a course of action.

California Horned Lizard

Impacts to California horned lizard will be reduced or avoided with implementation of the following measures:

- Minimize amount of vegetation removed, especially in intact, contiguous riparian areas and springs.
- Minimize habitat removal and the project footprint.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.
- Avoid or minimize alteration of, or impacts to, exposed gravelly-sandy substrate containing scattered shrubs, riparian woodland clearings, dry uniform chamise chaparral, particularly sandy loamy areas, and alkali flats.

Saint Helena Mountain Kingsnake

Impacts to Saint Helena mountain kingsnake will be reduced or avoided with implementation of the following measures:

- Minimize amount of vegetation removed, especially in intact, contiguous riparian areas and springs.
- Minimize habitat removal and the project footprint.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.
- Avoid or minimize alteration of, or impacts to, exposed gravelly-sandy substrate containing scattered shrubs, riparian woodland clearings, dry uniform chamise chaparral, particularly sandy loamy areas, and alkali flats.

Western Tailed Frog

Impacts to Western Tailed Frog will be reduced or avoided with implementation of the following measures:

- Erosion control and slope stabilization Best Management Practices, as defined in project's Storm Water Pollution Prevention Plan, will be implemented.

- Minimize the amount of vegetation removed, especially in intact, contiguous riparian areas and springs.
- Minimize habitat removal and the project footprint.
- Contain water and concrete washed out of concrete trucks until cured.
- Pre-construction surveys and Environmentally Sensitive Area delineation will be performed by a qualified biologist.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

Foothill Yellow-Legged Frog

Impacts to foothill yellow-legged frog will be reduced or avoided with implementation of the following measures:

- Erosion control and slope stabilization Best Management Practices, as defined in project's Storm Water Pollution Prevention Plan, will be implemented.
- Minimize amount of vegetation removed, especially in intact, contiguous riparian areas and springs.
- Minimize habitat removal and the project footprint.
- Contain water and concrete washed out of concrete trucks until cured.
- Pre-construction surveys and Environmentally Sensitive Area delineation will be performed by a qualified biologist.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

Survey and Manage Species

Avoidance and minimization measures should be implemented for the following Bureau of Land Management Survey and Manage species: *Ancotrema voyanum*, *Fluminicola n. sp. 14, 18, 19, and 20*, *Fluminicola seminalis*, *Helminthoglypta talmadgei*, *Lyogyrus n. sp. 3*, *Vespericola pressleyi*, *Vorticifix n. sp. 1*, *Helminthoglypta hertleini*, *Monadenia chaceana*, *Trilobopsis tehamana*, *Bryoria toruosa* and *Calcium viride*. These measures include:

- Use erosion control and slope stabilization Best Management Practices, as defined in project Storm Water Pollution Prevention Plan.

- Minimize amount of vegetation removed, especially intact, contiguous riparian areas and springs.
- Minimize habitat removal and the project footprint.
- Contain water and concrete washed out of concrete trucks until cured.

2.3.5 Threatened and Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act: 16 U.S. Code, Section 1531, et seq. See also 50 Code of Federal Regulations 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 Federal Highway Administration, and Caltrans as delegated, are required to consult with the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration Fisheries Service 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 is a Biological Opinion or an incidental take statement. Section 3 of the Federal Endangered Species Act defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act, California Fish and Game Code, Section 2050, et seq. The California Endangered Species Act emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Game is the agency responsible for implementing the California Endangered Species Act. Section 2081 of the Fish and Game Code prohibits “take” of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The California Endangered Species Act allows for take that is incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by the California Department of Fish and Game. For projects requiring a Biological Opinion under Section 7 of the Federal Endangered Species Act, the California Department of Fish and Game may also authorize impacts to

the California Endangered Species Act species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Affected Environment

Howell's Alkali Grass

Howell's alkali grass (*Puccinellia howellii*) is a federally listed threatened species, a state listed endangered species, and a California Native Plant Society 1B species. This species is found in alkali seep habitat. Three of these seep areas occur within the environmental study limits. This small cluster of mineral springs in Shasta County is the only place Howell's alkali grass species has ever been found. The total seep area is 1.2 acres, and the limited habitat makes this species vulnerable to human impact. This very specific habitat for Howell's alkali grass is located on property owned by the National Park Service directly adjacent to State Route 299 and within the project area.

California Wolverine

The California wolverine (*Gulo gulo*) is state listed as threatened and is also a state fully protected species. In the northern Sierra Nevada, wolverines have been found in mixed conifer, red fir, and lodgepole pine habitats. Wolverines frequently travel long distances and may leave their home range for many days. The project area is at the extreme low end of wolverine elevation range.

Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) are federally listed as threatened, state listed as endangered, and a fully protected species in California. Bald eagles select large, super-canopy roost trees that are open and accessible. Most western roost trees are conifers, except in some riparian zones. Eagles have been seen in the area but are usually found at nearby area lakes.

Northern Spotted Owl

The northern spotted owl (*Strix occidentalis*) is a federally listed threatened species. These owls are permanent residents throughout their range. They are found in the north Coast, Klamath, and western Cascade Range from Del Norte County to Marin County. Required habitat is consists of old growth forests dominated by conifers with topped trees or oaks available for nesting crevices. Critical habitat for northern spotted owl does not occur in the environmental study limit.

Surveys in 2002 located a northern spotted owl pair nesting about 1.8 miles from the present environmental study limit, just outside the 2002 northern spotted owl study area buffer. A 2006 database search for northern spotted owl located one historical nesting

site, on the north side of the highway. This site is located fewer than 4,000 feet from the environmental study limits and the cut-and-fill boundaries and about 4,000 feet from the proposed road alignment.

A northern spotted owl habitat assessment was conducted within the environmental study limit in the summer of 2006. The study concluded that the habitat within the current environmental study limit is either not suitable or only marginally suitable for northern spotted owls, and combined with the historic absence of nests within the environmental study limits, there is very little chance of northern spotted owl occurring within 0.5 mi of the environmental study limits and being affected by the project.

The northern spotted owl protocol requires that projects within the Klamath Province survey all suitable northern spotted owl habitat within a 1.3-mile radius of the proposed project (U.S. Fish and Wildlife Service, 1992). This project falls within the Klamath Province of the northern spotted owl and there is nesting, roosting, and foraging habitat within 1.3 miles of the environmental study limit. Therefore, because the 2002 survey expired at the beginning of the 2003 northern spotted owl breeding season, new protocol-level surveys will be performed one to two years prior to project construction. These surveys will be timed so that the data collected are relevant to determining whether avoidance, minimization, or mitigation measures are necessary to compensate for noise disturbance and/or habitat loss, both of which are only necessary if northern spotted owl are nesting or resident within 1.3 miles of the project area.

Environmental Consequences

Howell's Alkali Grass

This habitat is located at the eastern end of the environmental study limit where construction activities will be limited to placement of signs and traffic control. Protection of the site is critical to the continued survival of Howell's alkali grass. Impacts are not expected to occur, if avoidance and minimization measures are implemented.

California Wolverine

Wolverines are sensitive to human disturbance, and an existing state highway running through the project area. Therefore, it is unlikely that wolverines would remain in the environmental study limit for any significant length of time, although they may travel through the area. Increased travel speed on the roadway may cause increased road mortality, decreased mobility, and subsequent habitat fragmentation due to road avoidance.

Bald Eagle

Since this species would likely only travel through the environmental study limits in a transitory fashion, no project impacts are expected.

Northern Spotted Owl

If northern spotted owl are nesting or residing within 1.3 miles of the environmental study limit, it will be necessary to determine how much of the foraging habitat to be removed by the cut-and-fill activities of the project is within 1.3 miles of any nesting pairs or residents. The California Forest Practice Rules require that a minimum of 40 percent of the suitable habitat be maintained within the 1.3-mile radius to support the nesting or resident owls (California Department of Forestry, 2002). A 1.3-mile radius circle encompasses 3,340 acres; thus a minimum of 1,336 acres of suitable habitat should be maintained.

A total of up to 41.3 acres of foraging habitat will be removed during construction activities. Table 2.13 shows the amount of foraging habitat removed under each of the alternatives. The project would not affect nesting or roosting habitat. Given the linear configuration of the project and of the habitat that would be disturbed, the entire amount of disturbance for any of the alternatives could not, however, fall within any one pair’s territory (1.3-mile radius).

Once northern spotted owl preconstruction surveys are conducted, the amount of habitat to be disturbed within the 1.3-mile radius area of any nests or residents would be calculated. If disturbances caused by the project would result in the reduction of suitable habitat to below 1,336 acres with the 1.3-mile radius area, mitigation would be required. Construction of the project is likely to have little effect on the availability of foraging habitat for any pair nesting within 1.3 miles of the environmental study limit because of the small amount of habitat that could be removed within any given 1.3-mile radius area.

There would be no impacts to the species, if nesting or resident northern spotted owl are not found within 1.3 miles of the environmental study limit.

Table 2.13 Northern Spotted Owl Foraging Habitat to be Removed

Alternatives				
	BH4	BH5	BH6	BH12
Acres	29.7	28.2	41.3	28.0

Avoidance, Minimization, and/or Mitigation Measures

Howell's Alkali Grass

Impacts to Howell's alkali grass would be avoided or minimized with implementation of the following measures:

- Pre-construction surveys would be conducted.
- Prior to construction, an Environmentally Sensitive Area would be established.
- The mineral springs and Howell's alkali grass will be protected with Environmental Sensitive Area fencing during construction. Construction staging will not be allowed in the pullout adjacent to State Route 299 at post mile 7.8. Caltrans will consult with the National Park Service to determine avoidance and minimization measures to protect these resources.

California Wolverine

Impacts to California wolverines would be avoided or minimized with implementation of the following measures:

- Minimize habitat removal and the project footprint.
- Create wildlife underpasses or similar structures, particularly along creeks and other natural features that run under the highway, and place fencing to direct animals to safe crossing areas.

Bald Eagle

Since this species would likely only travel through the environmental study limits in a transitory fashion, avoidance and minimization measures are not necessary.

Northern Spotted Owl

Impacts to northern spotted owl would be avoided or minimized with implementation of the following measures:

- If nesting or resident northern spotted owl are identified within a 1.3 miles of the environmental study limits during pre-construction surveys, then no construction or tree removal would be allowed between March 15th and July 10th.
- If surveys find no nesting or resident northern spotted owl within 1.3 miles of the environmental study limits, then no avoidance measures will be necessary.
- Compensatory mitigation will only be required if northern spotted owl surveys find the owls nesting or resident with 1.3 miles of the environmental study limits. In this case, compensation will be required only for habitat removed within the active owl territory.

- All foraging habitat within the cut-and-fill boundaries and within 1.3 miles of a nesting or resident northern spotted owl will be compensated. This could be accomplished by purchasing suitable foraging habitat from an authorized U.S. Fish and Wildlife Service mitigation bank or by improving marginal foraging habitat through silvicultural treatments.

2.3.6 Invasive Species

Regulatory Setting

On February 3, 1999, President Bill 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 to define the invasive plants that must be considered as part of the National Environmental Policy Act analysis for a proposed project.

Affected Environment

Several California noxious weeds are present in the project area including yellow star thistle (*Centaurea solstitialis*), Scotch broom (*Cytisus scoparius*), and Klamathweed (*Hypericum perforatum*). Other invasive, non-native species on site include tree of heaven (*Ailanthus altissima*), ripgut grass (*Bromus diandrus*), cheat grass (*Bromus tectorum*), and Himalayan blackberry (*Rubus discolor*). Non-native, invasive wildlife observed on site include the bullfrog (*Rana catesbeiana*) and European starling (*Sturnus vulgaris*). Both species are very aggressive competitors against other frogs and birds, respectively.

Environmental Consequences

The project has the potential to introduce or spread invasive plant species and noxious weeds with the clearing, grading, and soil-moving operations associated with roadway construction.

Avoidance, Minimization, and/or Mitigation Measures

To reduce the spread of invasive non-native plant species, minimize the potential decrease of palatable vegetation for wildlife species, and comply with Executive Order 13112, the following measures will be implemented:

- Develop an Invasive Weed Eradication Plan, targeting invasive species on the California Department of Food and Agriculture list, as well as other non-native, invasive species found on site.
- Prevent the disposal of soil and plant materials from any areas that support invasive species into areas that support stands dominated by native vegetation.
- Re-vegetation for control will consist of native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions and prevent invasive species from colonizing.
- Equipment that is used in identified invasive species areas will be washed prior to entering the environmental study limits to prevent the spread of invasive weeds.
- Provide training for Resident Engineers on weed identification and the importance of controlling and preventing the spread of identified invasive non-native species.
- Use gravel and/or fill material that comes from weed free sources.

2.4 Construction Impacts

Affected Environment

Construction activities would occur on an 8.5-mile section of State Route 299 from the Shasta County line to 0.6 miles west of Crystal Creek Road. The proposed improvements consist of modifying the existing alignment of State Route 299. Due to the lack of alternate detour routes in the project area, staged construction plans will be needed to accommodate through traffic and minimize traffic delays. Construction staging will be required for roadway excavation, drainage improvements, and construction of structural sections.

Environmental Consequences

The following impacts could occur during construction of the project:

- Temporary traffic delays may result during construction of the project.
- Noise from use of equipment and machinery would occur during each phase of construction. The project would involve intermittent construction activities, so no single location would experience an extended period of construction-related noise.
- During construction, the project would generate temporary dust and air pollutants. The exhaust from construction equipment contains hydrocarbons, oxides of nitrogen, carbon monoxide, suspended particulate matter, and odors. However, the largest percentage of pollutants would be windblown dust generated during excavation,

grading, hauling, and various other activities. The impacts from these activities would vary each day.

- The National Pollutant Discharge Elimination System permit requires Caltrans to address the potential impacts of construction on water quality in the design and construction phases of the project.

Avoidance, Minimization, and/or Mitigation Measures

To minimize the impacts from construction, the following measures will be implemented:

- Traffic safety would be maintained through the use of warning signs, portable message signs, detour signs, traffic controls, and public information. The Caltrans Public Affairs Office would keep the local media informed of construction progress and details pertaining to delays, closures, and major changes in traffic patterns.
- Caltrans Standard Specifications pertaining to dust control and dust palliative requirements are a required part of all construction contracts and should effectively reduce and control emission impacts during construction. The provisions of Caltrans Standard Specification, Section 7-1.01F, “Air Pollution Control”, and Section 10, “Dust Control”, require the contractor to comply with the rules, ordinances, and regulations of the North Coast Air Quality Management District and the Shasta County Air Quality Management District.
- Compliance with Caltrans Standard Specification, Section 7-1.01I, “Sound Control Requirements”, would be required. Section 7-1.01I refers to mandatory mufflers for all internal combustion engines operated within the project and mandatory compliance with local noise ordinances.
- During construction, a Storm Water Pollution Prevention Plan would be implemented to identify the sources of sediment and other pollutants that affect the quality of storm water discharges. The plan would also describe and ensure the implementation of Best Management Practices to reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges.
- Erosion and water pollution issues must be addressed at each phase of the project from planning and design to the built and operational phases. Management measures for roads, highways, and bridges would include using the most current *Caltrans Project Planning and Design Guide*, approved pollution prevention design measures, and construction site Best Management Practices to control discharges of pollutants to the maximum extent practicable.

2.5 Cumulative Impacts

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

California Environmental Quality Act 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 the California Environmental Quality Act can be found in Section 15355 of the California Environmental Quality Act Guidelines. A definition of cumulative impacts under the National Environmental Policy Act can be found in 40 Code of Federal Regulations, Section 1508.7 of the Council on Environmental Quality regulations.

Based on the analysis in this Environmental Impact Report/Environmental Assessment regarding the potential for the proposed project to result in direct and/or indirect impacts to certain resources, the following environmental issues have been identified for consideration in the cumulative impact analysis:

- Aesthetics and Visual Resources
- Natural Communities
- Wetlands and other Waters of the U.S.
- Special Status Species
- Water Quality
- Cultural Resources

Projects considered in the cumulative effects analysis are shown in Table 2.14. All of these projects are located on State Route 299 within the study area for the Buckhorn Grade Improvement Project. Three of the projects are proposed to conform to the ultimate Buckhorn Grade Improvement Project alignment, including the Top of Buckhorn, Yankee Gulch, and Middle of Buckhorn projects. The Bottom of Buckhorn, Water Gulch, and Trail Gulch projects will not conform to the ultimate alignment due to funding constraints and the rugged terrain.

Table 2.14 Projects Considered in the Cumulative Effects Analysis

Responsible Agency	Project Name	Type of Project	Location	Status
Caltrans	Top of Buckhorn	Curve Correction	PM 0.0-0.6	Currently under construction.
Caltrans	Middle of Buckhorn	Curve Correction	PM 3.0-4.3	Construction planned in 2011
Caltrans	Water Gulch	Shoulder Widening	PM 4.5-4.8	Construction proposed in 2011.
Caltrans	Trail Gulch	Shoulder Widening	PM 4.8-5.0	Construction proposed in 2010.
Caltrans	Bottom of Buckhorn	Curve Correction	PM 5.4-5.8	Construction planned in 2010.
Caltrans	Yankee Gulch	Curve Correction	PM 6.8-7.6	Currently under construction

Aesthetics/Visual Resources

Views throughout the project area are moderate in visual quality. Long distance views of Willow Creek, Water and Trail Gulch canyons, and the abandoned Greenhorn Mine are prevalent throughout the corridor. Detractors to the existing views include high voltage utility lines and towers, mining damage to distant slopes, roadside signs, scarring due to erosion, and Caltrans maintenance activities.

Construction of the project will result in substantial alteration of the project area, while adding to the cumulative change of the corridor. Once completed, this project will be visible in the distance, but there are limited fixed viewers and viewpoints. In addition, it is anticipated that maintenance activities will be part of the cumulative visibility of constructed features on the corridor.

Although construction of the project will result in impacts to the immediate environment, with the incorporation of minimization and mitigation measures, visual impacts would be reduced to the extent feasible.

Natural Communities

Natural communities of concern within the project area include alkali seep habitat, riparian habitat, and oak woodlands.

Alkali seep habitat is found only in isolated areas in Shasta County. Approximately 1.2 acres of seep habitat is located within the project area. Impacts to alkali seep can be avoided with implementation of avoidance and minimization measures.

Riparian habitat occurs along Willow Creek and other drainages including Water Gulch, Trail Gulch, and Yankee Gulch. Approximately 0.38 to 0.45 acre of riparian habitat will be disturbed. Loss of riparian habitat will be mitigated through replacement and enhancement of the existing habitat.

Oak woodlands are found throughout the project area and are an integral component of natural communities providing food, foraging habitat, nesting habitat, and cover for numerous wildlife species. The project could result in up to 95.1 acres of direct impacts to oak woodlands and up to 443 acres of indirect effects. Caltrans would mitigate for impacts to oak woodlands by in-kind creation/restoration and preservation of oak woodlands on abandoned sections of the existing roadway, as well as on newly acquired parcels, as needed.

With the incorporation of avoidance, minimization, and mitigation measures, the project is not expected to have an adverse cumulative effect to natural communities of concern.

Wetlands and Other Waters

The project would permanently affect between 1.18 and 1.40 acres of jurisdictional wetlands and other waters of the U.S. With implementation of avoidance and minimization measures, temporary impacts to wetlands and other waters of the U.S. are not expected to occur. Compensatory mitigation for permanent wetland losses will be required. The project is not expected to contribute to cumulative impacts to wetlands and other waters, with the implementation of avoidance, minimization, and mitigation measures.

Special Status Species

The project could potentially affect special status plant and animal species found in the area. When listed species are affected, consultation with U.S. Fish and Wildlife Service under the Federal Endangered Species Act and California Department of Fish and Game under the California State Endangered Species Act would be completed for future projects that may occur in the area. Cumulatively, the viability of some sensitive species throughout the region could be impacted. Each project would mitigate for specific impacts through avoidance, creation, and preservation. Often, through mitigation requirements, the resource agencies are able to obtain large parcels of suitable habitat, creating a continuity that facilitates viability among individual species. This project is not expected to have an adverse cumulative effect to threatened and endangered wildlife and plant species.

Water Quality

The water quality impact analysis concluded that the proposed project would not substantially affect water quality. All projects listed in Table 2.14 have the potential to impact water quality both on a temporary basis during construction and on a permanent basis. Sedimentation is the greatest water quality concern for any of the proposed projects. The addition of impervious surfaces, which would occur from a majority of those projects, would increase the amount of storm water runoff as well as introduce new sources of pollutants that, if transported to surface waters, could degrade water quality. The conversion of grassland or oak woodlands to other uses could impact water quality if Best Management Practices are not implemented. Implementing Best Management Practices to control and treat storm water runoff would minimize all of these impacts. Water quality could be impacted by the location of new construction if vegetated buffer zones to filter pollutants around creeks and tributaries are not included in the design of these projects.

Cultural Resources

Five archaeological sites were identified within the area of potential effects that are either eligible for, or assumed eligible for, listing in the National Register of Historic Places. Two of the sites have elements within the area of direct impact that contribute to the eligibility of the site and would be affected by the proposed project. Three additional sites are assumed eligible for the purposes of this project and will be protected as Environmentally Sensitive Areas.

Caltrans has determined that the proposed project would adversely affect historic properties. Caltrans prepared a Finding of Effects to assess the effects of the proposed

project on the eligible properties, which was submitted concurrently with the determinations of eligibility. The State Historic Preservation Officer concurred with the Finding of Adverse Effect in a letter dated August 28, 2008.

The State Historic Preservation Officer and Caltrans have negotiated a Memorandum of Agreement, which includes stipulations to take into account the proposed project's effects on historic properties. The Memorandum of Agreement ensures that the adverse effects of the project are resolved by implementing Data Recovery and Environmentally Sensitive Area Action Plans. Since the Memorandum of Agreement is designed to reduce impacts on cultural resources to below a level of significance on a site-specific basis, cumulative impacts would be less than significant.